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JAIMC**The Journal of Allama Iqbal Medical College**

July - September 2020, Volume 18, Issue 03

Editorial

Coronaconomy – Health Verses Economy In The Time Of Corona iii
Muhamamd Imran

Original Articles

Sub-Conjunctival Versus Intracameral Dexamethasone Injection After Phacoemulsification, A Comparative Study About Immediate Anterior Uveitis 334

Fiza Azhar, Shamshad Ali, Saqib Siddiq, Muhammad Moeen Bhatti, Ather Touseef, M. Abrar Ahmad, Khalid Waheed

Leading Causes of Morbidities in Children under Five Years Age: Knowledge and Practices Regarding Risk Factors in CMH Lahore 339

Tahira Raza, M Asharaf Chaudhry, Ahsan Masud, Hira Kalsoom, Maheen Omer, Khawaja Rafay Ghazanfar, Inoshia Inam, Hamza Alvi, Jannat Sardar Sheikh

The Prevalence of Dry Eye Disease Among Professional Computer Users 344

M. Nausherwan Adil, M. Abrar Ahmad, Usama Javaid, M. Rashid Yaseen, Ather Touseef, Muhammad Moeen Bhatti

Knowledge, Attitudes and Practices of Hospital Waste Management amongst the Paramedics of a Teaching Hospital in Lahore 349

Khawar Abbas Chaudhry, Amina Yousaf, Mujtaba Hasan Siddiqui, Muhammad Ismaeel Tariq, Surya Fazal Hashmi, Muhammad Azhar Shah

Awareness and Knowledge of PAP Smear as a Screening Test for Cervical Cancer Among Women Attending Gynaecological OPD of Services Hospital 355

Madeeha Rashid, Kiren Khurshid Malik, Asma Mushtaq, Rubina Sohail

The Impact of Pterygium Surgical Excision on Corneal Astigmatism 361

M. Abrar Ahmad, M. Nausherwan Adil, Muhammad Moeen Bhatti, Saqib Siddiq Ch, Rana Naveed Iqbal, Ather Touseef

Teacher's Perception of Instructional Strategy Regarding Undergraduate Learning at Community Based Medical Camps 365

Zahid Kamal, Mehboob Alam, Muhammad Amjad, Bahadur Iftikhar, Junaid Iqbal, Raees Abbas

Preference of the Patients for Selection of Healthcare Provider Suffering from Lower Urinary Tract Symptoms 371

Sohail Hassan, Ashfaq Ahmad, Fawad Nasrullah, Mohammad Iqbal, Ammad Ahmad Siddiqui, Saleem Shahzad Shamas Qamar

Prevalence and Risk Factors of Anemia among Non-Pregnant Women of Childbearing Age 374

Muhammad Azhar Shah, Muhammad Latif, Mutiullah Khan, Mujtaba Hasan Siddiqui, Khadija Mohabbat, Maryam Azmat

COVID-19 Awareness and Knowledge in General Public During Lockdown 380

Asma Zahid, Nizam Abdul Qadir, Muhammad Kamran, Usman Ahmed, Komal Ayyaz, Aneeq Ahmed, Tayyab Abbas

Comparison of Frequency of Biliary Leakage with Clip-Less Versus Clipped Laparoscopic Cholecystectomy for the Management of Acute Cholecystitis 384

Ch. Muhammad Aqeel, Nizam Abdul Qadir, Asma Munaf Khan, Farrukh Muneer, Muhammad Asad Javed, Zareen Amjad

Diagnostic Accuracy of Color Doppler Ultrasound in Evaluation of Thoracodorsal Artery Pedicle after Axillary Lymph Node Dissection to Ascertain Reliability of Latissimus Dorsi Flap for Breast Reconstruction Surgery 389

Sobia Mazhar

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July - September 2020, Volume 18, Issue 03

Evaluation of Angiogenesis and Anti Oxidative Enzymes in Patients of Chronic Liver Disease	393
Madiha Ashraf, Maria Anwar, Ameena Nasir, Abdul Basit Ali, Adnan Riaz, Muhammad Faisal Javaid	
Injudicious Use of Thyroid Radioisotope Scan for the Diagnosis of Thyroid Diseases	399
Mahboob Alam Chishti, Basil Rizvi, Zareen Amjad, Usman Khan, Nizam Abdul Qadir, Rabia Ikram, Ali Nawaz	
Scar Tenderness as a Sign of Scar Complication	403
Faiza Ghafoor, Muntiha Sarosh, Hassan Raza Asghar, Nadia Zahid, Mahboob Alam Chishti, Zareen Amjad, Asma Saleem	
Statistical Analysis of Prevalence of Symptoms and Correlated Disease in the Outpatient of Urology Department	407
Manzoor Ahmed Malik, Hassan Raza Asghar, Waleed Miqal, Mahboob Alam Chishti, Zareen Amjad, Hina Nabi, Luqman Sadique	
Supine Percutaneous Nephrolithotomy: An Effective Approach for Patients of Renal Calculus	413
Muhammad Nazir, Sohail Hassan, Shah Jahan ur Rehman, Kamran Zaidi, Habib Akbar, Bibhushit Mahat	
Urinary Tract Infections: Bacteriological Profile and its Antimicrobial Susceptibility Profile From a Tertiary Care Hospital of Lahore	417
Azka Mubeen, Kokab Jabeen, Tahira Tehseen, Farhan Rasheed, Fizza Khan, Ijaz Ahmad	
Trends in Transfusion Transmissible Infections: A Tertiary Care Hospital Experience	422
Mizna Arif, Saad Zafar, Ikram ul Haq, Fahad Aman Khan, Abida Pervaiz, Rabia Mazhar	
Frequency of Ovarian Tumors at a Tertiary Care Hospital in Lahore	428
Aafrinish Amanat, Usman Nasir, Sadia Alam, Sadaf Waris, Atiqa Arshad, Umme Habiba	
Evaluation of Cervical Cancer Screening and Cervical Cytological Abnormalities on PAP Smear among Women in Sargodha Region	431
Tahira Tabassum, Aamir Sharif, Khalida Ahtesham, Nazma Kiran, Rukhsana Jabeen, Humaira Akram	
Prevalence of Anxiety and Depression in Older Age Group with Irreversible Visual Impairment	436
Ather Touseef, Ariba Ather, Faiza Ather, Kiran Ishfaq, Muhammad Moeen Bhatti, Aysha Rashid	
Management of Solitare Rectal Polyp by Band Ligation Versus Transfixation	440
Tariq Saeed, Maleeha Hussain, Sarem Zarak Wali	
Role of Indirect Laryngoscopies Pre Requisite before Thyroid Surgery	445
Tariq Saeed, Maleeha Hussain, Sarem Zarak Wali	
Depression and Anxiety in A Doctor's Life; A Cross-Sectional Study in Lahore, Pakistan	450
Aalia Tayyba, Mukarram Farooq, Aiman Naveed, Minaam Farooq, Muhammad Ayyan, Muhammad Ehsan	
Euglycemia & Hyperinsulinemia in Normal Pregnancy and its Relationship with Age	456
Shazia Ramzan, Arif Malik, Faheem Hadi, Maria Anwar, Manzoor Ahmad, Maryam Raza	
Efficacy of Autologous Platelet Rich Plasma in the Treatment of Chronic, Non-Healing Leg Ulcers	464
Nadia Ali Azfar, Sadaf Amin, Rabia Mukhtar, Rabia Hayyat, Muhammad Nadeem, Tariq Rashid	

Frequency of Lesions in Central Nervous System in a Tertiary Care Hospital	468
Bushra Nisar, Khalida Ahtasham, Saadia Sharif, Rozina Jafer, Muhammad Talha Haseeb	
Intrauterine Insemination Success Rate Among Couples with Unexplained Infertility: A Public Sector Tertiary Care Hospital Lahore Experience	473
Maj® Afroze Ashraf, Aisha Malik	
2% Undecylenoyl Phenylalanine Cream Versus 2% Hydroquinone (HQ) Cream for Treatment of Melasma Using Modified Masi Score	477
Farwa Naqvi, Zaib, Usma Iftikhar, Amna Mubeen, Iram Imran, Anam Ilyas	
Comparison of Ginger Versus Placebo for the Treatment of Nausea and Vomiting in First and Early Second Trimesters of Pregnancy	483
Mehnaz Gondal, Amna Ahsan, Tayyaba Tahira, Saira Fayyaz, Rabia Wajid, Maryum Shahid	
Frequency of Depression among Caregivers of HIV/AIDS Patients Under Treatment in a Tertiary Care Hospital	489
Ayaz Muhammad Khan, Rubina Aslam, Muhammad Ali Awab Sarwar, Rabia Asghar, Aneel Shafi, Aafia Malik	
Emerging Challenges for Laboratory Professionals During the Pandemic of COVID-19	495
Nadia Wali, Umme Habiba, Atika Masood, Iram Manzoor, Maleeha Aslam, Muhammad Irfan Khan	
Diagnostic Accuracy of Saline Infusion Hysterosonography vs Hysteroscopy for Determination of Uterine Pathologies in Patients with Abnormal Uterine Bleeding (AUB)	502
Munazzah Asghar Gill, Aisha Muzaffar, Sobia Zafar, Iram Asghar Gill, Usman Asghar Gill, Lubna Imran	
Mean Percentage Increase in Postpartum Haemoglobin Level of Two Injectable Modalities of Iron Therapy	508
Iram Inam, Sadia Sarwar, Shazia Sehgal	
Demographic Analysis of the Rumors Regarding Coronavirus Pandemic in Pakistan	514
Minaam Farooq, Aalia Tayyba, Muhammad Ayyan, Muhammad Ehsan, Mukarram Farooq, Sameen Nayer	
Electrocardiogram Understanding Among the Emergency Physicians in a Tertiary Hospital	526
Ahmad Hasan, Ahsan Iqbal, Rana M. Arif, Shahzad Tawab, Muhammad Muzamil, Aqib Javed	
Thyroid Dysfunction Among Patients of Type 2 Diabetes Mellitus Presenting to the Diabetic Clinic of Tertiary Care Hospital	532
Falak Shan, Umair Javaid, Arsalan Naeem Butt, Abd-ur-Rahman Javaid, Maimoona Javaid, Arif Gulzar	
Parity Related Euglycemic State and Insulin Sensitivity in Normal Pregnant Women	537
Shazia Ramzan, Zobia Hafeez, Ayesha Ashraf, Shehwar Nadeem, Saira Aftab, Tahir Maqbool	
Exploring Barriers Faced by SHNS (School Health and Nutrition Supervisors) During Service Delivery	544
Ain ul Momina, Maira Aamir	
Range of Axial Length in Patients Undergoing Cataract Surgery	552
Alina Mustafa, Saqib Siddiq, Muhammad Moeen Bhatti, Maha Shahbaz, Fizza Azhar, Ather Touseef, Khalid Waheed	

Case Report

A Case Study on Atychiphobia- A Typical Feature of A Social Anxiety Disorder 557

Izza Mefooz, Kiran Ishfaq, Faiza Ather, Ariba Ather, Rubina Aslam, Zahid Qutab

Cognitive Behavioral Therapy for Scrupulosity: A Single Case Study 563

Noor e Saheer, Kiran Ishfaq, Faiza Ather, Rubina Aslam, Fatima Saleem, Aafia Azhar

ERRECTA

Referring to the article published in JAIMC, Vol. 18, and issue 1, January – March 2020 on page 85.
Kindly read the name on third place as under

ASSOCIATION BETWEEN ADMISSION NEUTROPHIL TO LYMPHOCYTE RATIO AND IN-HOSPITAL ADVERSE CARDIAC EVENTS IN PATIENTS WITH ACUTE CORONARY SYNDROME

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Referring to the article published in JAIMC, Vol. 18, and issue 1, January – March 2020 on page 13.

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ACCURACY OF HIGH-RESOLUTION COMPUTED TOMOGRAPHY CHEST IN DETECTION OF SPUTUM SMEAR-NEGATIVE PULMONARY TUBERCULOSIS AND FORMULATING A PREDICTABILITY CRITERIA KEEPING GENE XPRT AS GOLD STANDARD

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Pictures on Title

1. Pterygium: Article on page 361
2. Iron Deficiency Anemia: Article on page 374
3. Ovarian Tumor: Article on page 428
4. Cervical Smear: Article on page 431

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CORONACONOMY – HEALTH VERSES ECONOMY IN THE TIME OF CORONA

In the past, responses to a pandemic have followed a set pattern, starting from initial denial to anxiety and panic, to an adjustment period and, then finally, the gradual development of a new normal. What is a new normal? Is this new normal going to divert the investors away from the traditional projects towards businesses such as pharmacy, transportation and technology? Or will this new pandemic drive the business industry away from risk projects for good? During the height of lockdown and an unprecedented time lapse, many business men, industrialists, traders, private and government job holders, daily wagers and project developers have been coping with the sudden downturn in economy as a result of the corona pandemic, and trying hard to survive or in the midst of COVID-19.

Dr. David S. Jones, Professor of the Culture of Medicine at Harvard University describe, “Epidemics start at a moment in time, proceed on a stage limited in space and duration, follow a plot line of increasing revelatory tension, move to a crisis of individual and collective character, then drift toward the closure.” The same sequel is now on play with COVID-19.¹ Pandemics and epidemics put huge pressure on the population and societies they strike. This new viral strain has made visible latent structures that might not otherwise be evident. As a result, epidemics and pandemics provide a sampling tool for social analysis. They reveal what matters to a population in real and whom they truly value.²

In the present pandemic, media coverage is inescapable. As effects of COVID-19 impact everyday life and affect international tensions, appetite for media coverage has grown exponentially thus saturating the human experience of the world around them. In the present era of media it is evident that how a tiny virus or disease becomes ‘newsworthy’ thus taking a strong hold in the public’s imagination.³ Media coverage inevitably affects the consumer

reaction. Counter-cyclical or defensive industries are those that run well in the era economic decline, as demand for those services and products do not depend on a descending economy. However, it is a niche industry whose financial performance is negatively correlated to the overall economy of the state. A business model that thrives in pandemic period where most of the people do not have money is fairly difficult to attract many.

In isolative situations like mandatory social distancing, individuals quickly adapt to change, warming to the intervention of technology. From working remotely to dependence on door-to-door delivery, quick-fix digital-first solutions are now being assessed for long-term viability even after the pandemic. As the people consider how they have adapted to the COVID-19 crisis, they will inevitability also rethink their lives moving forward. The pandemic has changed individual’s attitudes and that these shifts would dictate the success of any project. A thinking with this pandemic which has changed people’s lives is that many are looking ahead to recreate in the open doors or outdoors close to home as well as distancing themselves from other people. People now want to be more local, they do not want to jump on a plane, but rather drive to their destination. Devi Sridhar, a public-health expert at the University of Edinburgh beautifully describes, “The pandemic is not a hurricane or a wildfire. It is not comparable to Pearl Harbor or 9/11. Such disasters are confined in time and space. The SARS-CoV-2 virus will linger through the year and across the world. Everyone wants to know when this will end, that’s not the right question. The right question is: How do we continue?” The plain, unembellished lessons of corona pandemic have exposed what is required for the survival. People need to think laterally and explore new capabilities.

If any economical project is to withstand a crisis

such as COVID-19, the strength of the developer and the subsequent relationship with the borrower is a major factor for its survival and only with an appropriate structure can the project ensure job creation and thus economic strength. The advice from the experts globally is to adapt the infrastructure, marketing, production, and the employees, to the 'new normal', build on new alliances and break from the traditional bureaucracy. A good worldwide example is the entire automobile industry which is undergoing a transformation, especially with regards to digitalization and this too includes the way they are going to present their products in the future." Another classic example is the shift to the new age medicine by transporting medical personnel to the client showing how it can diversify and maintain flexibility to cope with the sudden changes and needs of the current economy.⁴

Indeed, being able to pivot and innovate at a rapid pace because of unforeseen disruptions will remain a key indicator of the economic health. And if these new under-crisis innovations and experiments work out, there will really be no reason not to keep them around. Some brands globally will come out of this crisis situation changed in an unexpected way, while there might be a longing for them to return to pre-crisis operations, it's unlikely that this will happen in the near future. At home and in business, individuals will be open to exploring new ideas and innovations, a continued adaptation to the 'new normal'. Now would be the time to break away from traditional rules and use the existing resources to rethink what is possible. Olga Mizrahi, narrates in his book, *Think Global, Sell Local*, "Strategic alliances are probably the most overlooked form of offline marketing and, yet, they're one of the most meaningful. Two heads are better than one and, in many cases, two companies are better than one, especially when they combine resources or share expertise in order to build new business."

A research in China suggests that spending

habits are set to rebound after the pandemic subsides. Kantar reports that 82% of the Chinese respondents are determined to resume their pre-COVID dining spending, 78% will resume their cancelled spending on travel and 77% pre-pandemic entertainment activities. However the length of the rebound period will be determined by the much more sober economic realities the society has to adapt to when the pandemic situation is over. An economic downturn and a drop in disposable incomes will cause discretionary spending to shrink. Adam Kamins, a senior regional economist at Moody's Analytics explains that during the Global Financial Crisis, the first place to come out of the recession were big densely populated global cities, but this time, depending on the duration and the eventual outcome of the COVID-19 pandemic, the big densely populated cities are going to be at a higher risk.⁵ Whatever the result, the corona virus crisis may have ushered in the new normal, but the hope for a prosperous future certainly prevails.

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The greatest glory in living lies not in ever falling, but in rising every time we fall.

Photograph by: *Ali Rizvi*

SUB-CONJUNCTIVAL VERSUS INTRACAMERAL DEXAMETHASONE INJECTION AFTER PHACOEMULSIFICATION, A COMPARATIVE STUDY ABOUT IMMEDIATE ANTERIOR UVEITIS

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Abstract

Objective: To compare the efficacy of injection dexamethasone used intracamerally versus sub-conjunctivally to control the immediate post-operative anterior uveitis after Phacoemulsification cataract surgery

Methods: This was a comparative, cross sectional research conducted during the period from October 2015 to April 2016 at Services Institute of Medical Sciences Lahore. A total of 300 patients with cataract aged 40 to 70 years were selected by non-probability consecutive sampling. After ethical approval from concerned committee and informed consent, the patients were divided into two equal groups by simple randomization. All the patients underwent phacoemulsification and intracameral dexamethasone was given to group A whereas sub-conjunctival dexamethasone was used in group B) after surgery. Data was collected on a specified proforma, entered in SPSS version 21 and analysed by the use of statistical tools.

Results: A total of 300 subjects participated in the study. The mean age of all patients was 56.78±9.77 years (Mean ±SD) with age range of 40-72 years. The finding regarding the presence of inflammatory cells and flare among both the study groups were compared found significant regarding cells (p value 0.048) and flare (p value 0.006). Gender and age-based results were found significant among female (p value 0.003) and age group of 56 to 70 years (p value 0.026).

Conclusion: This study concludes that postoperative injection of intracameral dexamethasone is a better option as compared to sub-conjunctival injection of dexamethasone in preventing the severity of immediate post-operative anterior uveitis.

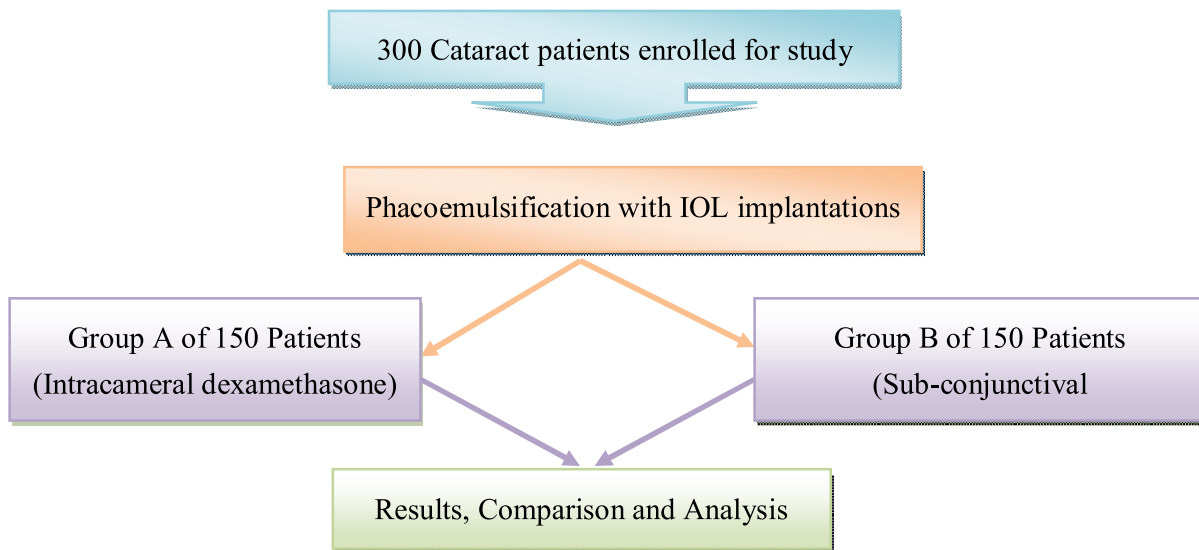
Keywords: Cataract, Phacoemulsification, Anterior Uveitis, Inflammation, Intracameral dexamethasone injection.

Cataract is still leading single cause of avoidable blindness and accounts for half of the total blindness in several middle and low-income countries.¹ Globally, it contributes to 33.4% of all blindness, however, the statistics are lower in the developed countries as compared to Southeast Asia.² It is worth mentioning that 78% of moderate to severe

visual impairment is due to cataract.³ World Health Organization (WHO) approximations that there are 37 million blind people worldwide out of which 39% are due to cataract only.⁴ Although, Cataract is a serious concern for the public health policy makers but the positive side of the story is the availability of effective surgical management.⁵ Advancements in

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Flow diagram of the study proceedings



surgical methods of ophthalmology have resulted in safer and suture-less procedures with excellent outcome. Phacoemulsification, introduced by Charles Kelman is considered as a preferred method with a small self-sealing incision resulting in speedy postoperative visual rehabilitation.⁶ It is important to mention that every surgical procedure is associated with different problems and the most common complication linked with phacoemulsification is the postoperative inflammation. Inciting factor may be the irrigation fluid, viscoelastic use, miotics and direct mechanical trauma to the ocular structures from cataract pieces, instruments and intraocular lens.⁷ Postoperatively, inflammation can prolong patient recovery, increase the likelihood of cystoid macular oedema, raised intraocular pressure, synechial formation, posterior capsular opacification and secondary glaucoma.⁸

Despite of the advancements in surgical techniques, inflammation is still a significant burden of ocular procedures.⁹ This ocular inflammation may lead to visual impairment, persistent pain and other undesirable consequences among the patients⁽¹⁰⁾. The commonly used and standard treatment of ocular inflammatory diseases are topical and sub-conjunctival corticosteroids.¹¹ Sub-conjunctival injection of

steroids is routinely used after the cataract surgery but there is an increasing trend to use the intracameral injection of steroids. Different research studies conclude the post-operative efficacy of intracameral dexamethasone in reducing the intraocular inflammation. Intracameral dexamethasone use during cataract surgery may be an effective way to reduce intraocular inflammation and it is also safe for the corneal endothelium.¹² Sub-conjunctival injection can cause sub-conjunctival haemorrhage that can be distressing and this injection may lead to an accidental perforation to the globe as well.⁷ Moreover it causes pain which is more significant when performing surgery under topical anaesthesia.¹³ These issues related with sub-conjunctival injection can be avoided by intracameral route. No clinically adverse effects have been found after the injection through intracameral route. Intracameral injection of dexamethasone provides an equally effective alternative to sub-conjunctival injection of dexamethasone perioperatively and avoids the pain associated with sub-conjunctival injection. This study was conducted to compare the efficacy of injection dexamethasone used intracamerally versus sub-conjunctively to control the immediate post-operative anterior uveitis after Phacoemulsification cataract surgery.

METHODOLOGY

This randomised controlled trial study was carried out at the department of ophthalmology, Services Institute of Medical Sciences Lahore. Duration of this study was six months from October 2015 to April 2016. A total of 300 patients were selected by non-probability consecutive sampling. Patients were included from 40 to 70 years of age without the gender discrimination with age related cataract diagnosed within last 5 years. The patients with history of complicated cataract, having previous history of intraocular surgery, subluxated lenses, retinal pathology, corneal haze, opacities and poor pupillary dilatation were excluded from the study. After approval from Ethical Research Board, Services Institute of Medical Sciences/Services Hospital, about 300 patients fulfilling the inclusion criteria were registered through ward admissions. Informed consent was taken from all the participants. Socio-demographic information like name, age, gender was recorded. Patients were divided into 2 groups by simple randomization. All the patients underwent phacoemulsification with IOL implantations. In this procedure, the patients were given local anaesthesia and were operated under microscope and phacoemulsification with intraocular lens implantation was performed. Data was collected on 1st postoperative day. Flare and cells, pupillary membrane and hypopyon in anterior chamber were noted using the slit lamp for inflammation in both the groups i.e. intracameral dexamethasone (group A) and those with sub-conjunctival dexamethasone (group B). About 0.1 ml of dexamethasone was directly injected in the anterior chamber at the end of the surgery to the patients in Group A while the group B patients received an injection of 0.5 ml (20 mg) dexamethasone under the conjunctiva in the inferior fornix. A flow diagram of the study proceedings is presented figure-1. All information collected was noted on a specified proforma with outcome variables. The computer software SPSS version 21 was used to analyse the collected data. Results of both groups were compared by applying the chi-square

test. The p-value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 300 subjects participated in the study. The mean age of all patients was 56.78 ± 9.77 years (Mean \pm SD) with age range of 40-72 years. The mean age of the study participants in group-A was 55.51 ± 9.58 years and mean age of participants of the group-B was 58.05 ± 9.82 years. The distribution of both groups based on gender, age group, cataract duration and involvement of the eye is presented in the table below.

The finding regarding the presence of inflammatory cells and flare among both the study groups were compared and are presented in the following table.

A p-value of <0.05 was considered as significant and findings are significant regarding cells (p

Table 1:

Variables		Group A	Group B	Percentage
Gender	Male	87	76	54.3%
	Female	63	74	45.7%
Age Groups	40 to 55 years	72	59	43.7%
	56 to 70 years	78	91	56.3%
Duration of Cataract	< 3 years	63	78	47%
	3 to 5 years	87	72	53%
Eye Involved	Right	84	87	57%
	Left	66	63	43%

value 0.048) and flare (p value 0.006) in the anterior chamber of the study participants. Gender, age groups and duration of cataract -based comparison of the cells in anterior chamber among both the study

Table 2:

Variable	Group A	Group B	Percentage	p-value	
Cells in Anterior Chamber	$\leq +2$	110	94	68	0.048
	$\geq +3$	40	56	32	
Flare in Anterior Chamber	$\leq +2$	141	126	89	0.006

groups are presented in the table below.

The results were found significant among female (p value 0.003) and age group of 56 to 70 years (p value 0.026) considering a p-value of <0.05 as significant. The results of the comparison based on gender, age groups and duration of cataract are

Table 3:

Variable		Cells in AC	Group A	Group B	p-value
Gender	Male	≤ + ₂	60	54	0.453
		≥ + ₃	27	22	
	Female	≤ + ₂	50	40	0.003
		≥ + ₃	13	34	
Age groups	40 to 55 years	≤ + ₂	51	39	0.561
		≥ + ₃	21	20	
	56 to 70 years	≤ + ₂	59	55	0.026
		≥ + ₃	19	36	
Duration of cataract	< 3 years	≤ + ₂	43	46	0.169
		≥ + ₃	20	32	
	3 to 5 years	≤ + ₂	67	48	0.102
		≥ + ₃			

presented in the table below.

These findings are significant among the female participants (p value 0.026) and age group of 40 to 55 years (p value 0.029) of the study subjects considering a p-value of <0.05 as significant.

Table 3:

Variable		Flare	Group A	Group B	p-value
Gender	Male	≤ + ₂	82	66	0.087
		≥ + ₃	5	10	
	Female	≤ + ₂	59	60	0.026
		≥ + ₃	4	14	
Age groups	40 to 55 years	≤ + ₂	69	50	0.029
		≥ + ₃	3	9	
	56 to 70 years	≤ + ₂	72	76	0.066
		≥ + ₃	6	15	
Duration of cataract	< 3 years	≤ + ₂	60	62	0.005
		≥ + ₃	3	10	
	3 to 5 years	≤ + ₂	81	64	0.256
		≥ + ₃	6	8	

DISCUSSION

The primary cause of reversible blindness in middle and low-income countries is cataract, accounting for 33.4% of the total blindness.³ It is an important public health issue and the leading cause of blindness in Pakistan as well.¹⁴ The gold standard treatment for cataract is phacoemulsification and

most common complication is the postoperative anterior uveitis.⁷ This complication is managed by the use of steroids. The findings of the current study represent that the postoperative anterior uveitis was better managed in group A as compared to group B on the basis of number of cells in anterior chamber and flare among both the groups. The results were considered significant at p value <0.05. These findings are consistent with the results of similar comparative study conducted by Nasir Ahmed et al at Institute of Ophthalmology Mayo Hospital Lahore concluding that the intracameral injection of dexamethasone was superior to subconjunctival injection of dexamethasone in preventing immediate postoperative anterior uveitis.¹⁵ The results are also in line with the findings of another international study conducted by Hassan Shamselden et al concluding that the postoperative use of intracameral dexamethasone after cataract surgery was safe and superior to subconjunctival injection of dexamethasone in decreasing early postoperative inflammation.¹⁶ However, the findings of the current study are a bit contrasting to the results of another similar study conducted by Muhammad Hasnain and Abdul-Rahman concluding that the Intracameral injection of dexamethasone is an equally effective alternative to subconjunctival injection of Dexamethasone. However, it is preferable as it avoids the pain related with subconjunctival injection.¹⁷

Another relevant study by Diane TW Chang et al also concludes that intracameral dexamethasone at the end of cataract surgery significantly reduces the postoperative inflammatory cells in anterior chamber which favours the results of the present study.⁸ Ahmed G. Elmahdy also revealed that there was a reduction in the number of aqueous cells which is considered as a major clinical findings of postoperative inflammation.¹⁸ The research studies also revealed that dexamethasone, when injected intracamerally increase its efficacy by about 5% as compared to subconjunctival route of administration.¹⁹ Our results are consistent with the findings of above mentioned study however, the recent study has not investigated the extent to which intracameral injection is better than the subconjunctival mode of administration. Asif Manzoora and Muhammad Moin found in their study that single dose Intracameral injection of triamcinolone acetonide and postoperative topical dexamethasone are equally effective in controlling post-operative inflammation after phacoemulsification.¹²

Subconjunctival injections of steroids are still most commonly used methods for the prevention of postoperative inflammation of cataract surgery.²⁰

However, it is painful in cases of topical anaesthesia and may also lead to subconjunctival haemorrhage. As an alternative the intracameral corticosteroid is a better choice for the control of inflammation and adverse effects including pain and haemorrhage. The limitations of this study are that we did not take account of density of cataract and duration of phacoemulsification and experience of the surgeons.

CONCLUSION

This study concludes that postoperative injection of intracameral dexamethasone is a better option as compared to sub-conjunctival injection of dexamethasone in preventing the severity of immediate post-operative anterior uveitis.

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LEADING CAUSES OF MORBIDITIES IN CHILDREN UNDER FIVE YEARS AGE: KNOWLEDGE AND PRACTICES REGARDING RISK FACTORS IN CMH LAHORE

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Abstract

Background: In Pakistan <5 (under five) morbidities are associated with socioeconomic factors, sanitary conditions and educational status of mother. This study was conducted to identify the common cases with which children under 5 years of age presented and the risk factors associated with the morbidities and awareness among parents about these factors.

Methods: This Descriptive cross sectional study was done on 96 patients of Combined Military hospital in Pediatric OPD (outpatient department) from October 2019 to January 2020. The data was collected by filling questionnaire and was analyzed using SPSS version 21.0.

Results: Prevalence of disease was found to be greater in children less than 1 year old (49%). Majority of the children (90.6%) were vaccinated appropriately according to their age. Hand washing (96.9%) and other sanitary measures (95.8%) were taken care of by mothers handling the child. The percentage of mothers who smoked was (2.1%). The awareness of risk factors such as malnourishment was (80.2%), overcrowding was (70.8%), reduction in household pollution was (90.6%) and hand hygiene was (93.8%). Most of the families (65.2%) went to doctors alone while remaining chose hakeems. For heating purposes, (81.3%) families used gas while remaining resorted to burning biomass. Majority of families (80.2%) were aware of smoke and indoor pollution causing respiratory distress.

Conclusion: Childhood morbidities are associated with neonatal, Infant and under five mortalities. These are basic indicators of a country's socioeconomic situation and quality of Life (UNDP 2007). Level of knowledge and practices of parents needs improvement for achieving better child outcomes and survival.

Key words: Under five morbidities, pediatric diseases, pre term, asphyxia.

Under five (<5) morbidities are closely related to under five mortalities in under privileged areas of the world, particularly in developing countries. According to WHO, around 6.2 million children and adolescents under the age of 15 years died in 2018 from preventable causes. More than five million deaths out of these occurred in children less than 5 years of age. The most susceptible age group was less than 1 month old (neonatal period).

The leading causes of mortality over the period of time were found to be pneumonia, diarrhea, malaria, sepsis, preterm delivery and asphyxia.¹ To

deal with the increasing mortality rate, WHO recommended some safety measures that can treat these preventable causes. These include measures such as immunization, adequate nutrition, safe water and food supply and taking appropriate care.

Prevalence of child mortality is much greater in developing countries. Asia along with the sub-Saharan Africa has a large portion of the world's developing countries and account for majority of deaths.

Pakistan has shown considerable improvement in certain health indicators, still we are far behind the

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recommended sustainable development goals and targets set in vision 2025-30 Pakistan.

There is increased risk of pediatric diseases due to poor socio-economic factors, sanitary conditions and low educational status. Healthy child outcomes are closely related to female education, nutritional and working status of mother. Healthy and empowered mother brings up healthy child. Survival of child is associated with independent and empowered mother. Infant and child mortality rates are basic indicators of a country's socio-economic situation and Quality of Life. (UNDP 2007)

National institute of population studies revealed that neonatal, infant and child mortality indicators show improvement with better educational and socio-economic situation of the country. Infectious diseases commonly found in Pakistan include typhoid fever which if not treated properly, may lead to mortality.² Diarrhea is another disease prevalent in this age group and studies have shown that if untreated, it increases the risk of pneumonia.³ There is a great prevalence of sepsis especially that caused by gram negative bacteria,⁴ as well as iron deficiency anemia.⁵ Other diseases such as acute gastroenteritis and febrile fits are also seen in a large number of cases.

Children under the age of 5 also suffer from non-communicable diseases such as congenital defects and injuries. Death due to injuries such as drowning burns or poisoning is reported to be the third leading cause of mortality in children.⁶ Our outpatient departments are full of such preventable childhood illnesses. This is the time we need to stress upon these morbidity indicators directly associated with child mortality.

The rationale of this research is to look into the knowledge and practices of parents regarding risk factors associated with these preventable diseases in CMH Lahore and to determine the risk factors associated with causes of morbidities among selected sample.

METHODOLOGY

A total of ninety six respondents were taken from Pediatric ward of Combined Military Hospital Lahore, using non probability convenience sampling

for this cross sectional study. Time duration was October 2019 - to January 2020. Questionnaire comprised of closed ended questions was distributed among the mothers after taking verbal consent from them. Participation was not mandatory and assurance of confidentiality was provided. Data analysis was done using statistical package for social sciences (SPSS) version 21.0. Descriptive statistics, including mean, standard deviation, frequency and percentage were used.

RESULTS

Thirteen and a half percent 13.54% of mothers were having no basic education, 19.7% were primary, 21% secondary, 17% intermediate and 26% were graduate and above. Fifty two 52% children were breast fed, 15% were given additional complementary feed, and 33% added other liquids with milk. 19% of the women were allowed to work/ and were self-employed, out of which only half were able to take independent decisions. Prevalence of disease was found to be greatest in children less than 1 year old (49%). These were followed by 1 year olds (17%) and 2 year olds (17%). 3 year old children constituted (7.3%), 4 year olds (6.3%) and 5 year olds (2.1%).(Fig- 1)The most common diseases prevalent were pneumonia (29.2%), fever (20.8%), gastroenteritis (12.5%), chest infection (7.3%) and vomiting (6.3%).

The appearance of children mostly was normal (84.3%). Some had wasted appearance (10.4%) and others appeared to be severely wasted (5.2%).

The most prevalent disease in the normal appearing children was pneumonia (30.9%) followed by gastroenteritis (11.1%). Total number of severely wasted was five (05), wasted (10) and normal appearance (81). In children with wasted appearance, the most prevalent disease was pneumonia (30.0%). (Table-1)

Out of the total number of families, those having an urban background were (55.2%) while those belonging to rural background were (44.8%). In the urban background families, the most common

disease was pneumonia (28.3%) followed by fever (28.3%) and gastroenteritis (15.1%). In the rural background families, the most prevalent cases were of pneumonia (30.2%) followed by gastroenteritis (13.9%) and meningitis (11.6%). (Fig- 2)

Fifty three (55.2%) of respondents belonged to urban background and 43(44.79%) had rural background.

Majority of the children (90.6%) were vaccinated appropriately according to their age. Hand washing (96.9%) and other sanitary measures (95.8%) were taken care of by the mothers before handling the child. The number of mothers who smoked was (2.1%). Regular weighing of the child was taken care of by (57.3%) of the families. The awareness of risk factors such as malnourishment was (80.2%), overcrowding was (70.8%), household pollution was (90.6%) and hand hygiene was (93.8%).

Most of the families (62.5%) went to doctors alone for consultation while remaining chose hakeems as well. For heating purposes (81.3%) families used gas while the remaining resorted to burning biomass. Majority of the families (80.2%) were aware of smoke and indoor air pollution causing respiratory distress. Two percent of mothers were smokers.

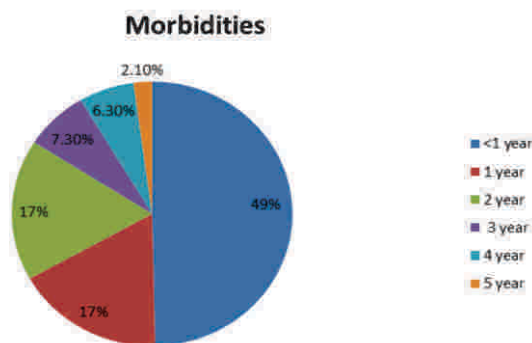


Figure 1. Year wise Child Hood Illnesses (Morbidities)

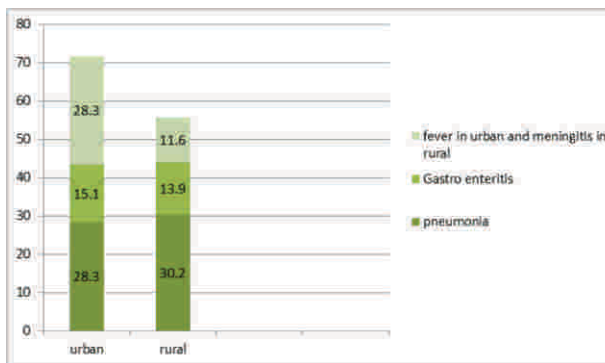


Figure 2: Relation between Diseases and Family Background

Table 1: Co-Relation of Appearance of Child with Disease

Disease of child	Appearance of child			Total
	Severely Wasted	Wasted	Normal	
Pneumonia	0	3	25	28
Gastroenteritis	2	1	9	12
Sepsis	1	0	1	2
Bronchiolitis	0	0	3	3
AIDS	1	0	0	1
Chest Infection	0	0	7	7
Meningitis	0	2	3	5
Febrile fits	0	1	2	3
Vomiting alone	1	0	5	6
Congenital heart disease	0	1	0	1
Tonsillitis	0	0	1	1
Acute resp infection	0	0	1	1
Enteric fever	0	0	1	1
Fever alone	0	1	2	3
Protein deficiency	0	0	1	1
Measles	0	0	1	1
Rash	0	0	1	1
Total	5	10	81	96

DISCUSSION

Globally the < 5 (under five) mortality rate stands at 46 deaths per thousand births. According to US consensus bureau, Pakistan is the sixth most populous country in the world. In Pakistan the <5 (under five) mortality rate still stands at 86 deaths per 1000 live births.⁷ It has now reduced to 74 deaths per thousand according to 2018 PDHS. In Pakistan, major causes of mortality among Children less than five years are birth asphyxia (22%), sepsis (14%), pneumonia (13%), diarrhea (11%) and prematurity (9%), which are directly associated with socioeco-

conomic background, parents education and sanitary conditions surrounding the child.

A study analyzing sustainable household environments and knowledge of healthy practices in Bangladesh, Nepal and Pakistan analyzed the considerably high prevalence of diarrhea and acute respiratory infections (ARI) in South Asian children.⁸ The objective of the study was to compare the associations of sustainable household environment and knowledge of healthy practices with episodes of these diseases among the children in the region. The results of the study concluded that unhygienic drinking water increased the risks of diarrhea and use of solid fuel for indoor cooking increased the risks of ARIs in all three countries. However far more significant were the effects of the mother's education, with incomplete primary education leading to an odds of diarrhea approaching twice that of a mother with secondary education or higher (OR 1.70 in Bangladesh, 95% CI 1.16 to 2.49)

We aimed to analyze the socioeconomic factors leading to the common diseases in children under the age of five. The socioeconomic factors included vaccination status, birth weight, mother's education, background, and age of child, awareness of malnourishment, overcrowding, pollution and fever as a risk factor.

Majority of the morbidities were seen in neonates under 1 year (49%) which is consistent with Pakistan demographic health survey (PDHS) data,

More than 70% believed that over-crowding is a risk factor associated with child hood illnesses. Ninety and a half 90.6% of the respondents were aware of the risks associated with burning of biomass and in-door pollution, still 18.7% were using bio mass for heating and cooking. This is in alignment with another study stating that, burning biomass results in indoor air pollution and causes respiratory problems in children less than five.⁹

Awareness regarding malnourishment was high with 80% in our study but when it comes to practices of mothers 40 % started weaning around 4-5 months,

depriving the infant from exclusive breast feeding. Twenty percent of children in our study were anemic.

Complementary feeding is started to full fill the nutritional requirement of infant and prevent malnutrition. Ideal time to start weaning is after six months exclusive breast feeding. Another study depicted the same practices. 57.3% of mothers started weaning after 6 months while 16.7 % started before six months.¹⁰

Mother's knowledge about the signs of pneumonia such as fast breathing and fever also depends on educational level and prior experience and in this case 47.9% were aware of the basic signs of pneumonia although they were unsure about the severity of these signs.¹¹

Educational status of mothers in our study revealed that thirteen mothers had no formal education, 19 had completed primary education, 21 had completed secondary education, 17 had intermediate and 26 had master's level education, and still forty percent respondents consulted other than doctors. Only nineteen percent women were employed and half were able to take any decision. This is consistent with another study showing that utilization of health facility is a challenge and many factors play a role in selecting a health service such as educational status, beliefs and socioeconomic factors.¹²

Limitations of the study are that this was a cross sectional study where sample was limited to patients visiting a single hospital located in a particular urban area.

CONCLUSION

Children less than one year old were at a greater risk of getting diseases. Almost all were vaccinated properly according to their age. Majority of parents were aware of the harms of over-crowding and poor ventilation and took sanitary measures before handling the child. Parents from rural backgrounds had greater prevalence of diseases amongst their children. Parents preferred to go to doctors, and a considerable number chose hakeems. For better child out

come and survival contributory risk factors towards <5 morbidities should be avoided, and for this women education, socioeconomic status and healthy practices should be promoted.

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Concentration and
mental toughness are the
margins of victory

THE PREVALENCE OF DRY EYE DISEASE AMONG PROFESSIONAL COMPUTER USERS

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Abstract

Introduction: Dry eye disease is developed due to deformities in the tear film that comprises of lipid, aqueous & mucous layers from anterior to posterior side. Dry eye disease is considered amongst one of the most predominant conditions observed in the ophthalmology outdoor setting. Because of the instability in tear film, patients suffering with this disease may present with various degree of redness, irritation, watering, burning, grittiness, foreign body sensation and transient blurring of vision. The signs of dry eye disease may even be present in the absence of full harmony of these above mentioned characteristics.

Objective: To determine the frequency of dry eyes disease among the professional computer users.

Study Design: Cross sectional study.

Place: Department of Ophthalmology, Jinnah Hospital, Lahore.

Study period: Present research was conducted from 04-08-2017 to 03-02-2018.

Material and Methods: This cross sectional study was conducted at Jinnah Hospital Lahore. Informed written consent was taken. Complete ophthalmic examination including detailed anterior segment examination on slit lamp was performed. Then, tear film break time (TBUT) was measured using 2% fluorescein dye drops, which were instilled in the inferior conjunctival sac / fornix. The patients were asked to blink several times for equal distribution of dye in entire tear film and then were asked to keep the eyes open and do not blink any further while the tear film was being observed under the cobalt blue broad beam illumination on slit lamp. The TBUT was the interval, recorded in seconds, for the appearance of 1st black spot or line in the fluorescein-stained tear film, indicating the formation of dry areas. A TBUT of less than 10 seconds is taken as abnormal.

Results: The mean age of patients was 40.82 ± 9.92 years. The minimum duration of working on computers was 5 years and maximum was 16 years with mean and standard deviation 9.34 ± 3.32 years. There were 64.4% male computer user while female computer users were 35.6%. There were 54.8% smokers while 45.2% were non smokers. There were 60% cases who uses computer in air conditioned rooms while 40% computer users without air conditioned rooms. Dry eye disease was present in 18.5% professional computer users while dry eye disease was not present in 81.5% computer users.

Conclusion: Dry eye disease was present in 18.5% among the professional computer users. Effect modifiers have no significant influence on the presence of dry eye disease.

Key words: Dry Eye Disease, Professional Computer Users, Tear Film Break Up Time, Prevalence.

Dry eye disease is the multi-factorial disease of ocular surface which occurs due to the presence of optical distress. It is also called as keratoconjunctivitis sicca or dysfunctional tear disorder.¹ The precise incidence of dry eye disease is not well known because of the trouble in the definition of the disease and the shortage of single appropriate diagnostic tool to confirm the presence of dry eyes disease. But, the incidence of dry eye disease rises with increasing age and is projected to be presence in 5 – 30% of people aged 50 years or above. This incidence is estimated to rise as the people living in the developed countries continues to age.^{2,3}

Sjögren's syndrome is the long-lasting provocative disease featured by reduced functioning of lacrimal & salivary glands. Risk factors specific for Sjögren's Syndrome include a genetic predisposition, low androgen status, nutritional deficiencies, and exposure to environmental agents.⁴ The problem of dry eye can significantly affect the visual acuity of individual, daily routine, social & physical health as well as workplace efficiency.⁵ In addition, patients with dry eye incur direct medical costs through frequent visits to health care professionals, as well as pharmacologic and non-pharmacologic therapies. Indirect costs include decreased productivity and time lost from work.⁶ A cost analysis study estimates an overall annual cost of \$55.4 billion to the United States from a societal perspective.⁷

Dry eye disease is the complex and multi-factorial complication. The tear film of eyes consists of lipid components, aqueous & mucous layers. The healthy tear film depends on the synergistic interface of the eyelids, lacrimal glands & ocular surfaces, which collectively compose a lacrimal functional unit. Dysfunction in any component of lacrimal functional unit may cause the development of dry eye disease.⁸ The use of personal computers, laptops or mobile / tablets in recent decade, has been increased extensively and the drastic rise in the work load and duration of using visual display terminals. The number of people using these visual display terminals is increasing all over the world with increasing

use of Internet. During year 2012, the frequency of Internet users all over the world was reported as 2.4 billion, which was doubled rate as estimated in previous 5 years.⁹ In Japan during 2010, about 95 million individuals (80% of population) were using the visual display terminals with Internet.¹⁰

Lengthy working on the visual display terminals is found to be associated with general and musculo-skeletal symptoms like physical tiredness, back ache and also pain in shoulders & wrists.¹¹ Additionally, work on visual display terminals has been found to be associated with ocular symptoms including loss of visual acuity, asthenopia, pain in eyes and dry eyes disease due to increase rate of tear vaporization, reduced blinking rate, and less tear emission.¹² In few epidemiological surveys, by using the questionnaire, prolonged use of visual display terminals was significantly associated with pattern concerning the higher prevalence of symptoms of dry eye and clinically diagnosed as the dry eye disease. The pathogenesis of dry eye disease symptoms among users of visual display terminals might be because of alterations in the configuration of the tear films.¹³

During the last decade, computer and laptop use have turned to an integral part of modern life. It is projected that, since 2000, around 75% of all the jobs in routine activities, computer use is necessary.¹⁴ Owing to the high capacity and increase trend in computer use, several studies tried to evaluate the way for protection of eyes and the several researches involved in these studies are distributed to determine the effects of the computers and visual display terminal. In starting, these studies were focused mostly to determine the radiation and its harmful effects, but progressively ophthalmic illnesses because of the exposure to the video display terminals turn out to be the major focus and the terminology “computer vision syndrome” was developed to refer to such illnesses. Among these illnesses as reported by user of video display, the problem of red eye, blurry vision, diplopia, burning & irritation, as well as weakness of eye are most common.¹⁵

METHODOLOGY

This cross sectional survey was done at Department of Ophthalmology, Jinnah Hospital, Lahore. The study was conducted for 6 months i.e. from August 04, 2017 to February 03, 2017. In the study, sample size of n=135 cases was estimated by keeping 95% confidence interval, 6% margin of error and percentage of dry eye disease as 14.6%. All the patients were included by applying Non-probability, consecutive sampling technique. Person from both genders with age 25-60 years of age, using computer in their profession with best corrected visual acuity of 6/6 measured by Snellen's Visual acuity chart were included. The person who uses computer for at least 5 hours a day and 5 days a week for last six months was labeled as a professional computer user were included in the study. On examination if person has any one of the following findings, he/she was excluded from the study: previous intraocular surgeries including Extra Capsular Cataract Extraction, Phacoemulsification, Iridectomy, patients having any pathology of eyelids i.e. chalazion or blepharitis, corneal ulcer, scleritis, allergic conjunctivitis, basal cell carcinoma or Squamous cell carcinoma or with best corrected visual acuity of worse than 6/6 so to avoid any confounding factors of asthenopia that may be occurring due to the uncorrected refractive error. Sociodemographic data like name, age, sex was documented. A pre-designed proforma was filled by the investigator himself in language of the participant. Then, complete ophthalmic examination was performed including detailed anterior segment examination with slit lamp. Then, tear film break time (TBUT) was assessed by using 2% fluorescein dye solution. To assess the TBUT of the patients, fluorescein was implanted in the tear film of the patients and patients were requested to keep eye open and do not blink for few seconds, meanwhile the tear film was observed under the broad beam of cobalt blue illumination. The TBUT was noted the time lapse, in terms of seconds, between two blinks and the presence of 1st dry spot in tear film. Dry eye disease was charac-

terized by using the TBUT and the patient with tear film break time of less than 10 seconds was labeled as having dry eye disease.

Data Analysis: The data was analyzed by using SPSS v. 20.0. Numeric variables such as age & duration of using computers was presented as mean \pm standard deviation. Categorical variables such as sex & smoking were presented as frequency and percentages

RESULTS

From 135 cases, it was observed that the minimum age was 25 years and maximum age was 60 years with mean and standard deviation of the age was 40.82 ± 9.92 years. The minimum duration of working was 5 years and maximum was 16 years with mean and standard deviation 9.34 ± 3.32 years.

There were 87/135 (64.4%) male computer user while female computer users were 48/135 (35.6%). There were 74/135 (54.8%) smokers while 61/135 (45.2%) were not smokers. There were 81/135 (60%) cases who uses computer in air conditioned rooms while 54/135 (40%) computer users without air conditioned rooms. Dry eye disease was present in 25/135 (18.5%) professional computer users while dry eye disease was not present in 110/135 (81.5%) computer users.

By using chi-square test, there was no significant association between dry eye disease and gender having p-value = 0.181. Significant association was not found between stratified age group and dry eye disease with p-value 0.069. Significant association was not found between duration of professional computer use and dry eye disease with p-value 0.591. Significant association was not found between the availability of air-conditioned room and Dry Eye Disease with p-value 0.366. There was no significant association between dry eye disease and smokers having p-value = 0.307.

Table 1: Characteristics of candidates

N	135
Age	40.82 ± 9.92
Gender	
Male	87 (64.4%)
Female	48 (35.6%)
Duration of using computer	9.34 ± 3.32
Smoking	
Yes	74 (54.8%)
No	61 (45.2%)
Air conditioned room	
Yes	81 (60%)
No	54 (40%)

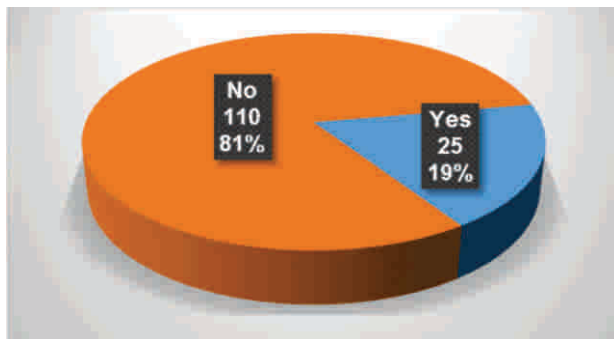


Fig 1: Distribution of Dry Eye Disease

DISCUSSION

In our study the mean age of the patients was 40.82 ± 9.92 years. The minimum duration was 5

Table 2: Stratification with Respect to Effect Modifiers

		Dry Eye Disease		Total	P - value
		Present	Absent		
Gender	Male	19	68	87	0.181
	Female	6	42	48	
Age (years)	< 43 years	10	66	76	0.069
	≥ 43 years	15	44	59	
Duration of professional computer use	< 10 years	14	68	82	0.591
	≥ 10 years	11	42	53	
Availability of Air-conditioned room	Yes	17	64	81	0.366
	No	8	46	54	
Smokers	Yes	16	58	74	0.307
	No	9	52	61	

years and maximum was 16 years with mean and standard deviation 9.34 ± 3.32 years. There were 64.4% male computer user while female computer

users were 35.6%. There were 54.8% smokers while 45.2% were not smokers. There were 60% cases who uses computer in air conditioned rooms while 40% computer users without air conditioned rooms. Dry eye disease was observed in 18.5% professional computer users while dry eye disease was absent in 81.5% computer users.

In previous study, out of 9049 detected studies, 16 were included, with total of 11,365 workers of visual display terminals. Regardless of the high frequency of dry eye disease (49.5%, 95% CI; 47.5 to 50.6), ranged from 9.5% to 87.5%, significant heterogeneity (I2 = 98.8%, p < 0.0001) was detected. Few studies joined the criteria to define dry eye disease. Heterogeneous prevalence was related to the stratifications on symptoms (I2 = 98.7%, p < 0.0001), tears (I2 = 98.5%, p < 0.0001) and epithelial injury (I2 = 96.0%, p < 0.0001). The prevalence of dry eye disease was reported to be more common in women as compared to the men and also more common in older age individuals than younger ones. Because of the differences in the diagnostic method considered to define dry eye disease, the prevalence of dry eye disease all over the world was considered to be 49.5% has less consistency owing to very significant heterogeneity.¹⁶

Present literature displayed that the crude rate of dry eye disease was observed as 30.3%, while the age-, gender-, & region - adjusted rate was 33.2%. Females (P = 0.01) and urban inhabitants (P = 0.001) were more prone to develop the dry eye disease. Individuals having dry eye disease, 85.1% displayed the TBUT time less than or equal to 10 sec, 54.1% were diagnosed with dysfunction of meibomian gland, 39.2% attained the fluorescein score of 1 or greater, while 32.8% cases attained the Schirmer test score of less than or equal to 5 mm. The low Schirmer score was significantly associated with high prevalence of dry eye disease, though the sensitivity was less. Dry eye disease was significantly more correlated with older age; female gender and inhabitants living in the urban regions.¹⁷

In another study, conducted by Schaumberg et al., it was reported that the rate of dry eye disease

risers with the increasing age, i.e. from 5.7% in females aged < 50 years to 9.8% in females of age above 75 years or more. In United States, the age - adjusted prevalence of dry eye syndrome was 7.8%, or 3.23 million of females of age 50 years of above. Compared to the Whites, the females of Hispanics (odds ratio = 1.81, 95% CI; 1.18 -2.80) & Asian (odds ratio = 1.77, 95% CI; 1.17 - 2.69) region were more prone to report the severe signs, but are not clinically diagnosed for dry eye syndrome. The difference was insignificant for income (P - value = 0.78), but females who have more qualification had less chances of developing dry eye disease (P=0.03) than uneducated or less educated females. Females of the Southern countries have the highest rate of dry eye disease, however the extent of topographical differences was uncertain.¹⁸

CONCLUSION

Dry eye disease was present in 18.5% among the professional computer users. Effect modifiers have no significant influence on the presence of dry eye disease.

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KNOWLEDGE, ATTITUDES AND PRACTICES OF HOSPITAL WASTE MANAGEMENT AMONGST THE PARAMEDICS OF A TEACHING HOSPITAL IN LAHORE

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Abstract

Introduction: A higher incidence of nosocomial infections is detrimental for the wellbeing of patients therefore it has to be ensured that the focus is shifted towards providing healthcare services in a safer environment to maximize the benefits of seeking healthcare advice and interventions. Our study aims at determining whether the paramedics at Hayat Memorial Hospital have an adequate knowledge regarding hospital waste management and hospital waste handling practices.

Objectives: To determine the knowledge regarding proper techniques and methods of healthcare waste handling, waste collection, segregation, storage, waste transportation and disposal amongst the paramedics and supporting staff of Hayat Memorial Hospital.

Results : 50 respondents from Hayat Memorial Hospital delivered their knowledge on hospital waste management. Response to the given questionnaire showed that 92% of the subjects had an understanding of the term "hospital waste", while 76% of the respondents had the basic knowledge regarding hospital waste collection and segregation. Amongst the participants, 78% had a basic understanding of color coding system for segregating waste. When asked, 64% participants suggested that incineration was the final method of waste disposal.

Conclusion: Paramedical staff was practicing the hospital waste management adequately. They had knowledge of the harmful effects of hospital waste. However they should be further trained and educated on management of hazardous waste. Effective waste management strategies should be devised and implemented.

Keywords: 1. Hospital waste management 2. Hayat Memorial Hospital 3. Healthcare waste

Waste generated during various hospital procedures imposes a serious threat to the environment as well as the wellbeing of those exposed. Every hospital devises their own customized hospital waste management plan according to the standard guidelines that are supposed to be followed across the globe. Holistically, hospital waste is deemed as hazardous. As it is a potential threat, therefore its management should be gauged towards prompt identification of issues combined with strict

surveillance strategies.¹ The term hospital waste encompasses both risk-waste and non-risk waste. Risk-waste comprises of the pathogenic waste generated during therapeutic and diagnostic procedures, radioactive waste, chemicals, pharmaceutical waste as well as research laboratory waste. Non-risk waste includes papers, leftover food supplies, plastics and cardboard. The waste management process includes waste collection, segregation using color coding methods, followed by satisfactory

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waste disposal techniques.² Hospital waste disposal methods include open pit dumping, burial of waste, burning or incineration.³ Inadequate waste management practices lead to infectious disease transmission. Infectious or pathogenic waste potentiates exposure to blood borne viruses.⁴ Lack of training of healthcare workers, improper regulation by hospital authorities and inappropriate provision of facilities are the prime issues faced.⁵ The waste management strategies being employed in hospitals of Pakistan still remain subpar, in terms of appropriate staff training for adequate waste transportation and disposal methods.⁶ Approximately 0.5–2.0 kilograms of hospital waste is generated per bed per day in healthcare facilities of developing nations. Training and educating the staff on waste disposal measures therefore plays a crucial role.⁷ In developing nations there is a need to upscale the knowledge of healthcare employees. Misuse and recycling of sharps including syringes as well as unreported incidences of needle stick injuries remain huge undiscovered and underestimated health threats.⁸ As healthcare providers are more vulnerable and exposed to receiving occupational injuries including needlestick injuries and injuries due to sharp waste materials, it further raises concern.⁹ Effective management of biomedical waste is not only a legal necessity but also a social responsibility. Training and health education regarding the adverse effects of hospital waste should therefore be prioritized.¹⁰ Considering all that has been discussed above, this study has been conducted to assess knowledge, attitude and practices of paramedical staff regarding health care waste management system.

Objective was to determine the knowledge of paramedics and supporting staff regarding proper techniques and methods of healthcare waste collection, segregation, storage and disposal. The skills and orientation of paramedics and staff involved in waste collection, waste segregation, storage and disposal is of key importance in maintaining an adequate standard of hospital waste

management. Guidelines and standards must be followed in healthcare waste management and disposal. The techniques used in handling the healthcare waste determine how successfully we are disposing hazardous waste; as to what degree are we preventing occurrence of nosocomial infections; the extent to which environment of the hospital is safe for patients and the staff.

METHODOLOGY

Study Setting: Hayat Memorial Hospital, Lahore

Study Design: Cross-sectional Descriptive study

Study Subjects: Paramedical staff

Sampling Technique: Non-probability convenient sampling

Sample Size: Fifty participants

Tool of measurement: Questionnaire

Work Plan: Permission was taken from hospital management and with the consent of participants a structured questionnaire was duly filled. All the required data was collected and compiled into tabular form.

Analysis of Data: Statistical analysis using SPSS version 23.0 followed by percentage calculation and graphical representation using pie charts, on the basis of response to the questionnaire.

Ethical Considerations: Verbal informed consent was taken from all participants.

Inclusion Criteria: Permanent hospital employees i.e. staff nurses, ward boys, operation theater assistants involved in hospital waste management, both genders included.

Data Collection Procedure: 50 supporting staff members fulfilling the inclusion criteria were enrolled for the study from emergency and out-patient department.

RESULTS

Upon inquiry, 92% of the respondents were found to have the understanding of the term “hospital waste” (table 1). Upon being questioned, 78% of the respondents confirmed that color coded bags were being utilized for waste disposal (table 2).

When asked, 76% of the respondents believed that they have the basic knowledge pertaining hospital waste segregation (table 3). When asked who was responsible for hospital waste segregation, 56% of the subjects answered nurses and technicians were responsible for waste segregation (table 4). Upon inquiry, 62% said that waste segregation was taking place in a separate area (table 5). 74% responded that protective clothing was used by waste handlers, 26% replied contrarily (table 6). As per the study conduc-

Table 1: Understanding of The Term “Hospital Waste”

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	generated during various activities in the hospital	46	92.0	92.0
	don't know	4	8.0	100.0
Total	50	100.0	100.0	

Table 2: Use Of Colour Coding for Waste Disposal

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	39	78.0	78.0
	no	11	22.0	100.0
Total	50	100.0	100.0	

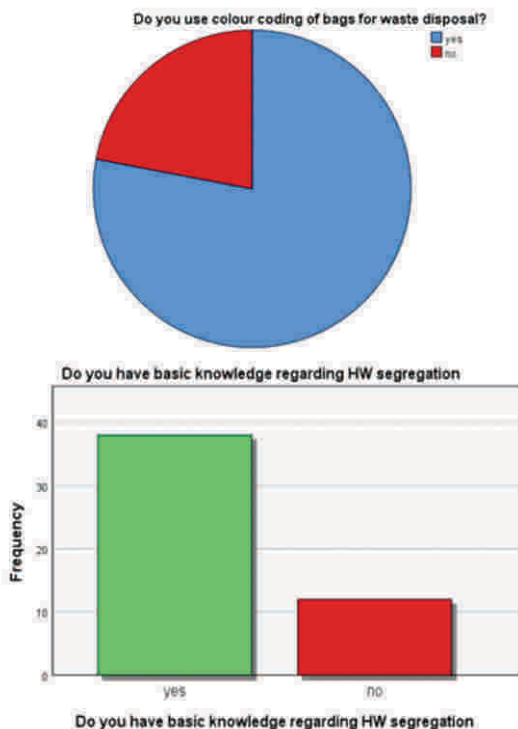


Table 3: Basic Knowledge Regarding Hospital Waste Segregation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	38	76.0	76.0
	no	12	24.0	100.0
	Total	50	100.0	100.0

Table 4: Specific People Responsible For Waste Segregation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	nurses and technicians	28	56.0	56.0	56.0
	others	22	44.0	44.0	100.0
	Total	50	100.0	100.0	

Table 5: Separate Place For Waste Segregation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a separate room	31	62.0	62.0	62.0
	lab	7	14.0	14.0	76.0
	other	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

Table 6: Use Of Protective Clothing By Waste Handlers

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	37	74.0	74.0
	no	13	26.0	100.0
Total	50	100.0	100.0	

Table 7: Use Of Trolleys For Waste Collection

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	24	48.0	48.0
	no	26	52.0	100.0
	Total	50	100.0	100.0

Table 8: Responsibility Of Waste Disposal

		Frequency	Percent	Valid Percent
Valid	hospital	19	38.0	38.0
	Waste Management Company	31	62.0	62.0
	Total	50	100.0	100.0

Table 9: Presence Of Hospital Waste Management Policy

	Frequency	Percent	Valid Percent
Valid	yes	34	68.0
	no	16	32.0
	Total	50	100.0

Table 10: Satisfaction With The Current Waste Disposal Method

		Frequency	Percent	Valid Percent	
Valid	yes	32	64.0	64.0	64.0
	no	18	36.0	36.0	100.0
	Total	50	100.0	100.0	

Table 11: Final Method Of Waste Disposal

		Frequency	Percent	Valid Percent
Valid	burial	12	24.0	24.0
	incineration	32	64.0	64.0
	landfill	6	12.0	12.0
	Total	50	100.0	100.0

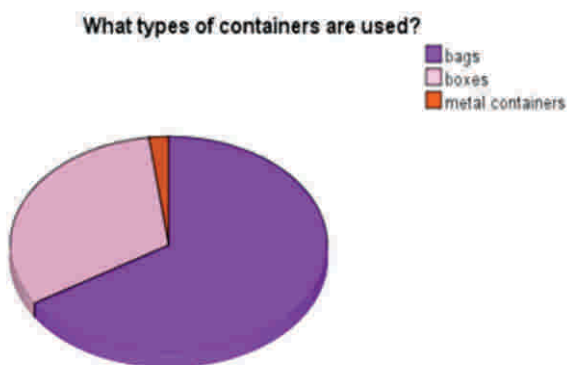


Table 12: Types Of Containers Used In Hospital Waste Collection

		Fre- quency	Per- cent	Valid Percent	Cumulative Percent
Valid	bags	33	66.0	66.0	66.0
	boxes	16	32.0	32.0	98.0
	metal containers	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Table 13: Received A Needlestick Injury

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	28	56.0	56.0	56.0
	no	22	44.0	44.0	100.0
	Total	50	100.0	100.0	

ted, 52% respondents denied use of trolleys in waste collection (table 7). While being inquired 62% respondents agreed that a waste management company is responsible for final waste disposal (table 8). As per the survey, 68% respondents told that the hospital has a waste management policy (table 9). As per the study conducted, it has found 64% respondents were satisfied with the current waste disposal methods employed (table 10). When inquired on the final method of waste disposal, 24% thought it was burial; 64% thought it was incineration; 12% said landfilling (table 11). When questioned, 66% of the subjects claimed that plastic bags were being used for collecting and storing waste until it is transported for final disposal, whereas 32% believed that boxes were being used for waste collection (table 12). It was revealed that 56% of the participants had previously received a needlestick injury, however 44% of the participants denied having experienced it before (table13).

DISCUSSION

A study conducted in Saudi Arabia, elaborated a low cost plan designed to manage hospital waste adequately. It emphasized the significance of devising a comprehensive strategy for waste disposal following collection and analysis of obtained data, with rapid identification and removal of any issues identified within the entire process.¹

A research in a tertiary care hospital of Nepal assessed the impact of intervention on the quality of hospital waste management practices. During the intervention process, dedicated hospital committees were established, waste management policies were devised and implemented. The hospital staff was trained and equipped for adequate waste handling, waste collection, segregation, waste storage, transportation and disposal of waste. Focus was laid on

reducing the production of waste, and effective ways of recycling the produced waste. Subsequent to training and intervention the practices of waste handling significantly improved.²

A survey conducted in Tanzania concluded that knowledge amongst the participants regarding management of biomedical waste was below average. The need for creation of awareness through training the health workers was felt. 50% participants suggested that open pit burial was the final method of waste disposal, while in our study 64% respondents suggested that incineration was the final method of waste disposal.³

In a study conducted in five hospitals of Lahore it was stated that there is a strong need to devise waste management plans keeping in view economic feasibility as well as the safety of the environment. The study highlighted improper waste segregation and waste disposal methods being practiced. Furthermore the potential consequences and harmful effects on exposed population and environment were also discussed. Incineration of hospital waste material was deemed as the preferred way of waste disposal. However the knowledge regarding healthcare waste and its imposed hazards was found to be inadequate amongst the study subjects. Use of safety measures and personal protective equipment by healthcare waste handlers was unsatisfactory. It was mentioned that 90% of the staff knew about the use of colour coding in waste segregation, whereas in our study 78% of the staff had knowledge of the use of colour coding for waste segregation.⁴

A study amongst healthcare workers in Ethiopia revealed that 28.8% subjects had received a needlestick injury within the past year, whereas 43.6% had suffered a needlestick injury during the course of their professional career prior to that. It was suggested that ways to tackle the rising incidence and prevalence of occupational injuries amongst healthcare workers should be formulated and implemented. Training the workers and strengthening the infection control measures was advised. These findings are consistent with our study where 56% respondents

positively replied when questioned about having received a needlestick injury.⁵

Another survey conducted in Pakistan evaluating the waste management practices, concluded that national and international standards of waste management practices were not being met. While the level of hygiene practiced in the hospitals was satisfactory, the handling and disposal of waste was found to be lacking. The staff members were found to be ignorant towards appropriate preventive and protective measures while performing their routine responsibilities. It was revealed that 70% respondents claimed hospital waste is segregated by trained personnel and 80% responded that there is a special room designated for hospital waste disposal, whereas in our study 56% responded that nurses and technicians are responsible for hospital waste segregation and 62% responded that a separate room is designated for hospital waste disposal.⁶

A research conducted amongst the paramedical staff of Jinnah Hospital, Lahore, discovered that a great majority of participants had basic knowledge of biomedical waste handling and management. It was assessed that the practical waste management practices of the staff were more satisfactory than their knowledge level regarding waste management practices. 96% of the subjects had knowledge about Hospital Waste Management, and these results are consistent with our study.⁷

A study in hospitals of Bangladesh showed that knowledge of nursing staff regarding waste management and disposal practices was insufficient. It was suggested that training of health personnel on biomedical waste management and hospital infection control measures should be made compulsory. It was stated that 46.6% respondents had the knowledge of color coded bins for waste segregation while 15.2% were aware about waste transportation. These results were not consistent with our study.⁸

In a study carried out amongst Emergency service providers in West Virginia, it was discovered that 81.99% of the participants had never experienced a needlestick injury, while 18.21% had experien-

ced a needlestick injury within the past year. An association between age and frequency of needlestick injuries received was established. It was claimed that more experienced and trained staff members reported a higher frequency of needlestick injuries. It was also discussed that female emergency service providers working in urban areas were at a higher risk of receiving needlestick injuries. Whereas in our study 56% of the participants admitted having received a needlestick injury.⁹

A research carried out in 10 hospitals, including public sector hospitals and private sector hospitals of Islamabad and Rawalpindi revealed a lack in appropriate waste handling measures. The processes of waste handling, waste collection, segregation, storage, transportation and disposal failed to meet WHO recommended standards as well as the Pakistan Bio-safety rules 2005 standards. Training of healthcare workers was suggested, which is in line with our findings.¹⁰

CONCLUSION

Paramedical staff had the basic level of knowledge regarding the harmful effects of hospital waste. The hospital waste management plan was being implemented and the hospital waste management services were found to be adequate. However the paramedical staff should be further trained and educated on management of hazardous waste. This technique was found useful in assessing the standards of hospital waste management practices and assisted in identifying the need of training the healthcare staff to ensure safer waste handling. After analyzing the results, following recommendations are proposed :

- a. Establishment and strict implementation of a hospital waste management policy.
- b. Lay significant emphasis on training of the healthcare personnel, paramedics and supporting staff of the hospital.
- c. Occurrence of needlestick injuries as well as injuries due to impact from sharp waste must be

- d. reported to the person appointed as incharge of hospital waste handling.
- d. Devising appropriate policies concerning occupational injuries and needlestick injuries.
- e. Further systematic strengthening of existing waste management facilities.
- f. Strict observation of hygiene measures and infection control measures within the hospital premises.

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AWARENESS AND KNOWLEDGE OF PAP SMEAR AS A SCREENING TEST FOR CERVICAL CANCER AMONG WOMEN ATTENDING GYNAECOLOGICAL OPD OF SERVICES HOSPITAL.

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Abstract

Objectives: To determine the level of awareness and knowledge of women towards Pap smear as a screening test for cervical cancer.

Methods: A descriptive cross-sectional study took place in outpatient department of Services hospital, Lahore between July 2019 and December 2019. A structured questionnaire was randomly distributed to 385 married women attending the gynecology outpatient clinics.

Results: Three hundred and eighty five women participated in the survey. The most of the participants aged between 31-50 years (63%) and were married (85%), with majority having primary & secondary education levels (47%) and housewives (52.2%). A total of 304 women (78.8%) never heard about Pap smear previously. Only 81 women (21.1%) were aware about it. A sum of 312 women (81%) did not do a single Pap smear previously. Regarding knowledge of Pap smear, 309 women (80%) did not know when to start doing Pap smear screening, 372 women (96.6%) did not know how frequently they should do Pap smear and 373 women (96.8%) did not know when to stop doing Pap smear screening. Hospitals & healthcare workers (40.7%) and media (33%) were major source of knowledge.

Conclusion: The awareness and knowledge of Pap smear as a screening test for cervical cancer among participants is deficient and scarce. There is an urgent need to educate and foster awareness concerning cervical cancer and its screening through Pap smear.

Keywords: Knowledge, Cervical cancer, Pap smear, Awareness, Screening

Cervical cancer is the fourth most frequent cancer worldwide according to WHO.¹ It is a slow-growing tumor which begins in the cervix of women and occurs mostly in middle aged women. Once the malignant cells start to grow, they can slowly metastasized the whole body to cause distressing health effects.² Because of its slow growing nature, cervical cancer is highly preventable and treatable if detected early, even then many women still develop the cancer with severe morbidities and even mortalities. In 2018 an estimated 570,000 new cases occurred making it 6.6% of all female cancers.³ Around 80% of deaths from cervical cancer occurred in low- and middle-income countries where it causes about 190,000 deaths each year.⁴

Cervical cancer is the second most common

cancer in women in Pakistan.⁵ Twenty women die of cervical cancer daily in Pakistan, which ranks seventh among countries having the highest number of cervical cancer deaths worldwide.⁶ According to research carried out by WHO, In 2002, the prevalence of cervical cancer in Pakistani women was 0.009% (9/100,000) while in 2008 it was 0.019% (19.5/100,000).⁵ Sixty million population of Pakistani females are in reproductive age group, who are at risk of developing cervical cancer. According to existing estimates every year 5601 women are diagnosed with cervical cancer and 3861 die from this cancer.⁷

The American cancer society state that cervical cancer once used to be the leading cause of cancer death for women in the US, but now as all women are

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undergoing screening for cervical cancer its incidence has been decreased significantly.⁽⁸⁾ The burden of the disease is now limited primarily to the less developed regions of the world, where one-third of the cervical cancer burden is attributed to South Asia. A lack of effective screening programs and treatment of pre-cancerous lesions is a reason behind this.

Infection with human papilloma virus is primary source behind this cancer. Screening is beneficial as cancer is asymptomatic in early stages and with help of screening can be recognized in premalignant stages. There are various methods of cervical cancer screening which includes: conventional cytology also known as Pap smear, liquid based monolayer cytology, human papilloma virus testing (HPV), and visual inspection to detect pre-cancer or cancer.²

According to study carried out by world health survey in 57 countries, cervical cancer screening coverage among developed countries is 93.6% while in developing countries it is 44.7%.⁹ According to ICO/IARC Information Centre on HPV study carried out by world health survey shows Cancer cervical screening practices in Pakistan in 2003 was only 2.3%.⁷ In Pakistan, comprehensive Pap smear screening programs have not been effectively executed at government level and services of pap smear is accessible to only a small proportion of women coming to teaching health facility or major private health care providers. Also most of the women are not aware of the screening methods.

It is a proven fact that for forming successful policies for increasing utilization of preventive services, there is need to explore the extent of knowledge and awareness level about the problem of targeting population.¹⁰ Therefore, this cross sectional survey is carried out to determine awareness and knowledge of Pap smear as a Screening Test for Cervical Cancer among women attending gynaecological outpatient department of Services Hospital. This study proves to be helpful step towards assessing the magnitude of the problem and the efforts

needed to tackle it.

METHODOLOGY

This is a cross-sectional survey that was carried out from July 2109 to December 2019. Patients attending gynaecology OPD were recruited after informed consent. All participants were ensured about the confidentiality. They were informed that their participation is voluntary and they have full right to withdraw from the study at any time without reasons. Data collection done by interview-based questionnaire to assure their complete understanding of the asked questions and to ensure the validity of received responses. The questionnaire that was used during data collection contained focused questions in respect to the awareness and knowledge of Pap smear test along with demographic questions. In addition, sources of information about Pap smear screening test were assessed. Questionnaire contains no personal identifying information. The data were analyzed using SPSS version 20.

RESULTS

Demographic: Age

Age	n=385	%
20-30	69	17.9
31-40	109	28.4
41-50	133	34.5
51-55	74	19.2

Parity

Parity	N=385	%
Nulliparous	52	13.5
P1	85	22.3
P2-4	145	37.6
P5-9	103	26.7

Married

Marital status	N=385	%
Married	324	85.15
Divorced	39	10.12
widow	22	5.7

Education

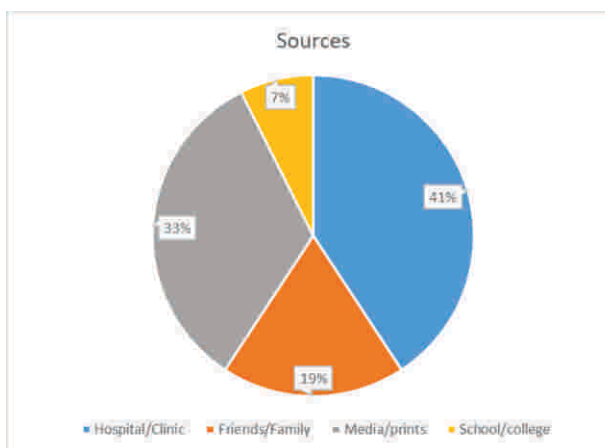
Education	N=385	%
Illiterate	91	23.6
Primary	103	26.7
Middle/secondary	79	20.5
Intermediate	69	17.9
Graduates & above	43	11.3

Occupation

Occupation	N=385	%
House wife	187	48.6
Non skilled worker	119	30.9
Skilled worker	79	20.5

Socioeconomic status

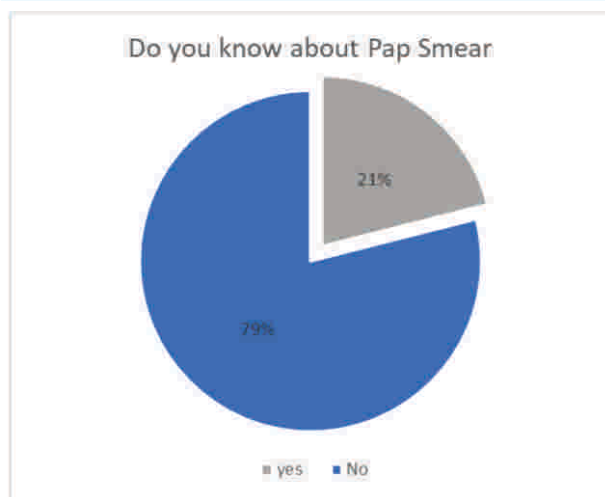
Socioeconomic status	N=385	%
Lower class	217	56.3
Lower Middle class	121	31.4
Upper middle class	43	11.1
Upper class	4	1.02



Do you know What Pap smear is?

Do you know what Pap smear is?	Frequency N=385	%
yes	81	21.1
No	304	78.9%

Have been screened before	Frequency N=385	%
Yes	73	18.9
No	312	81.03



Awareness about Pap smear

Status of Pap Screening

Knowledge about Pap smear as screening test for CA cervix

Do you know when to start doing Pap smear?	Frequency	%
Yes	77	20
No	309	80
If [yes], please indicate when	n=77	
After marriage	15	19.4
After 30 years	27	35.06
After 40 years	35	45.4

Do you know importance of Pap smear/why it is used?

Do you know importance of Pap smear?	Frequency N=385	%
Yes	67	17.4
No	318	82.6%

Do you know how frequently you should do Pap smear?	Frequency	%
Yes	13	3.37
No	372	96.6
If [yes], indicate how frequently	N=13	
Every 6 month	4	30.7
Every 1 year	4	30.7
Every 3 year	5	38.6

Source of knowledge (If heard of Pap smear from what sources?)

Sources	N=81	%
Hospital/Clinic	33	40.7
Friends/Family	15	18.5
Media/prints	27	33.3
School/college	6	7.4

Do you know when to stop doing Pap smear?	Frequency	%
Yes	12	3.11
No	373	96.8
If [yes], indicate when	N=12	
At 50 years	5	41.6
At 60 years	4	33.4
At 70 years	3	25

Do you know when to start doing Pap smear? N=385

DISCUSSION

With development of Pap smear (Papanicolaou test) as cervical screening test, incidence of cervical cancer has decreased by more than 50% in past 30 years,¹¹ making it one of the most preventable cancer. When detected in premalignant and early stages it is highly curable. Despite of this fact most of Pakistani women presented in advanced stages (III, IV) requiring radiotherapy or chemotherapy. The main reason for late presentations is due to fact that no proper screening program for cervical cancer is followed here and absence of formal nationwide campaigns to provide awareness among masses regarding this preventable cancer.

The study results showed that most of the participants, 78.9% were unaware of Pap smear screening test, 82.6% were unaware of its importance. Only 18% of participants have undergone Pap screening. Comparing to a similar study carried out in Bangalore India 88% participants were unaware of Pap smear testing and 80% were not aware of term cervical cancer.¹² Another study conducted in tertiary hospital in Karachi, Pakistan assessed the knowledge of interns and nurses about Pap smear, showed 60% of the respondents were unaware that Pap smear is the screening test for cervical cancer.¹³ Bangladeshi study on awareness of cervical cancer and its prevention reveals that only 7% population was aware and had knowledge of Pap smear screening test.¹⁴ These study results can explain why most of the cervical cancer patients in developing countries presents in advanced stage as masses have poor information regarding screening test and gravity of situation by this cancer. Similar study regarding KAP of Pap smear test carried out in Bahrain showed that 64% women never heard about the Pap smear but 64% believed that it can detect pre-cancerous lesion and 44% know that should be repeat three yearly.¹⁵

This study also revealed poor knowledge and inadequate information about Pap smear by the respondents. 80% of participants didn't have knowledge about when to do Pap smear, 96.6% didn't know how

frequently it should be done and 96.8% didn't know when to stop doing it. A study in Riyadh by Hassan revealed insufficient knowledge (more than 90%) and misinformation about Pap smear.¹⁶ A study carried out in turkey by Erdin Ilter showed that 70% participants had adequate knowledge regarding Pap smear screening and 51% subjects had done it before.¹⁷ In our study most of the patients belonged to lower socioeconomic status with only minimal education level. Financial difficulties and low education levels are considered to be main factor in ignorance regarding health awareness. Therefore, special budget allowance should be allocated for not only health education activities but also for mass screening programs targeting the lower socioeconomic classes in population. Moreover, it would be a better idea to spread cervical cancer awareness and knowledge through health talks, interviews, posters, pictorial display and health promotion videos, as it will be easier to understand by them. Involvement of Lady Health visitors at primary health care level in awareness programs can be of great help. Correct knowledge about Pap smear test (with respect to when to start, when to stop and frequency of testing) is essential to ensure maximal benefit and adherence to the preventive measures implicated in the Pap smear screening test.

Sources of knowledge to participants in my study are hospitals and healthcare workers 40%, media 33.5% and family 18%. The advice of healthcare professionals is considered to be vital for patients. Hospitals and doctors should start awareness programs regarding cervical cancer prevention. Healthcare workers should advised all eligible women coming to them for various gynecologic/obstetrical reasons to do Pap smear as a screening test for cervical cancer. Establishments of laboratory services and training in interpretation of slides at every level is need of the hour.

33% of participants quoted media to be the source of their information. This shows the importance of mass media and the need to utilize its role in spreading awareness about health issues. Though the

reliability of some information found on the Internet is questionable, but the Internet resources can be a useful way to spread awareness as these are easily available to masses in country. In this regard, it is necessary to introduce the reliable and useful online information for benefit of general public. SMS services and social media can be utilized as already being used in Dengue and Covid 19 campaigns. In similar study in Iran, healthcare providers, and participation in educational programs have been reported as the main sources of information.¹⁸

Therefore, efforts to promote cervical cancer screening programs among women should emphasize more on creating awareness and informing women of their risk of developing cervical cancer and promoting the belief that effective and routine screening can detect cancer in the pre-malignant stage which is treatable. Women should be motivated to be committed to their health and to participate in the screening program. Level of awareness and knowledge of participants regarding cervical screening interpret their attitude and willingness of availing screening services. So we must improve awareness level of general public, if we want to reduce incidence of this treatable cancer in Pakistan.

CONCLUSION

The study highlights inadequate awareness and knowledge about Pap smear screening test among women coming to Services hospital. In Pakistan, cervical cancer is the commonest female genital tract cancer; even then there are no effective nationwide screening and prevention programs available. There is an urgent need to educate and create awareness about the cervix cancer, its diagnosis and prevention. Awareness companions need to be started from basic & rural health centers and high schools / universities. In resource crunched country like Pakistan we cannot afford the high costs involved in advanced cervical cancer management, so there is a need of establishing formal intensive screening and HPV vaccination programs for cervical cancer accessible to all populations. Until these preventive programs

are established firmly in place, it is responsibility of all healthcare professional to give awareness and education regarding Pap smear screening and its importance to all eligible women who attend their healthcare facilities.

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THE IMPACT OF PTERYGIUM SURGICAL EXCISION ON CORNEAL ASTIGMATISM

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Abstract

Background: Pterygium is the lesion that grows on the ocular surface. It is described as the elastotic degeneration of the collagen and proliferation of fibro-vascular mass, along with the overlying layer of conjunctival epithelium. Pterygium causes the corneal alteration and induces the significant volume of astigmatism. Excision of pterygium is the surgical procedure which can help to retrieve the corneal astigmatism to the normal.

Objective: To find the mean change in astigmatism after pterygium excision in the adult population.

Material & methods: This Quasi experimental study was done at Department of Ophthalmology, Services Hospital, Lahore for 6months. Thirty five patients filling the inclusion criteria were registered. A preoperative keratometry was performed. All patients underwent Pterygium excision with autologous conjunctival graft and postoperative keratometric readings were taken at one month follow-up. Change in the corneal astigmatism was recorded. All data was collected by using a proforma. SPSS v. 17 was used for data analysis.

Results: The mean age of patients was 43.49 ± 16.02 years. There were 26 (74.3%) males while 9 (25.7%) females. At baseline, the mean astigmatism was $4.06 \pm 1.04D$ which was reduced to $2.92 \pm 0.93D$ after surgery. The mean change in astigmatism was $1.14 \pm 0.23D$. This was significant decrease in astigmatism after surgery ($p < 0.05$).

Conclusion: Thus, pterygium excision is beneficial in reducing corneal astigmatism in adults.

Keywords: Astigmatism, pterygium excision, diopter, autologous conjunctival graft

Pterygium is derived from a Greek word “pterygos” which means “wing”. It is commonly present as a lesion on the ocular surface and described as the elastotic degeneration of the collagen material and proliferation of fibro vascular mass, along with the covering of the epithelium lie on the top.¹ It grows in the inter-palpebral space which most frequently affects the nasal side of palpebral conjunctiva. Even though, pathogenesis of the Pterygium is not clear yet, but it is supposed that the ultraviolet radiations can be a significant and strongest influencing factor for development of pterygium, in addition to the dry

eyes or person is living in a hot warm climate.² Lately, it was opposed that the mutations in gene p53 present on the chromosome 17 might be responsible for development of Pterygium.²

According to the distribution, the chances of Pterygium are twice among males as compared to females. This may be because of excessive outdoor exposure of the males is more than females which raises the probability of Pterygium among males.² Patients having pterygium present with the wide range of complaints. Sometimes it is asymptomatic while sometime it cause severe symptoms like

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redness, along with itching, reduced ocular motility and reduced or blurred vision.³ The effect of pterygium on the status of the corneal refraction can be estimated by using refraction, keratometry & corneal topography.⁴ Pterygium causes the alteration in the cornea and also persuades the significant extent of the astigmatism. In a study done by Faisal Aziz Khan, astigmatism may occur either due to pooling of tears in advance of the pterygium or by traction generated by the pterygium mechanically pulling on and distorting the cornea or both.⁴

The most common indications for the excision of Pterygium are: reduction in the vision because of intrusion on the visual axis as well as due to altered astigmatism level, old irritation in the eye, recurrence of inflammation, obstructive ocular motility and also the cosmetic purposes.⁵ Several surgical methods have already been described. These methods include the “bare sclera excision with or without using adjuncts like beta radiation, thiotepa eye drops, intra-operative or post-operative application of mitomycin C, amniotic membrane transplant and conjunctival autograft.”⁵⁻⁷ This study was aimed to find mean change in astigmatism after pterygium excision. This study would help us in guiding patients about the possible outcome of the surgery and assess the outcome of pterygium surgery in our population. Objective was to find the mean change in corneal astigmatism after pterygium surgical excision in adult population.

METHODOLOGY

Study design: Quasi experimental trial

Venue: Department of Ophthalmology, Services Hospital, Lahore.

Duration of study: Six months i.e. from December 01, 2015 to May 30, 2016.

Sample size: Sample size = 35 cases is estimated by keeping 95% confidence level, $d=0.12$ and taking expected mean \pm SD of mean decrease in corneal astigmatism i.e. 0.95 ± 0.34 after pterygium excision in adult population.

Sampling technique: Patients were recruited via Non-probability, consecutive sampling

Selection Criteria: All patients with age range of 20-70 years of either gender with primary pterygium, defined as triangular fibro vascular ingrowth of bulbar conjunctiva over the limbus onto the cornea involving ≥ 1 mm of cornea measured on slit lamp examination were included. Patients with recurrent pterygium, having corneal pathology like keratoconus, corneal opacity or any previous ocular surgery diagnosed on history and slit lamp examination were excluded.

Data Collection Procedure: The written informed consent was acquired from all patients. After obtaining ocular and systemic history, ocular inspection was done in affected eye including the estimation of visual acuity on Snellen’s chart, manifest refraction and slit lamp anterior segment examination. A preoperative keratometric reading was taken by an automated keratometer (Nikon keratometric). All patients then underwent Pterygium excision with autologous conjunctival graft and postoperative keratometric reading was taken at one month follow-up.

Change in Astigmatism: Irregular curvature of the cornea due to pterygium assessed in Diopter (D) by keratometry at preoperative and one month postoperative. Difference in preoperative and postoperative astigmatism readings in Diopter (D)

Data Analysis: The collected data was analyzed by using software SPSS version 17. The frequency and percentage was calculated for gender. The quantitative data including age, preoperative and postoperative astigmatism and change in astigmatism were presented as mean and standard deviation. Paired t-test was applied to determine the mean change in astigmatism keeping p-value ≤ 0.05 as significant cut-off.

RESULTS

The mean age of patients was 43.49 ± 16.02 years. There were 26 (74.3%) males while 9 (25.7%) females. About 17 (48.6%) patients had issue in the

right eye while 18 (51.4%) patients had problem in left eye. Table1

At baseline, the mean astigmatism was 4.06 ± 1.04 D which was reduced to 2.92 ± 0.93 D after surgery. The mean change in astigmatism was 1.14 ± 0.23 D. There was significant decrease in astigmatism after surgery ($p < 0.05$). Table2

DISCUSSION

Pterygium is an ocular disorder which can significantly alter the refractive astigmatism, that in turn results in significant deterioration of the vision.⁸ In our study, at baseline, the mean astigmatism was 4.06 ± 1.04 D which was reduced to 2.92 ± 0.93 D after surgery. The mean change in astigmatism was 1.14 ± 0.23 D. There was significant decrease in astigmatism after surgery ($p < 0.05$).

In a local study done by Khan et al., the pre-operative astigmatism was 2.25D which was reduced

measured with automated keratometer.⁴ In another study by Eknath Shalke in India the mean decrease in corneal astigmatism was up to 2.66 ± 0.075 D which is much greater than the mean decrease in astigmatism in this local study i.e. 0.95 D.⁹

The reduction in the astigmatism level after surgical excision was dependent on the size of the pterygium, which was surgically removed.¹⁰ Various authors have reported variable amount of astigmatism by comparing the length of pterygium using corneal topography. Pterygium which are < 2.5 mm induce less astigmatism of 1.25 D compared to those > 2.5 mm which induce on average 3.94 D of astigmatism.¹¹

Hansen et al. reported that pterygium > 3.0 mm induced 1.97 D of astigmatism versus 1.11 D in < 3 mm.¹² Kampitak reported a 2 D or more of astigmatism with length greater than 2.25 mm.¹³ Recently, Jaffar et al. found a strong correlation with a mean size of 2.84 ± 0.557 mm and inducing a 3.46 ± 1.441 D ($p = 0.01$) of astigmatism.¹⁴ On the contrary, Fong et al. results did not accord with other studies who found that pterygium had to be greater than 3.5 mm to induce 1 D of astigmatism.¹⁵

Maheshwari et al., found that the pre-operative refractive astigmatism was reduced from 4.60 ± 2 D to 2.20 ± 2.04 D, post-operatively. This was a significant reduction in level of astigmatism ($P = 0.00001$).⁸ Vives et al., also found that there was significant reduction in astigmatism after excision i.e. the mean pre-operative astigmatism was 1.8 ± 1.35 D, which was reduced to 1.15 ± 0.9 D after one month of excision while further reduced to 1 ± 0.46 D after three months of the excision. There was also significant correlation obtained between the length of pterygium and pre-operative astigmatism level ($p < 0.05$).¹⁶

In another study, conducted by Cinal et al., excision was done in 27 patients. It was found that pre-operative astigmatism at 3 mm pterygium length was 2.30 ± 2.08 D which was reduced to 0.82 ± 0.74 D after excision. This reduction was statistically significant ($p = 0.002$).¹⁷ Soriano et al., also found

Table 1: Demographics of Patients

n	35
Age (years)	43.49±16.02
Gender	
Male	26 (74.3%)
Female	9 (25.7%)
Anatomical Side	
Right	17(48.57%)
Left	18(51.43%)

Table 2: Change in Astigmatism before and after Treatment

	Preoperative	Postoperative	Change	P-value
Astigmatism (D)	4.06 ± 1.04	2.92 ± 0.93	1.14 ± 0.23	< 0.05

ced to 1.30 ± 0.22 D post-operative astigmatism. This reduction in the post-operative astigmatism level was observed to be statistically significant ($p < 0.001$). There is a mean decrease of 0.95 D in corneal astigmatism after pterygium surgery. After removal there is a significant influence on the corneal refractive parameters which includes spherical power, astigmatism, asymmetry and irregularity. This decrease in corneal astigmatism is statistically significant when

that there is a significant decrease in the central corneal astigmatism i.e. from 2.41 D to 1.29 D after excision of pterygium regardless of the small sample size of the research work.¹⁹ But Bahar et al., reported an insignificant reduction of astigmatism i.e. 3.12D to 2.50D after excision of pterygium, without any changes in the axis.¹⁸

CONCLUSION

Pterygium excision is beneficial in reducing the corneal astigmatism in adults. We can recommend this method to improve astigmatism in patients of pterygium.

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Your mental health
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TEACHER'S PERCEPTION OF INSTRUCTIONAL STRATEGY REGARDING UNDERGRADUATE LEARNING AT COMMUNITY BASED MEDICAL CAMPS.

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Abstract

Background: More than 70% population of Pakistan lives in rural areas. Majority of Medical colleges have been established in metropolitan cities. Their educational programs do not really focus on the health problems of the under-privileged population. Therefore there is a need to revisit the successful strategies to orientate the learning towards community needs.

Objective: This study aimed to assess the instructional strategy at medical camps to develop certain soft skills like; communication skill, team spirit and professionalism in medical students.

Design: Retrospective study with Survey questionnaire.

Settings: Multi-disciplinary medical camp organized by Al-Akhyar Foundation, Punjab at Sunder Sharif, Lahore.

Measuring Tool: All teachers were given questionnaire and responses were analyzed and frequencies were calculated by SPSS version 23.

Results: 25 Teachers participated in medical camps. Five teachers dropped out and at the end of study, 20 teachers were present. 16(80%) were male, 4(20%) were female. Among them 5(25%) were Professors, 8(40%) Associate Professors, 7(35%) Assistant Professors and 5(25%) Senior registrars..

Among these twenty teachers, sixteen (80%) perceived that “student centered” learning lead to sensitization of the student to the community health needs. They also get a glimpse of psycho-social relationships with patient that strengthens their future therapeutic relationship. Fourteen teachers (70%) had opinion that “medical camp helps the teacher to improve the communication skills in medical students. Ten teachers (50%) viewed that instead of being individually oriented, this camp activity enhance attribute of “team spirit”. Twelve teachers (60%) perceived that majority of the students (>95%) have no concept of professionalism.

Conclusion: This instructional and academics strategy at the community based camps should be adopted in a wider perspective to actively engage medical students in their studies and acquire skills.

Key Words: Medical Education, community based medical education with teacher perspective, Primary health care.

A genuine civilized society carries medical care as public service and medical education as a public concern. Most of medical schools in developing countries like Pakistan are following the curri-

culum and standards like industrialized countries. Our doctors are not aware of the problems of poor countries like communicable diseases, malnutrition and population explosion and are not trained to work

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at underprivileged and slum areas.¹ According to Silver, Medical education is reflection of medical practice; it is not the education that will change the practitioners, but reformed practice that will redesign medical education.²

Exposure to medical camps at community level enables medical teacher and students to socialize, to cultivate subject understanding, make learning real and relevant. It works as a tool to learn how to consult and communicate, develop generic skills like leading, teamwork and acquisition of soft skills like; communication skill, team spirit and professionalism.³

Now it seems pertinent to incorporate the opinion and perception of medical teacher in community based care and preventive strategies. This educational program is also called CBME (community based medical education) COBES (Community based experience and services).⁴

It is evident from different studies that early exposure to community can accelerate contextual and experiential learning of medical teacher as well as students. Community based health education may ameliorate socio-behavioral aspects of medical personnel in perceiving the health problem of our population. In order to fully comprehend the influence of social determinants on individual health, medical teachers and students must acquire certain attributes like effective communication and collaboration skills.⁵ It was strongly recommended by WHO (2008) that all countries must fortify their primary health care services through thorough coverage, person centered care, public policy and leadership qualities.⁶ Some studies persuade the idea of engaging medical students with general practice and family medicine specialist for deep rooted learning of medical students and intense exposure to community.⁷

Constructing an appropriate plan and strategy to conduct a medical camp at rural area not only sensitized the students to become responsible and perceptive professional but also enabled them to

acknowledge the valuable work at primary care setting.

Impact of community based medical camps may be further diminished if there are deficient teachers who could engage medical students at rural based service or camp.⁸

The structure of community based learning strategy is based on a framework which is further divided in micro, meso and macro levels⁹. At micro level teacher helps student in learning by mentoring and gearing. At meso level teacher apply different learning strategies by incorporating teaching and learning. At macro level innovation and leadership play role to transform an undergraduate to meet the community needs.¹⁰

There are very few studies in the literature that focus the perception of teacher in the context of instructional strategy at community based medical learning which rationalized the need of research in this peculiar aspect. It was retrospective study with questionnaire.

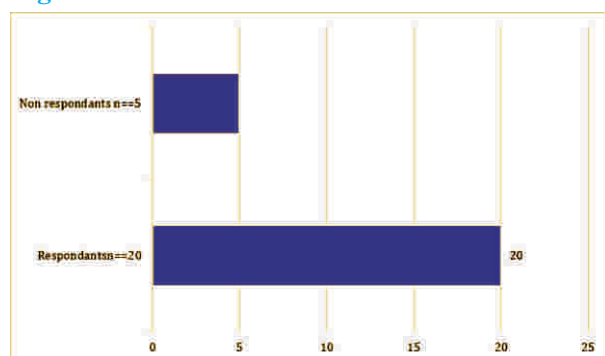
METHODOLOGY

A prospective study was conducted at Irfania Medical Camp, a service arranged by a non-profit organization Al-Akhyar foundation on the outskirts of Lahore, the capital city of Punjab. Twenty five (25) teachers from different medical colleges participated in the study. The study was approved from the institutional review board of King Edward Medical University, Lahore. Questionnaire was designed and answered by teachers. Informed consent regarding participation in the research was taken from all the teachers as well as the patients attending the camp. A five point Likert scale was used. Data obtained was analyzed. Main outcome measures were to assess whether in view of teachers these camps can be made useful to develop professionalism, communication skills, team work, clinical reasoning, and community based learning, student teacher interaction and reflective learning.

RESULTS

A study carried out at community based medical camps at suburbs of Lahore for 3 years. 25 Teachers participated in medical camps. Five teachers could not continue the study due to personal commitments. At the end of the study, 20 teachers were present, 16(80%) were male participants, 4(20%) were female. About 12(60%) of them had teaching experience of more than five years. Five teachers had teaching experience of more than 10 years .Eight had 8 years teaching experience, seven had 5 years experience while five had 3 years teaching experience. Regarding instructional strategy to improve students' learning at medical camp, 9 elements included, scoring on 5 point likert scale were assessed. Point 1 being the "lowest" score and 5 being the "highest" score.

Figure 1:



First element of instructional strategy at medical camp was whether "the environment was conducive" for learning which got 4.0 score. Instructional strategy regarding improvement in clinical correlation (reasoning) scored 4.0. Improvement in student-teacher interaction scored 4.0. Improvement in "patient-Doctor relationship" (empathy) got 4.2.

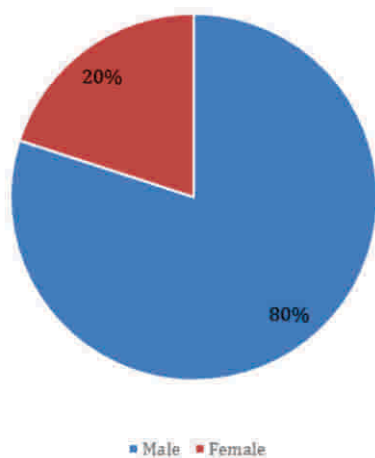


Figure 2:

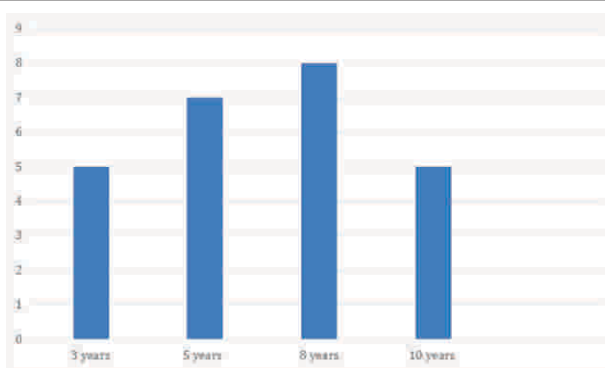


Figure 3: Teaching Experience in Years

DISCUSSION

In this research opinion of teachers were sought for improvement in community based learning of medical students and to develop strategies. Outcome measure was to know teachers perceptions that this type of learning can develop certain attributes in students. No study regarding teacher's perception is carried out in Pakistan. Internationally much work done regarding students perception about learning at community based camps but studies acquiring teacher/ facilitator's perception are lacking. In this study we developed a questionnaire and likert scale for rating their response. Our first parameter was that learning environment must be "comfortable and conducive" for learning of medical students. As it was difficult to arrange proper logistics for a medical camp at periphery. According to our teacher's perception this component scored 4.0. It means according to them environmental conditions were not affecting students learning. While studies carried out at Nigeria and other settings showed that environment at medical camps had a great impact on medical student's aptitude for learning. Unfavorable climatic and travelling conditions were hindrance for medical students to work with ease and enhance learning.¹¹ In our study second element was to provide opportunities for students to enhance "Clinical correlation, reasoning and collaborative learning". We are heading towards an era of medical education where "leaner driven learning" has gained pivotal role. Most of our teachers had viewed this element essential for conducting medical camp and score for this

Table 1:

	Question	1 Strongly Disagree	2 Disagree	3 Somehow agree	4 Agree	5 Strongly agree	Total score
1	Learning environment was conducive	-	2	1	12	5	4
2	Promoted Clinical correlation (clinical reasoning)	-	2	3	3	12	4.2
3	Student-Teacher interaction		1	3	11	5	4.0
4	Improved patient –Doctor relationship (Empathy)	-	-	-	16	4	4.2
5	Sensitized the student about CBME	-	-	4	11	5	4.0
6	Reflective learning (Intensive supervision)	-	-	4	5	11	4.3
7	Building team spirit	-	-	4	3	13	4.4
8	Evolving Professionalism (Role modeling)	-	2	4	4	10	4.1
9	Improved communication skills	-	3	3	8	6	3.8

Sensitization about CBME got score 4.0. Element of reflective learning scored 4.3. Building team spirit scored 4.4. Communication skills improvement scored 3.8.

component was 4.2.¹² Effective treatment requires effective relationship between patient and doctor. “Empathy” is one of salient attribute of doctor and it declines during course of medical education. Role modeling and hidden curriculum found to be most influential in many studies for developing empathy in medical students. They have the perception that the “student centered” interaction is more easily “manageable, doable” and revealing the social organization and environments that lead to sensitization of the student to the community health needs at the beginning of their student career. They also get a glimpse of psycho-social relationships with patient that strengthens their future “therapeutic relationship”.¹³ We found in our study that many of our teachers had view that these medical camps useful for developing empathy in medical students for patients. Score for this component was 3.8. which is close to ‘Agree’. They had perception that, while working in camps, students were sensitized through these camps by misery of patients living in underprivileged areas with almost no expert medical help available. Contrary to our study other researcher found seminar, video conferencing and interview with patients to conceive empathy.¹³

To train our medical students as future health professionals, acquisition of some soft skills for doctor-patient communication which are mainly “listening skills and observation skills”.¹⁴ A recent study in the United Kingdom revealed that teaching

communication skills, leadership and team work as a part of undergraduate medical education was worthwhile for professional development of medical students. WHO specify to introduce communication skills and teamwork in primary health care exposure for medical students, to approach the health needs of certain community.¹⁵ Many studies explain that instructional design of a medical camp must include activities to develop communication skills in medical students. Our study was comparable to these studies and most of our teachers scored “teamwork and communication skill” (4.4) as essential part of medical camp.¹⁶ They are of the opinion that “medical camp based articulation” of the students helps them to improve the clinical communication at the outset of their medical career. Student–teacher relationship is professional one in which, under appropriate conditions, both students and teachers are heading towards a common goal which is the achievement of academic and professional development and excellence. Our study showed that there was better student teacher interaction. In academic settings it was difficult for teachers to communicate with each student effectively in 45 minutes lecture. Students feel free to discuss with teacher in camps and it had positive impact on their learning.¹⁷ Now a day’s professionalism is subjected to great discourse, easy to articulate, laborious to quantify and majority of the students (>95%) have no any concept of professionalism or professional attitude.¹⁸ This

element in our study got highest score by teachers' i.e 4.4. So all teachers had perception that these camps were a great source of evolving professionalism as medical students had opportunity to interact with most vulnerable and under-privileged population at periphery. So it was obvious that these medical camps were complimentary to medical colleges for providing learning of professionalism.¹⁸ The other elements in our study were sensitization of the students about community health needs and problems. They are of the opinion that instead of being individually oriented, this camp activity enhance and escalate the sense of "sensitization and team spirit". A study precisely denote that community-based camps had been revealed to be the better place for medical students to gain understanding of public health problems as compared to hospital setting.^{8,19} Teachers had perception that these camps had provided a great opportunity for reflective learning of students. They confronted situations regarding dealing and management of patients which were not encountered in academic settings. This experience caused increased self awareness among students and heightened the sense of professional identity.²⁰

CONCLUSION

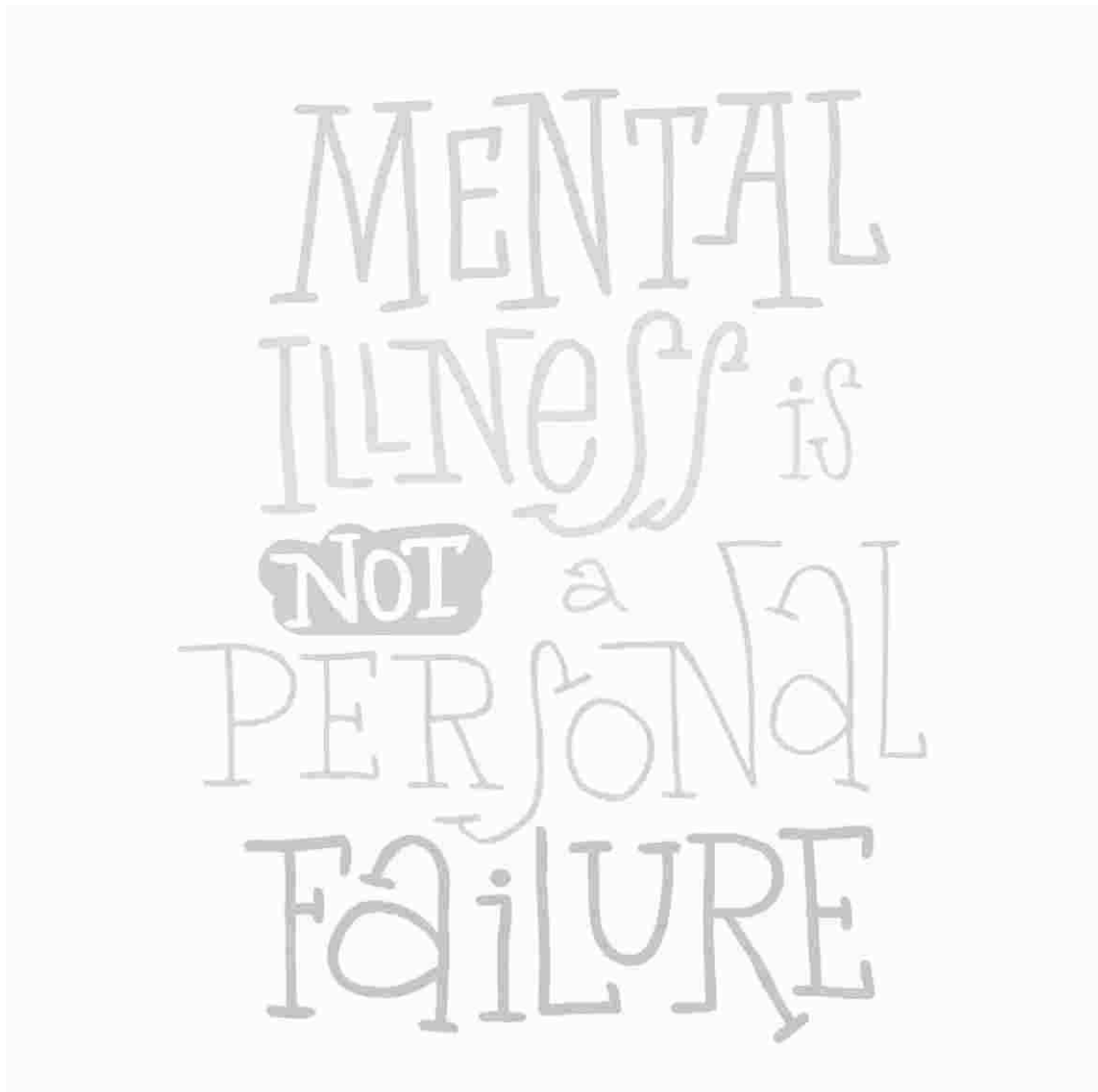
This instructional and academics strategy can be greatly augmented by straightforward and upfront confrontation of the health care problems at the community based camps. Teacher's perception that prompts the students to actively engage in their studies sound to be fairly motivating as manifested by the enthusiasm and satisfaction they had experienced during their tasks. Therefore it should be adopted in a wider perspective with a large number of teacher populations to draw more firm conclusions.

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PREFERENCE OF THE PATIENTS FOR SELECTION OF HEALTHCARE PROVIDER SUFFERING FROM LOWER URINARY TRACT SYMPTOMS

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Abstract

Background: In our country there are different types of healthcare providers practicing in the community. In this study we tried to determine the preference of healthcare providers by the patients. As there are not much studies available on this subject, we tried to show a general picture about the preferences of the patient. Therefore this study is a valuable contribution for determining the choice of patient among different healthcare providers.

Method: A questionnaire was designed and patients preference about their healthcare provider was asked. Patients were given seven choices, local doctor, nearby government hospital, Hakim, homeopathic doctor, dispenser, Peer (spiritual healer) and Siana. The data was entered and was analyzed to know the frequencies of preferences.

Result: One thousand male patients were interviewed. The mean age was 55.77 + 4.85 years with a range of 51-77 years. The preference of 343 (34.3%) was a local doctor, 62 (6.2%) was government hospital, 217 (21.7%) was a Hakim, 54 (5.4%) was a homeopath doctor, 278 (27.8%) was a dispenser, 31 (3.1%) was a Peer and 15 (1.5%) was a Siana.

Conclusion: It is difficult to assess the true preference of the patient for selection of healthcare worker. Patients usually prefer their local general physician and their previous experiences.

Key Words: Choice behavior, Patient satisfaction, Healthcare provider, Quality of health care, lower urinary tract symptoms.

Among elderly patients lower urinary tract symptoms are common. It is a progressive disease and its prevalence increases with age. At the age of 50 years its prevalence is 41% which reaches up to 70% at the age of 70 years.¹ The severity of disease directly affect the quality of life and if left untreated may cause serious complications. Although some of patients do not bother their lower urinary tract symptoms but mostly try to get relieved.¹ For that purpose they consult either doctors or complementary and alternative healthcare provider. The complementary and alternative healthcare providers

are group of people from different medical healthcare systems, products and practices which are not included in conventional medicine.²

In most countries the patients are not encouraged to choose actively among different healthcare providers for the management of their diseases.⁽²⁾ But in Pakistan the patients prefer to visit traditional healers. There are multiple reasons for this such as poor socio-economical conditions, illiteracy, long waiting times in hospitals, non availability of doctors etc. The principle by which the choice of patient is assessed for the selection of healthcare

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provider is "voting with your feet".³ This means that the patients who want a high quality healthcare with minimum cost comparing the quality management by different modalities, select the best for their health.³

There is scarce data about the preferences of patient about selection of their healthcare provider. This study will provide a baseline data from which door to more researches will be open. Objective was to find out the treatment trends of the people for their lower urinary tract symptoms.

METHODOLOGY

Place of Study: This study was conducted at Lahore General Hospital Lahore.

Sample Size: One thousand males who are above 50 years of age and presented with lower urinary tract symptoms were included in the study.

Study Type: It is a cross sectional descriptive study.

Method: A questionnaire was developed which had two parts. First part was about the basic information of the patient while the second part was about the preferences about healthcare professionals. All the, one thousand, patients were interviewed and the question about the preferences of healthcare professionals for the treatment of their lower urinary tract symptoms was asked. The answer was entered in the Performa and prepared for analysis.

Statistical Analysis: All the data collected was entered in to Epi data. Then the frequencies of different options were calculated by Epi Info.

RESULTS

Total 1000 male patients were interviewed. The range of age of these patients were from 51 to 77 years with a mean age of 55.77 + 4.85 years. Among these patients 71% (n=710) belongs to poor socio-economical class. Regarding literacy rate 70.2 % (n= 702) were illiterate. Among these patients 433 (43.3 %) were permanent resident of District Lahore.

All the persons were asked about their preference of healthcare provider and seven different options were given. Among all 1000 persons 343

(34.3%) persons told that if they suffer from lower urinary tract symptoms, they prefer to consult their local doctor (a), 62 (6.2%) persons said that they will consult nearest government hospital (b), 217 (21.7%) persons will consult with Hakim (c), 54 (5.4%) persons will consult with homeopathic doctor (d), 278 (27.8%) will consult with dispenser (e), 31(3.1%) will consult with a Peer (spiritual healer) (f), while 15(1.5%) persons said that they will consult with Siana (some senior family member) (g). So, among 1000 people, 405 persons (40.5 %) said that they will prefer to consult trained people that is doctors and government hospitals for their lower urinary tract symptoms while rest of 595 persons (59.5 %) still prefer to go to untrained or non qualified people.

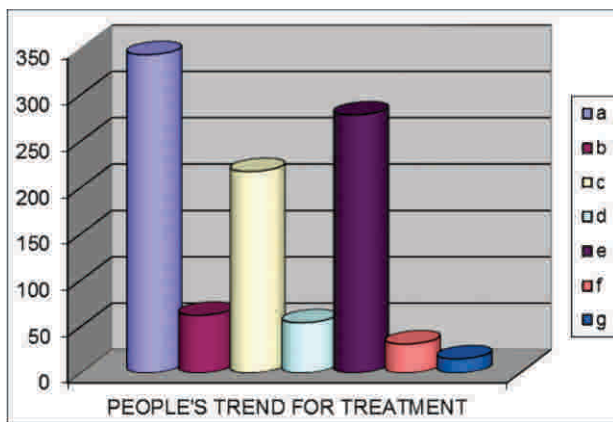


Figure 1: People's preferences for selection of healthcare provider. n=1000 a = local doctor

- b=nearest government hospital c=hakim
- d=homeopathic doctor e= dispenser
- f= peer g= siana

DISCUSSION

The selection of healthcare provider is not a simple process as it seems. The patient always wants high quality healthcare along with minimum cost according to their needs and preferences.^{4,5,6} The results of our study showed that the choice of patients varies. Most of them (59.5 %) selected complimentary and alternative healthcare providers. There was two main factors for this diversity was illiteracy (70.2

%) and poor socio-economical condition (71%).⁴

Usually most of patient do not select their healthcare provider actively.⁷ The reason for such attitude is that patient do not think that it is important^{2,8} or they have limited options. (Reference) Those patients who make their decisions actively usually consider their socio-economical condition while selecting the healthcare provider. Unfortunately the patient is either unable or unwilling to select his healthcare provider actively due to illiteracy or poor socio-economical condition.⁹ Apparently it looks that most of the patients do not find the proper healthcare provider. Only a few collect all relevant information before selection of healthcare provider.¹⁰

The choice of healthcare provider is based upon perception of patient regardless what is clinical reality. Patients want to get treatment of their lower urinary tract symptoms and improve their health and quality of life. The choice of health care provider depends mainly on cultural practices and socio-economical conditions of the society.¹¹

CONCLUSION

To determine the choice of patient for healthcare provider is very complex. In different situations the patients make different choices. Usually patients consider important their own general physician or their previous experiences. Patients also make their decisions based not only on outcome but also their socio-economical conditions.

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MY DARK DAYS MADE ME STRONG. OR MAY BE I ALREADY WAS STRONG, AND THEY MADE ME PROVE IT.

PREVALENCE AND RISK FACTORS OF ANEMIA AMONG NON-PREGNANT WOMEN OF CHILDBEARING AGE

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Abstract

Objective: To determine the prevalence and risk factors of anemia among non-pregnant women of childbearing age (18 to 45 years), presenting to OPD of Akhtar Saeed Trust Hospital Lahore.

Methodology: We conducted a community based cross-sectional, observational study among women presenting to Medical Outpatient Department of Akhtar Saeed Trust Hospital, Lahore; from May 2017 to June 2018. The sampling technique used was simple random sampling. Data was collected on structured questionnaire designed for study. During the study, 5 milliliters of venous blood was collected from each study participant. Blood was used to get hemoglobin level and thick and thin films were prepared for malaria parasite in anemic patients. Stool was sent for parasitic infestation. Statistical analysis was done using SPSS-V 20.0 software.

Result: The prevalence of anemia in non-pregnant women of child bearing age was 27% with mean hemoglobin $9.9 \text{ g/dL} \pm 1.04$, amongst whom 36.4% were mildly anemic. Age group of 31–45 years old consisted of 59.7% patients, multiparity (29.7%), malaria (54.5%), menorrhagia (60.2%), large household size (48.9%) and intestinal worm infestation (19.9%) were found to be risk factors of anemia among the group.

Conclusion: Prevalence of anemia indicates moderate public health problem. Identified risk factors should be considered for prevention and control of anemia at earliest to prevent morbidity and further complications.

Key Words: anemia, multiparity, treatable disease

Anemia is defined as decreased hemoglobin concentration below a specified limit for age and gender. The normal value of hemoglobin concentration varies with age, gender and body state. For women of child bearing age in non-pregnant state the cut off value is 12 mg/dl. In a normal and otherwise healthy person, anemia is an indication of either malnutrition or an unknown underlying disease which should be treated early in course of the disease. Anemia is common in developing countries like Pakistan. Anemia is found in both males and female population but anemia in females is more profound due to various social factors and different female physiology as compared to males. Anemia in

females not only affects their performance but also causes complications during pregnancy and may affect fetus. The estimated prevalence of anemia in Pakistani women of reproductive age (15-49 years) was 52.10% as of data of 2016 according to mundi index.¹ Its highest value over the past 26 years was 53.60% in 1990, while its lowest value was 48.80% in 2001. Pakistan ranked 5th in regards to the prevalence of anemia amongst women of reproductive age. Anemia in non-pregnant women (NPW) is classified as mild, moderate and severe anemia. When hemoglobin concentration is less than 8 g/dl, it is considered as severe anemia, when it falls between 8 and 10.9 g/dl, it is labeled as moderate and

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mild when it falls between 11 and 11.9 g/dl². Anemia is considered as a major public health problem when the prevalence of anemia reaches up to 40 % in the population, moderate public health problem when prevalence is 20 to 39% and mild public health problem when 5 to 19% anemic patients are present in population.

Anemia in non-pregnant females of child bearing age should be considered as an emergency, as the start of most of the pregnancies is complicated due to anemia and this anemia further increases during the course of pregnancy. Anemia in this age group of women is multifactorial depending upon the social, ethical and economic factors and is also under the influence of community and culture. Various regions of the world have different myths regarding the food intake of women of child bearing age which affect the nutritional status of women. Moreover the prolonged bleeding in menstruation (more than 6 days per cycle), increased number of pads used per day (more than 3 pads per day) during menstruation is also risk factor for anemia³. Various infections like chronic malaria, intestinal worm infestation are also contributing factors in development of anemia in women of child bearing age⁴. Moreover social factors, size of the family, educational status of woman herself, working environment at office or environment at home are also important contributing factors regarding the development of anemia in non-pregnant women of childbearing age.

If the underlying cause of anemia is addressed timely, it will help in proper and prompt treatment of anemic females. Early recognition of anemia and contributory factors can help to eliminate this in non-pregnant women of child bearing age. It can also prevent complications during pregnancy. Most of the causes of anemia are treatable and reversible with little effort. Current study was carried out to find the prevalence of anemia in local population and to find out the treatable contributory factors so that mortality and morbidity of anemic patients can be minimized.

METHODOLOGY

This is a community based cross sectional study and simple random sampling technique was used. The study was conducted in the Department of Medicine at Akhtar Saeed Trust Hospital, Lahore; from May 2017 to June 2018. Ethical approval for this study was taken from Ethical Review Board of the Hospital. Non pregnant women of child bearing age 18-45 years presenting to outpatient department (OPD) of the hospital were enrolled in the study after taking written informed consent from them. Objectives of the study were explained to all women before enrolling them in the study. Women who received blood transfusion within four months of data collection, who were taking treatments for anemia, postpartum women less than a period of two weeks and pregnant women, were excluded from study. Relevant data was collected by the attending physician himself/herself on a specially designed performa. Confidentiality was ensured. Complete blood count was performed for all women in the Pathology laboratory of Akhtar Saeed Hospital and those who were having hemoglobin concentration less than 12g/dl were labelled as anemic and called for follow up. Their thick and thin films of blood were made to look for malarial parasite and stool specimen was analyzed to look for any intestinal worm infestation. Specially designed performa was filled regarding their multiparity (more than 3 pregnancies), number of persons living with her in the same house and the occupational status of women. All data was entered in SPSS and results were generated as given below. The patients of anemia were treated as per hospital guidelines.

RESULTS

A total of 696 women of childbearing age presenting in OPD were enrolled in the study. The prevalence of anemia was 188 patients making 27% of sample size. Out of 188 patients diagnosed of anemia, 12 patients lost follow-up, so the dropout rate was 6.3%. Therefore, 176 patients were further followed up in the study. The mean age of partici-

pants was 30.32 ± 6.1 years with minimum age 18 years and maximum age was 45 years. Most patients belonged to middle age group (31 -45 years) i.e. 105 (59.7%) while 71 (40.3%) patients belonged to younger age group (18-30 years) as shown in Table 1.

Table 1: Age of Patients and Severity of Anemia

		Severity of Anemia			Total
		Mild	Moderate	Severe	
Age of Patients	18-30 years	43 24.4%	28 15.9%	0 0.0%	71 40.3%
	31 - 45 years	22 12.5%	42 23.9%	41 23.3%	105 59.7%
Total		65 36.9%	70 39.8%	41 23.3%	176 100.0%

Table 2: Risk Factors for Anemia in Non Pregnant Women of Child Bearing Age

Risk factors	Number of Patients	Percentage
Multiparity	52	29.7%
Malaria infection	96	54.5%
Menorrhagia	106	60.2%
Large house hold size	86	48.9%
Intestinal worm infestation	35	19.9%

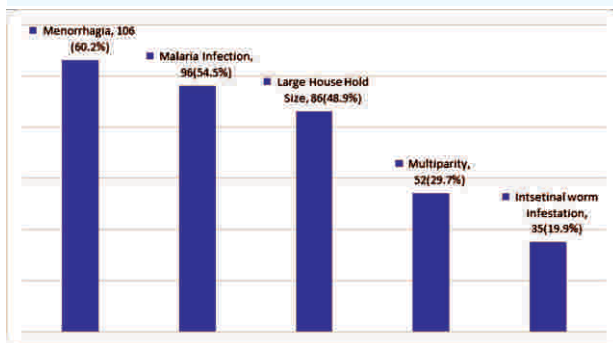


Figure 1. Risk Factors for Anemia in Non Pregnant Women of Child Bearing Age

The mean hemoglobin concentration was $9.9\text{mg/dl} \pm 1.04$. As shown in table 2 and figure 1, the major risk factors of anemia in women of child bearing age were multiparity (more than 3 pregnancies) in 52 (29.7%) patients, malarial infection was present in 96 (54.5%) patients, menorrhagia was present in 106 patients (60.2%), large family size (more than 7 persons in the house) was present in 86 (48.9%) patients and intestinal worm infestation was

found in 35 (19.9%) patients. As shown in figure 2, anemia was further classified as mild, moderate and severe, 64 (36.4%) women were having mild, 70 (39.8%) had moderate and 41 (23.3%) had severe anemia.

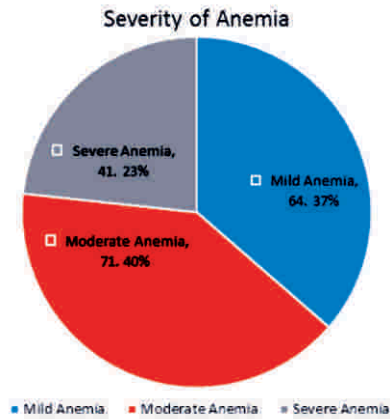


Figure 2. Severity of Anemia

DISCUSSION

We conducted the study on non-pregnant women of childbearing age i.e. 18 to 45 years. Total sample size was 696 and mean age as 30.32 ± 6.1 . Ma et al⁵ in china assessed the risk factors for anemia in females of child bearing age, the sample population' age was 20-44 years age and the mean age was 36 years which was 4 years higher than the mean age of sample size in our study. Marriages at early age in our country may account for that. The mean hemoglobin concentration in our study was $9.9\text{gm/dl} \pm 1.04$. While, Wieringa et al⁶ in Cambodia showed mean hemoglobin concentration of $11.9\text{gm/dl} \pm 1.3$ in females, the difference in mean hemoglobin concentration could be due to better nutritional status of females in Cambodia. In our study almost 1 out of 4 patients were having anemia i.e. the prevalence of anemia was 27%. This high value shows that anemia is a moderate public health problem in Pakistan.⁷ The prevalence of anemia in this study is almost equal to Haidar et al,⁸ a study in Ethiopia that reported 30.5% prevalence of anemia in non-pregnant women of child bearing age. The prevalence of anemia in our study and Haider et al⁸ in Ethiopia is

much lower as compared to Hyder et al⁹, a similar study conducted in another developing country, Bangladesh, which reported 73% prevalence of anemia in females of child bearing age in rural areas. This difference in prevalence can be attributed to selected sample population as that study was carried out in rural population and our study was conducted in a tertiary care center of a major city. Another reason may be the poor nutritional status of females in Bangladesh as compared to Pakistan and Ethiopia. Massot et al¹⁰ in Belgium showed prevalence of 7.7% which is much lesser than our results, this result difference can be due to fact that Belgium is a developed country and rich in resources and has very established healthcare system as compared to Pakistan. Our study finding indicates that participants of the age group of 31-45 years were more likely to be anemic i.e. 59.7% of sample size. Hassan et al,¹¹ a similar study in Egypt reported that anemia is more common disease in fourth and fifth decades of females of child bearing age. Ma et al⁵ in China also showed similar results about the prevalence of anemia. Study reports from India indicate that females younger than 25 years had higher prevalence of anemia.^{12,13} This difference can be attributed to cultural values of India, as in India, girls get married at an early age and most of them give birth to babies before the age of 20 years. Moreover, malnutrition is more common in teenage girls in Indian population leading to anemia at an early age.¹⁴

In our study mild anemia was found to be in 36.4% of population, moderate anemia was found to be in 39.6% and 23.3% of population suffered from severe anemia. These results can be compared to Wirth et al,¹⁵ a study in America in which Cote d'Ivoire population was studied and 24.2% population was having mild anemia, 23.7% had moderate anemia and 1.1 % had severe anemia. We can easily infer by the comparison of these results that all three degrees of anemia are more common in Pakistan as compared to America. The reasons are obvious that nutritional status of females is quite poor in Pakistan.

In our study, the effects of occupational status

on anemia were also studied. It was noted that anemia was more common in house wives i.e. 55.7% as compared to working women i.e. 44.3%. The high percentage in house wives can be due to lower socio economic status resulting in poor nutrition. Similar studies in Ethiopia and Meghalaya also supported these findings^{16,17}. Whereas, Kamruzzaman et al¹⁸ in Bangladesh found different results in this regard. In that study, 40.9% anemic patients were housewives and 43.6% were working women. These results indicate that both house wives and working females had similar percentage of anemia in rural Bangladesh. These differences in results could be due to different demographics in different studies.

In our study, the most important contributing factor was menorrhagia (menstrual bleeding more than 6 days per cycle) i.e. 60.2% females had prolonged menstruation. Similar results were found in other studies in our neighboring country. Ismail et al¹⁹ in Kerala in India showed that menorrhagia was associated with 85% cases of anemia in females of reproductive age.

In our study, malarial infection was found to be in 54.5% of anemic patients, which is much higher as compared to the other countries. Wirth et al¹⁵ found malaria to be an important risk factor in 14.8% of anemic patients in Cameroon and 17.7% of anemic patients in Liberia. This difference in percentage of malaria infection can be due to different demographics, as Pakistan is endemic country for malaria.

In our study, large family size (more than 7 persons living in the same house) was found to be in 48% of anemic patients, showing that large family size is associated with higher prevalence of anemia. Melku et al²⁰ in Ethiopia conducted a similar study where anemia was to be present in 13% of patients having smaller family size and 15% in patients having larger family size. It can be due to nutritional deficiency and decreased resources associated with large family size.

In our study, multiparity (more than three pregnancies) was found to be in 29.7% of anemic patients; the data was further stratified for the degree

of anemia and the number of pregnancies. The results were comparable to Kamruzzaman et al,¹⁸ a study carried out in Bangladesh in which increased number of pregnancies was associated with high prevalence of anemia, 37.7% women were nulliparous, 38.4% had 1-2 pregnancies, 44.1% had 3-6 pregnancies and the highest prevalence of 51% was documented for women having more than seven pregnancies.

In our study, intestinal worm infestation was found to be in 19.9% of anemic patients. Similar results were observed in other international studies. Asrie et al²¹ in India showed significant association of anemia with intestinal worm infestations. So, these studies carried out in various demographics across the globe validate our results and increase the strength of our study.

CONCLUSION

Anemia in non-pregnant females of child bearing age is a moderate public health problem in Pakistan. Most causes of anemia at this age are treatable. We should remain very vigilant in cases of anemic females at this age group because if not treated timely, it can result in complications during pregnancy. Simple strategies like eradication of malaria, deworming of all females and educating about family planning can result in decreased prevalence of anemia. Vitamins and iron supplements should be freely provided to the general population to prevent nutritional deficiencies. Early consultation with gynecologist can also prevent large number of anemic cases.

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HAVE MORE
THAN YOU
SHOW,
AND SPEAK
LESS THAN
YOU KNOW.

COVID-19 AWARENESS AND KNOWLEDGE IN GENERAL PUBLIC DURING LOCKDOWN

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Abstract

Background: The rapid and extensive spread of this viral pandemic has become a major cause of concern for the healthcare providers and general public at large. This study aims to highlight the general public awareness about this deadly pandemic, their perception about the disease, sign and symptoms, its mode of transmission and the precautionary measures they are taking to avoid spread of viral illness. This study may help us to improve the shortcomings in day to day counseling and decision making, enlighten public on this subject and the public health administration to take further steps towards better control of the disease. Our consideration is not vaccine development or treatments, but rather on the social and cultural implications about the attitude and awareness of public in this unprecedented moment¹.

Methods: A cross sectional survey was conducted from the surroundings of Lahore, Pakistan completed a questionnaire based survey on the awareness, knowledge and infection control practices related to COVID-19 during this pandemic. This is a general population based cross sectional study carried out among 1000 responders both males and females in COVID-19 lockdown period from march 14th 2020 to 5th April 2020, as a part of this population based study, the participants' awareness level about COVID-19, including early sign and symptoms about the disease, transmission routes, use of protective measures and administrative strategies were evaluated. For this study a purposeful and subject validated questionnaire was designed according to guidelines updated by Center of Disease Control and prevention (CDC). The distribution of responses was recorded as frequencies and percentages for quantitative and qualitative variables. Descriptive statistics were performed for all sections based on their percentages. The survey was approved by ethical review board of Jinnah hospital/ AIMC, Lahore.

Results: This study showed that awareness and knowledge of non-literate people of Pakistani population is good, considering it as a pandemic problem.

Keywords: COVID-19, general public, lockdown.

Corona virus has caused two large scale pandemics in the past two decades, SARS and MERS (Middle East Respiratory Syndrome).^{2,3} This disease outbreak in China, Wuhan, has grown substantially to infect 2761 people during November 2019. In January 2020, news reports began to circulate of a new respiratory virus spreading in the country causing 80 deaths and has led to the infection of 33 people in 10 additional countries up till January 26th

2020.⁴

The World Health Organization declared a global health emergency on January 30th and on March 11th, a pandemic.¹ The impact of this outbreak can be felt all over the globe, as countries around the world closed their borders, and many cities shutdown. The situation has continued to dramatically escalate and within days' global statistics showed 395647 confirmed cases of COVID-19 with 17241 deaths.¹

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As of April 8, 2020, number increased to 82119 confirmed deaths and more than 1430141 confirmed cases of coronavirus pneumonia.⁵

Typical symptoms of these patients are fever, dry cough, breathing difficulties/ dyspnea and headache.⁶ Disease onset may result in progressive respiratory failure owing to alveolar damage and even cause death in immuno compromised and elderly patients. It was observed that transmission of this virus occurred from human to human by aerosols and by inhaling the agent through nose leading to social distancing policies worldwide. Some of the first actions taken by the World Health Organization are observing hygienic measures, travel restrictions, nationwide lockdowns, closing schools and other rushy areas as markets and shopping malls etc. This whole scenario created not only the social havoc for people but also affect their cultural and economical norms.

METHODOLOGY

This survey was conducted by Residents of Jinnah Hospital, Lahore. The survey was conducted from 22nd march 2020 to 8th April 2020 and completed with a response rate of almost 90 %. This is a general population based cross sectional study carried out among non-literate public both males and females in surroundings of Lahore, Pakistan during COVID-19 lockdown period from march 14th 2020 to 5th April 2020. As a part of this population based study, the participants’ awareness level about Novel Corona Virus, including early clinical signs of the disease, transmission routes, use of protective measures and administrative strategies were evaluated. For this study a purposeful and subject validated questionnaire was designed. This questionnaire was filled by residents of Jinnah hospital, Lahore. The information of 1000 people with no missing value was found in data analysis. The survey was approved by ethical review board of Jinnah hospital/ AIMC, Lahore.

RESULTS

Five distinct survey questions were evaluated in total of 1000 responders from Lahore, Pakistan, first was about whether the population know about sign and symptoms of COVID-19 or not. It is quite evident from the first bar graph that almost all participants were well aware of two most important clinical signs i.e. flu and fever.

However, the most of participants were not aware of respiratory disturbances and shortness of breath. This could have been led to the delay in diagnosis reporting to COVID-19 management clinic.

Next parameter was about mode of transmission of COVID-19, and fortunately it was a relief knowing that general population had an excellent knowledge about COVID-19 mode of spread. All variables in the questionnaire were clearly expressed individually in the following table

Third parameter was about the knowledge of protective precautionary measures made this apparent that as recommended by World Health Organization, the population had the concept of frequent hand washings very luminously evident and following this in their routines. The use of hand sanitizer,



when not in homely settings also known to many. They were practicing the adequate social distancing

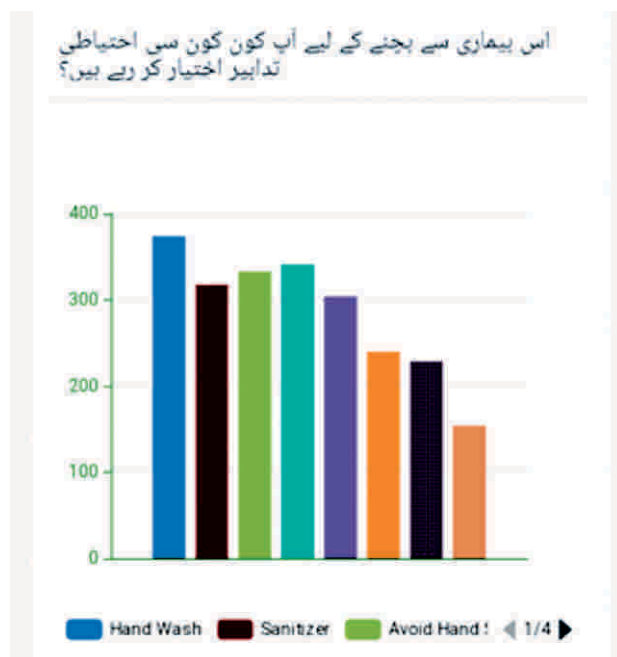
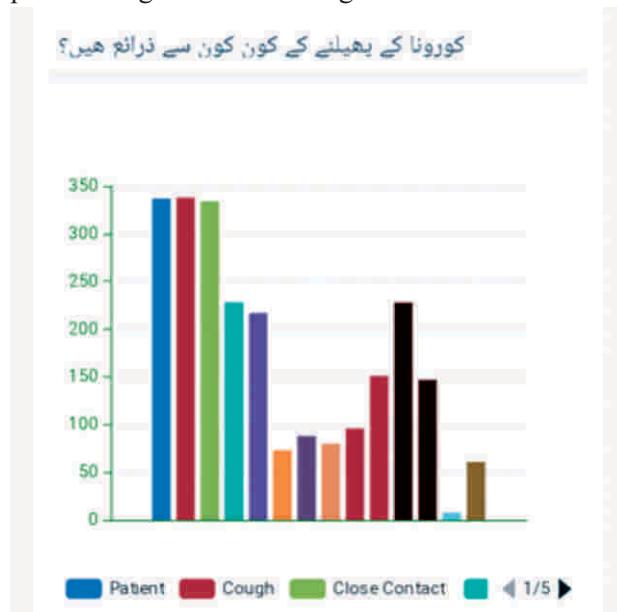
by avoiding handshakes and hugs when out or when socializing for necessities. They know about quarantine of gatherings too.

Fourth question mentioned in our questionnaire was about the satisfaction among participants about administrative steps taken by government for cessation of COVID-19. Our data showed that general public was gratified in this regard.

As for as the terror this Novel virus is creating, it was observed that people had an enigmatic response towards the morbidity and mortality. Some of them were horrifyingly anxious while others were ready to combat in true warrior's spirit.

DISCUSSION

In contradiction to universal proverb “ignorance is bliss”, we adapt to new normal as “knowledge is blessing”. SARS-COV-2 is a new strain of corona virus that has not been previously identified in humans. Although the incubation period of this strain is currently unknown, the CDC (center for disease control and prevention) indicate that symp-



toms may appear in as few as 2 days or as long as 14 days after exposure.^{7,9} Chinese researchers have indicated that SARS-Cov-2 may be infectious during its incubation period.^{8,9} In our survey, it was found that general public was well aware of the most hazardous outcomes about the disease and to know is



Table 1:

No	Questions	Yes		No	
		Frequency	Percentage	Frequency	Percentage
1.	what do you know about COVID-19 sign and symptoms?	892/1000	89.2%	108/1000	10%
2.	What are its transmission routes?	732/1000	73.2%	268/1000	26.8%
3.	What precautionary measures you are following?	974/1000	97.4%	26/1000	2.6%
4.	Are you satisfied with the administrative strategies devised by government to stop COVID-19 spread?	583/1000	58.3%	417/1000	41.7%
5.	Are you afraid of consequences?	497/1000	49.7%	503/1000	50.3%

basically–The Cure. Role of electronic media, newspaper and social media is highly appreciated in this hour of national calamity, majority of our population got to know about the disease via electronic and social media. The situation must have been more devastating than the present scenario if their respective efforts were lacking specially of social media. When we inquired about the diagnosis and symptoms, public knows that this virus affects mainly the respiratory tract, common presenting symptoms include fever and dry cough, with some patients presenting with advanced respiratory symptoms as well (sore throat, nasal congestion, malaise, headache and myalgia) or even struggling for breath. People were well aware when to isolate themselves or when to contact health care professionals for intensive care. Inquiry about social distancing showed an equivocal response. As some people were scared and had a lot of trepidation towards severity of the disease, meanwhile some of them behaved logically to know its importance as to halt the upward curve of this pandemic.

This study showed that current situation appreciates all the devised strategies for general public knowledge and awareness including the usage of protective gears, to reduce the proposed ways of transmission and most importantly to guide them about how one should behave in coming days of havoc as a responsible citizens of Pakistan.

CONCLUSION

General population survey from surroundings of Lahore, Pakistan showed adequate awareness of COVID-19. The literacy rate of this population was very low but such higher percentage of responders shows that efforts of electronic and social media with

the guidance of health care administrative authorities are worth appreciating. They proved their platforms fruitful in this pandemic and there is a hope for betterment as well.

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COMPARISON OF FREQUENCY OF BILIARY LEAKAGE WITH CLIP-LESS VERSUS CLIPPED LAPAROSCOPIC CHOLECYSTECTOMY FOR THE MANAGEMENT OF ACUTE CHOLECYSTITIS

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Abstract

Gallstone-related disease is the most common clinical problems encountered worldwide. Acute Cholecystitis occurs when the gallbladder becomes inflamed. Treatment of acute Cholecystitis depends upon the severity of the condition & presence or absence of complications. Cholecystectomy is the surgical removal of the gallbladder.

Objective: To compare the frequency of biliary leakage with clipless versus clipped laproscopic cholecystectomy for the management of cholecystitis.

Materials and methods: Study design: Randomized control trial

Place and Duration: This 6 month study was conducted at Surgical Unit 1, Department of Surgery, Jinnah Hospital, Lahore

Data Collection: All patients underwent Laproscopic Cholecystectomy under general anesthesia & patients were randomly divided into two groups by lottery method. In group A, Clipless Harmonic scalpel was used. Whereas in group B, the conventional instruments were used with the application of clips. Patients were called for follow up in OPD after 1 week. Magnetic Resonance Cholangiopancreatography was done to assess the biliary leakage. All the data was analyzed in SPSS version 20.

Results: The mean age of patients was 42.97+10.77 years. Male to female ratio was 1.09:1. The biliary leakage was noted in 29 cases in which 9 were from clipless group & 20 were from clipped group. Difference between groups was statistically significant i-e p-value=0.020.

Conclusions: It has been proved in our study that biliary leakage was statistically significantly higher in the clipped Laproscopic Cholecystectomy for the management of acute cholecystitis.

Keywords: Cholecystitis, Laproscopic, Cholecystectomy, biliary, leakage

Gallstone-related disease is among the most common clinical problems encountered worldwide. The manifestations of cholelithiasis vary greatly, ranging from mild biliary colic to life-threatening gallstone pancreatitis and cholangitis. The vast majority of gallstone-related diseases encountered in an acute setting can be categorized as biliary colic, acute and chronic cholecystitis, choledocholithiasis, and pancreatitis, although these diagnoses can overlap.¹

In laparoscopic cholecystectomy (LC), cystic duct and artery are normally secured with titanium

clips.

Intracorporeal ligation is normally superior to extra corporeal knotting. Most studies report of separate and multiple ligations of cystic duct and artery, which are viewed as technically demanding and time consuming. Similarly the harmonic scalpel and 'LigaSure' are prohibitory expensive for resource limited country like Pakistan.¹ The ultrasonically activated (Harmonic) scalpel has proven to be an effective, efficient, and safe instrument for dissection and hemostasis in both open and laparoscopic surgical procedures.

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Biliary leakages are the most severe early complications after cholecystectomy. The rate of clinically-relevant bile leaks after conventional open cholecystectomy ranges from 0.1% to 0.5%. The development of laparoscopic cholecystectomy has increased the incidence of biliary leakages by up to 3% during the learning curve.² Magnetic resonance cholangiopancreatography (MRCP) with placement of a biliary stent or nasobiliary (NB) drain is the procedure of choice for treatment of post-cholecystectomy bile duct leakage.³

It has been reported that the incidence of biliary leakage was statistically significantly higher in the clipped group, compared to the clipless group (30 vs. 10%, respectively; $P=0.002$).⁴ But other studies showed that the use of the clipless harmonic scalpel versus clip placement had comparable rates of bile leak at 1.75% and 0.66%, respectively. It was recommended that the use of the clipless harmonic scalpel was safe and although comparable to clip placement at the discretion of the surgeon for cystic duct ligation.

But mixed results have been stated. So conducted this study to confirm whether clipless method was better than the method using clips. This will help us to improve our practice and in future will apply the results of study for the management of Cholecystitis with minimal post-operative complications.

METHODOLOGY

The sampling technique used is Randomized Controlled Trial. The study was conducted at Surgical Unit 1, Department of Surgery, Jinnah hospital, Lahore. The duration of study was 6 months from July 2018 to Jan 2019. Sample size of 130 cases; 65 cases in each group is calculated with 80% power of test, 5% level of significance and taking expected percentage of biliary leakage i.e. 30% with clipped laparoscopic cholecystectomy and 10% with clipless laparoscopic cholecystectomy. Patients of age 25-60 years of either gender with acute Cholecystitis undergoing laparoscopic cholecystectomy under general anesthesia ASA I & II. Patients with Diabetes

mellitus ($BSR>186\text{mg/dl}$), hypertension ($BP \geq 140/90$ mmHg). Patients with abnormal clotting profile ($PT>20\text{sec}$, $aPTT>15$ sec, $INR>2$)

After taking approval from hospital ethical committee, 130 patients fulfilling the inclusion criteria were selected from surgical wards of Jinnah hospital, Lahore. Informed consent was taken. The demographic information like name, age, sex and duration of cholecystitis was obtained.

All patients underwent laparoscopic cholecystectomy under spinal anesthesia by a single surgical team and patients were randomly divided in two groups by using lottery method.

In group A, clip-less Harmonic scalpel was used. Ultrasonic shear (Olympus Keymed Sonosurg version G2 220-240 V 3A. 50/60 Hz.) was used as the only working instrument during the procedure through 10mm epigastric port, for dissection/cutting of cystic artery and duct, then gall bladder dissection from liver bed helped by grasper through right mid clavicular 5mm port to attain complete hemo-biliary stasis, lastly the gall bladder is retrieved from the epigastric 10mm trocars site.

In group B, the conventional instruments were used with the application of clips. One small catheter drain was put in all cases that were removed after 24 hours. After surgery patients were shifted to the wards and then discharged from there. Then patients were called for follow-up in OPD after 1 week. Then, MRCP was performed to assess biliary leakage. All MRCP was performed by a single radiologist. All the data was through a pre-designed proforma. The data was entered and analyzed in SPSS version 20. Quantitative variables like age and duration of cholecystitis was calculated as mean and standard deviation. Qualitative variables like gender and biliary leakage was calculated as frequency and percentage. Both groups were compared for biliary leakage by using chi-square test taking $p\text{-value} \leq 0.05$ as significant. Data was stratified for age, gender and duration of cholecystitis. Post-stratification, chi-square test was applied to check the significance with $p\text{-value} \leq 0.05$ as significant.

RESULTS

Comparison of Age with Study Groups

In this present study total 130 cases participated. In this study the mean age of the clipless group patients was 41.49±10.94 years and its mean age in clipped group was 44.45±10.48 years .

Comparison of Sex with Study Groups

In our study , 68(52.31%) patients were male and 62 (47.69%) patients were females. The male to female ratio of the patients was 1.09:1 seen in fig 1.

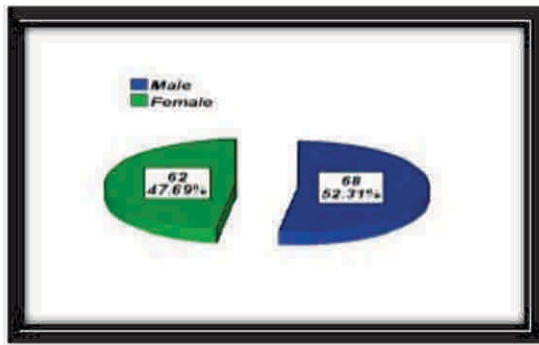


Fig 1: Frequency Distribution of Gender

The study results showed that the male patients were 68 in which 33 were from clipless group and 35 were from clipped group, similarly the female patients were 62 in which 32 were from clipless group and 30 were from clipped group.

Comparison of duration of Biliary Leakage

Out of 130 cases the biliary leakage was noted in 29(22.31%) patients and its was absent in 101 (77.69%) patients seen in fig.2

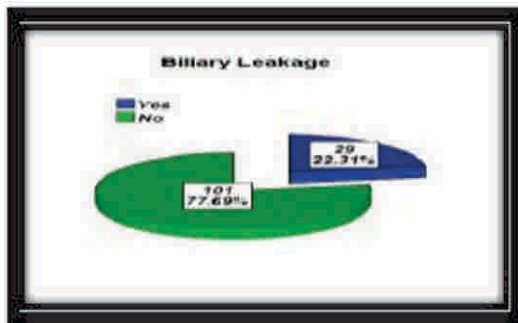


Fig 2: Frequency Distribution of Biliary Leakage

In this study the biliary leakage was noted in 29 cases in which 9 were from clipless group and 20 were from clipped group. Similarly biliary leakage

Table 1: Comparison of Duration of Biliary Leakage with Study Groups

		Study Groups		Total
		Clipless	Clipped	
Biliary Leakage	Yes	9	20	29
	No	56	45	101
Total		65	65	130

Chi value=5.37 ,p-value=0.020 (Significant)

was not found in 101 cases in which 56 were from clipless group and 45 were from clipped group. Statistically significant difference was found between the study groups (table 1) with biliary leakage group. i. e p-value=0.020.

The study results showed that in upto 45 year patients, the biliary leakage was noted in 14 cases in which 6 were from clipless group and 8 were from

Table 2:

Age (years)	biliary leakage	Study Groups		Total	p-value
		Clipless	Clipped		
≤45	Yes	6	8	14	0.225
	No	37	24	61	NS
>45	Yes	3	12	15	0.064
	No	19	21	40	NS

clipped group, similarly in above 45 years patients, the biliary leakage was noted in 15 cases in which 3 cases were from clipless group and 12 were from clipped group. Statistically insignificant difference was observed between the biliary leakage with study groups stratified by age. i. e p-value=0.225 & 0.064 respectively.

The study results showed that in the patients with upto 1 week duration of Cholecystitis, the biliary leakage was noted in 13 cases in which 5 were

Table 3: Comparison of Duration of Biliary Leakage with Study Groups Stratified by Duration of Acute

Duration of Cholecystitis	Biliary leakage	Study Groups		Total	p-value
		Clipless	Clipped		
≤1 week	Yes	5	8	13	566
	No	26	29	55	NS
> 1 week	Yes	4	12	16	0.008
	No	30	16	46	NS

from cliples group and 8 were from clipped group,

similarly patients with above 1 week duration of Cholecystitis, the biliary leakage was noted in 16 cases in which 4 cases were from clipless group and 12 were from clipped group. Statistically significant difference was observed between the biliary leakages with study groups in more than 1 week duration. i. e p-value=0.008 (Table 3)

DISCUSSION

LC is simple, safe and economical.⁵ There are several techniques of securing cystic duct and artery in LC, like clips, intra or extra corporeal ligation, harmonic scalpel or LigaSure.⁶ Harmonic scalpel and „LigaSure“ in LC has come up recently.^{7,8}

According to our study results the biliary leakage was noted in 29(22.31%) patients in whom 9 were from clipless group and 20 were from clipped group. In our study the Clipless group showed significantly less biliary leakage than to clipped group patients i. e p-value = 0.020.

A study by PK Saha, Ratna Rani Roy et al⁹ in Bangladesh conclude that Clipless LC is a safe and effective method. In their study total number of 50 cases was undergone elective LC. There was no bile leak or other complications related to ligation.

Other studies showed that the use of the clipless harmonic scalpel versus clip placement had comparable rates of bile leak at 1.75% and 0.66%, respectively.

One study by Tharwat Kandil Email et al⁷ concluded that the HS provides a complete hemobiliary stasis and is a safe alternative to stander clip of cystic duct and artery. It provides a shorter operative duration, less incidence of gallbladder perforation, less postoperative pain, and less rate of conversion to open cholecystectomy.

In one study, bile leaks were reported in 9 of 331 patients (2.7%) when a harmonic scalpel was used alone.⁸ A study of 100 LCs performed using a harmonic scalpel recommended that additional cystic duct ligatures be used for a cystic diameter exceeding 5 mm.^{8,10}

One study conducted in Rawalpindi also repor-

ted that the frequency of gall bladder perforation in our study was equal in both groups (2 [3.4%] vs. 2[3.6] respectively with P-value=0.972).¹¹

One more study has also showed that bile leak was encountered in 1.7% with clipless method and 3.3% with clipped method (p=0.45).¹²

In our study the mean value of duration of Cholelithiasis in clipless group was 12.68±6.98 minutes and its mean value in clipped group was 12.52±6.48 minutes.

The incidence of gallbladder perforation was statistically significantly higher in the C&C group, compared to the HS group (30 vs. 10%, respectively; P=0.002). The median operative time was statistically significantly shorter in the HS group than in the C&C group (32 vs. 40 minutes, respectively; P = 0.000).¹⁰

Besides being equally safe, advantages to clipless cholecystectomy by means of harmonic shears versus conventional LC is a shorter operative time, less incidence of gallbladder perforation, less postoperative pain and less rate of conversion to open cholecystectomy.⁷

A study by Roberta Gelmini et al¹³ presented that the mean operative time was significantly shorter in patients treated with the Harmonic scalpel. The Harmonic scalpel is not only a safe and effective instrument but also a reliable substitute for clips because it provides complete hemobiliary stasis, which is in accordance to our study results.

CONCLUSION

It has been proved in our study that the biliary leakage was statistically significantly higher in the clipped LC for management of Cholecystitis.

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IF YOU TAKE CARE
OF YOUR MIND,
YOU TAKE CARE
OF THE WORLD.

DIAGNOSTIC ACCURACY OF COLOR DOPPLER ULTRASOUND IN EVALUATION OF THORACODORSAL ARTERY PEDICLE AFTER AXILLARY LYMPH NODE DISSECTION TO ASCERTAIN RELIABILITY OF LATISSIMUS DORSI FLAP FOR BREAST RECONSTRUCTION SURGERY

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Abstract

Objectives: To determine the diagnostic accuracy of Colour Doppler Ultrasound in pre operative evaluation of the thoracodorsal artery pedicle in patients with unilateral mastectomy and axillary dissection for breast reconstruction surgery and comparing it with per operative surgical findings.

Methods: This is a descriptive cross sectional pilot study. This study includes 24 patients, all females with unilateral mastectomy and axillary dissection. The age range is 21 to 53 years. Operated side was scanned using Esaote machine. Both superficial and deep probes were used. The diameters, peak systolic velocities, end diastolic velocities, resistive indices, pulsatility indices of the thoracodorsal arteries of operated side were measured. The data was compared with per operative surgical findings.

Results: The characteristics of thoracodorsal artery were as follows. Mean diameter was 1.88 mm, peak systolic velocity was 28.45 cm/sec, end diastolic velocity was 11.03 cm/sec, resistive index was 0.94, pulsatility index was 4.02. The mean PSV was around 21.6 cm/s; the EDV was 12.7 cm/s; RI was 0.89 and PI was 2.7.

Conclusion: Thoracodorsal artery was easily identified on the operated side using the anatomical landmarks as present or absent. 17 patients gave a true positive result. TDA pedicle was not identified in operated side of 3 patients. 2 patients gave false positive results. We concluded that Color Doppler ultrasound was highly accurate in locating the thoracodorsal artery pedicle and in increasing the reliability of latissimus dorsi flap for breast reconstruction. Pre operative evaluation of thoracodorsal artery pedicle increases the success rate of the flap and it can surely lead to a significant decrease in postoperative graft failure rates.

Keywords: thoracodorsal artery pedicle, breast reconstruction, Doppler ultrasound waveforms, latissimus dorsi flap.

Breast Cancer is the commonest female malignancy in the world and its incidence continues to rise.¹ In Pakistan it is more common at a young age contrary to the West where it is more common in old age (after 60 years).² Approximately one in every nine Pakistani women is likely to suffer from breast cancer. This is one of the highest incidence rates in Asia.³

Most of the patients with breast cancer in Pakistan present late and usually require a radical mastectomy, modified radical mastectomy or bila-

teral mastectomies.⁴ The rate of breast conservation surgery is quite low in our population.⁵ These patients present in the plastic surgery unit after mastectomy. Most of the patients are operated upon in the peripheral private hospitals. These patients are unaware of the type of operation. Most do not have surgical notes and previous record with them. They are referred to us in the radiology department to identify the presence or absence of thoracodorsal artery pedicles. This pre-operative evaluation can not only determine the presence or absence of the

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pedicle, but can also point out to other pathologies which may contraindicate the use of latissimus dorsi flap. This is considered a great help for the reconstructive surgeons in making the choice of the most suitable operation and leads to decrease in the post operative graft failure rates.³

Latissimus dorsi is an important muscle used for breast reconstruction surgery.⁵ It is supplied by thoracodorsal artery, a branch of subscapular artery which itself arises from the axillary artery. It arises from the lower margin of subscapular muscle and advances postero-inferiorly. Approximately 4 cm after its origin, it gives off a scapular circumflex branch and continues down as thoracodorsal artery (TDA). TDA runs anterior to the subscapular muscle and teres major, lateral to the serratus anterior and enters the latissimus dorsi at around 1 cm from the external margin.⁶ TDA is a long artery approximately 10-12 cm, gives off a horizontal and a vertical terminal branch. This bifurcation is persistent and located on the deep surface of the muscle 3-6 cm distal to the inferior scapular border and 1-4 cm medial to its external border. It also gives numerous perforators which are now being studied to provide flap pedicles.⁷ Usually thoracodorsal artery pedicle shows constant anatomy.⁸ However, a rare variation may be seen whence the thoracodorsal artery can originate from the acromiothoracic artery independently from the circumflex scapular artery.⁹

Limited data is available on the internet regarding the radio diagnostics of thoracodorsal artery, hence, this study may be considered as a pilot study. The purpose of this study is to establish the diagnostic accuracy of Colour Doppler Sonography (CDS) in preoperative localization of the TDA pedicle in patients with unilateral radical mastectomy, hence, increasing the reliability of latissimus dorsi muscle flap for breast reconstruction. The gold standard was per-operative direct visualization of the pedicle.

METHODOLOGY

24 patients were selected for this study, all females with unilateral mastectomies and axillary

dissections. Patient identity was checked. Written consent was obtained. The operated side was identified. Two methods were employed,¹⁰ one in decubitus position¹¹ and the other in sitting position¹² as detailed ahead. Most of the patients were assessed in decubitus supine position after having some rest and with the arm of the side examined at 90° abduction. Pillows and supports were used for patient comfort. High resolution linear probe was used with range of 7-13 HZ, however, in obese patients, deep probe with range of 5-7 HZ was also used. Grey scale examination was carried out before proceeding with the Doppler study to determine the qualitative patency, or the absence of patency of the vessels and the wall characteristics which included intimal thickening, plaque formation, stenosis, atherosclerosis; chest wall complications like abscesses, seromas and recurrences were identified and these patients were excluded from the study.

Table 1: Exclusion Criteria

Exclusion criteria
Male patients
Patients with stenosis, thrombosis, plaque formation in TDA
Patients with residual/recurrent lesions
Patients with chest wall abnormalities like, abscesses, seromas or radiation necrosis.

The examination started with identifying the axillary artery as it passes under the midpoint of the clavicle on the outer border of first rib as the continuation of the subclavian artery.¹³ Pectoralis minor was identified at its origin from the 3rd -5th anterior ribs. The third part of axillary artery was localized beyond the pectoralis minor. Subscapular artery, once located, was followed along the posterior axillary fold for about 2-4 cm, until it branched into a larger circumflex scapular branch that immediately curves laterally and a smaller vertical TDA which runs 2-4 cm lateral to the lateral border of scapula before itself dividing into the horizontal and vertical branches.¹⁴



Figure 1. Lateral Circumflex and Thoracodorsal Branches of Subscapular Artery.

The angle of insonation was kept at 45°, sampling box was adjusted to 1 mm. Luminal diameter was measured in millimeters (mm). The presence or absence of the TDA pedicle was determined and Doppler indices were calculated. Peak systolic velocities, diastolic peak in centimeters per second (cm/s), resistance indices and pulsatility indices were recorded.

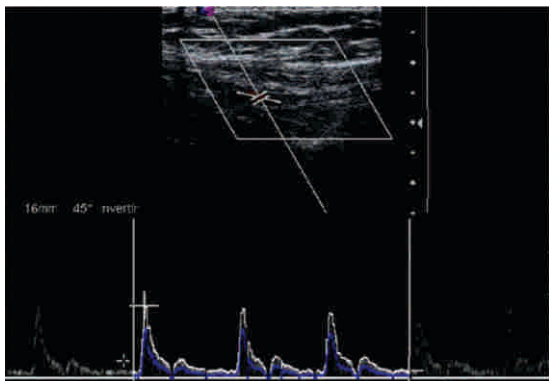


Figure 2. TDA Waveform.

Some patients who had gross amount of edema and were unable to lie down, were examined in sitting position, with their backs toward the examiner, and the hands crossed on the chest. The probe was placed at posterior axillary line in the armpit, the latissimus dorsi, teres major and subscapular muscles were identified, and then probe was moved down to identify the subscapular artery and follow the thoracodorsal artery.

In both methods the parameters were measured

3 times and the mean value was taken. Each examination lasted for approximately 30 minutes. The information was collected in a form designed for this trial and digitalized into a data base for analysis. The per operative notes were obtained and predictive values, sensitivity and specificity of the data was calculated.

RESULTS

The diameters of thoracodorsal arteries were taken at the origin, mean diameter was 1.68 mm. The mean PSV was 29.19 cm/s; EDV was 1.38 cm/s; RI was 0.81 and PI was 3.3. Table 2.

Table 2: Doppler Indices of Thoracodorsal Artery

Doppler indices	TDA
Diameter of pedicle (mm)	1.68
PSV (cm/s)	29.19
EDV (cm/s)	1.38
RI	0.815
PI	3.3

The reference ranges of the inner diameter of the initial segment of thoracodorsal artery was 1.12-1.88 mm; peak systolic velocity was 18.6-45.9 cm/sec; end diastolic velocity was 1.15-2.04 cm/sec; resistive index was 0.60-0.93; pulsatility index was 2.16-4.02. Table 3.

Table 3: Reference Ranges of the CDS Parameters

Reference range	Values
Diameter (mm)	1.12-1.88
PSV (cm/s)	18.6-45.9
EDV (cm/s)	1.15-2.04
RI	0.6-0.93
PI	2.16-4.02

These patients were followed till their operation. In collaboration with the Department of Plastic Surgery, operative notes were collected and data was compared with the CDS results. Out of 24 patients, 17 patients showed true positive results. 3 gave true negative results. 2 patients gave false positive results. Table 4.

Table 4: Comparison of CDS data & surgical notes.

	Per-op positive	Per-op negative
CDS positive	17	2
CDS negative	0	3

Analysing this data, the predictive values and sensitivity and specificity were calculated. Table 5.

Table 5: Sensitivity, Specificity, PPV & NPV of CDS

	Value %	Confidence interval %
Sensitivity	100	80.49-100
Specificity	40	5.27-85.34
Positive predictive value	85	73.48- 92.06
Negative predictive value	100	100

CONCLUSION

This study concludes that TDA pedicle can be identified in post radical mastectomy patients with 100% sensitivity and 100% negative predictive value. Pre operative CDS of thoracodorsal artery should be mandatory in preplanning of the latissimus dorsi flap for breast reconstruction. This not only helps to increase the success rate of the flap recon but also decreases flap failure rate. Using muscle landmarks, the TDA can be identified and followed with CDS. It not only determines the parameters and indices, but also identifies any stenosis, thrombosis or anatomical variation. As no study has been done on this subject in Pakistan, this article should prompt further studies pertaining structural abnormalities of post axillary dissection TDAs.

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EVALUATION OF ANGIOGENESIS AND ANTI OXIDATIVE ENZYMES IN PATIENTS OF CHRONIC LIVER DISEASE

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Abstract

Background: Hepatic fibrosis is the absolute incident of chronic liver injury from the etiological agent.¹ It is featured by extreme amassing of extracellular matrix (ECM) that destroy the hepatic architecture by making fibrotic scars and the development of nodules for regenerating hepatocytes defines liver cirrhosis.

Oxidative stress is present at genetic, molecular, cellular levels of all living beings and is usually manifested as a progressive accumulation of assorted deleterious changes in cells with advancing age that augment the risk of disease and death. Antioxidants like superoxide dismutase and glutathione reductase are imperative defense against reactive oxygen species.

VEGF play central role in pathological and normal angiogenesis, which is the development and growth of new blood vessels from preexisting vessels bed.

Methods: We have checked the evaluation of liver enzymes in blood serum by performing different assays including total bilirubin, direct bilirubin, ALT, ALP and LDH. Solid phase sandwich ELISA was performed for VEGF. Levels of antioxidants such as SOD

Catalase and GSH in blood serum were also determined.

Results: The levels of ALP, ALT, direct bilirubin and total bilirubin were increased. It was observed that level of LDH release, SOD, Catalase and GSH were higher in diseased as compared to normal. VEGF is increased in disease group.

Key Words: ALP, ALT, LDH, SOD and GSH

The liver is among the vital metabolic organs and glands of the human body that possess the unique phenomenon of regeneration. It metabolizes major nutrients of the body, detoxifies drugs and other substances like steroids and endogenous hormones and plays a pivotal role in mechanism of blood clotting.²

Liver fibrosis is a condition that usually fall out from chronic hepatic insult that often leads to cirrhosis and finally liver failure.³ It is characterized by extreme amassing of extracellular matrix (ECM) that destroy the hepatic architecture by making fibrotic scars and the development of nodules for

regenerating hepatocytes defines liver cirrhosis. The clinical significance of liver cirrhosis is connected with augmented intrahepatic resistance to blood flow and hepatocellular dysfunction, which results in portal hypertension, hepatic insufficiency and the occurrence of hepatocellular carcinoma.⁴

Vascular endothelial growth factor (VEGF) was discovered as a part of tumor extruding component which accelerates discharge of skin blood vessels.⁵ It is also known as vascular permeability factor (VPF) or vasculotropin.⁶ It is produced by plasma cells, endothelial cells, megakaryocytes, macrophages, neoplastic cell, myocytes and CD4

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lymphocytes.⁶ VEGF is considered critical for survival, proliferation, migration as well as differentiation of endothelial cells. It is also required for vascular assembly and remodeling.⁷

VEGF had a key role in the course of angiogenesis during all phases of the embryonic life, it also plays a significant role in angiogenesis and in enhancing vascular permeability both physiologically and pathologically.^{8,9}

Oxidative stress is known as the disturbance of equilibrium among the production of reactive oxygen species (ROS) and the inherent capacity of a biological system to acquisitively detoxify the reactive intermediates. ROS comprise of hydrogen peroxide (H₂O₂), peroxyxynitrite (ONOO), superoxide (O₂⁻) and hydroxyl radical (OH[·]). Most of the above mentioned species have been identified in RCC.¹⁰ Reactive oxygen species that are produced in the tissues can cause direct damage to macromolecules such as proteins, lipids and nucleic acids. In the endoplasmic reticulum and in the mitochondria of liver via cytochrome P450 system of enzymes, these reactive species (ROS) are mainly produced. Reactive oxygen and nitrogen species primarily affect protein, lipid and DNA among cellular structures in liver. The process will be resulting in abnormalities in structure and function of hepatocytes.¹¹

Glutathione is the most imperative antioxidant in a cell possessing a few sporadic functions. Glutathione helps keep cells alive and secluded. Since glutathione resides in the body majorly in the reduced state, it also has a pivotal role in establishing the redox state of the cell so it is ranked among one of the vital cellular antioxidants.¹² SOD and Catalase are considered primary antioxidant defense system. SOD, which is present in mitochondria, forms hydrogen peroxide by acting on superoxide while catalase, found to be in peroxisomes, detoxifies hydrogen peroxide (H₂O₂).¹³

METHODOLOGY

58 individuals were selected for the study, out of whom 20 were normal healthy individuals (irrespective of gender) while 38 individuals were those

who were suffering from chronic liver disease irrespective of the etiology for liver damage. Blood samples were collected for biochemical analysis from the patients admitted in the departments of Medicine at Jinnah Hospital Lahore. 5ml blood was drawn from antecubital vein of each individual in disposable 10ml syringe to estimate alanine amino transferase and alkaline phosphatase. Samples were processed within one hour for quantitative alanine aminotransferase and alkaline phosphatase estimation using the vertical spin ultra-centrifugation technique for serum separation for ten minutes at 3000rpm and then serum was transferred into properly labeled vials and stored at 2-5 °c till analysis of ALT and ALP. Serum ALP and ALT were estimated by standard enzymatic kits.

Commercial Kit from bioMerieux diagnostic France was used to determine ALP and ALT from the blood of individuals by photometric determination method. Reconstitute the contents of one vial of reagent 2 with the contents of one vial of Reagent 1 using mixing cap. Dispense as follows into a cuvette at 30 C.

Mix, incubate for ten min. at 30 C, then add R3 100ul.

R1+R2	1ml
SAMPLE	100ul

This was sucked into photometer and results were displayed on photometer screen. These results were noted and recorded.

Total Bilirubin and direct bilirubin

Total bilirubin kit (AMP diagnostic) was used to estimate the amount of total bilirubin in serum collected from chronic liver disease patients and normal subjects. This kit contains 263ul of total bilirubin reagent and 7 ul of nitrite reagent were mixed and transferred to the wells of the plate. 30 ul of serum added to each well, plate incubated at room temperature and absorbance measured at 550nm. The direct bilirubin kit (diazyme Europe, Gmbh) was used to estimate direct bilirubin in serum of chronic liver disease and normal patients.

Superoxide Dismutase: The SOD assay was done by previously described methods. The reaction mixture was 0.5 ml in volume and contained 100 mM KH₂PO₄ buffer (at pH 7.8), 0.1 mM EDTA, 2.25mM nitrobluetetrazolium (NBT), 13 mM methionine, 60µM riboflavin and enzyme extract. For ten minutes the mixture cuvette was exposed to light. The cuvette containing reaction mixture along with enzyme kept in dark was used as blank whereas the cuvette with reaction mixture without enzyme extract kept in light was used as control. The absorbance was taken at 560 nm wavelength.

Glutathione reductase (GR): The assay of GR will be done. The reaction mixture for this assay was 0.5ml in volume which contained 100 mM KH₂PO₄buffer (at pH 7.5), 1 mM EDTA, 0.5 mM oxidized glutathione and the rest was enzyme extract. Finally 0.2 mM NADPH was added to the reaction mixture to initiate the reaction prior to taking the spectrophotometer reading. Absorbance was taken at a wavelength of 340 nm

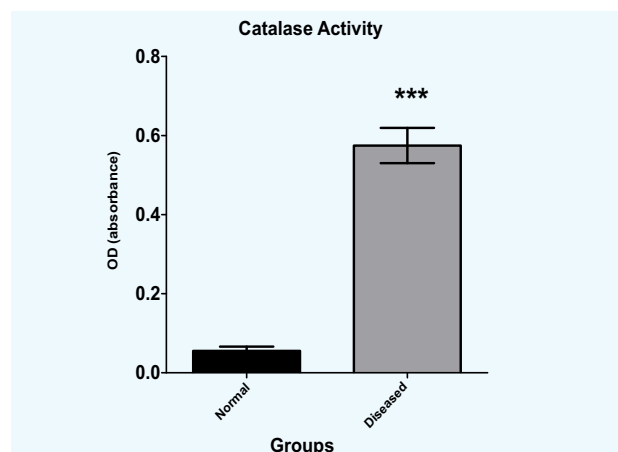
Catalase Assay; This assay was performed according to Yang.

LDH assay: LDH concentration was measured in serum after adding LDH solution to serum (Pars Azmoon Company) and read by auto-analyzer RA 1000 machine

RESULTS

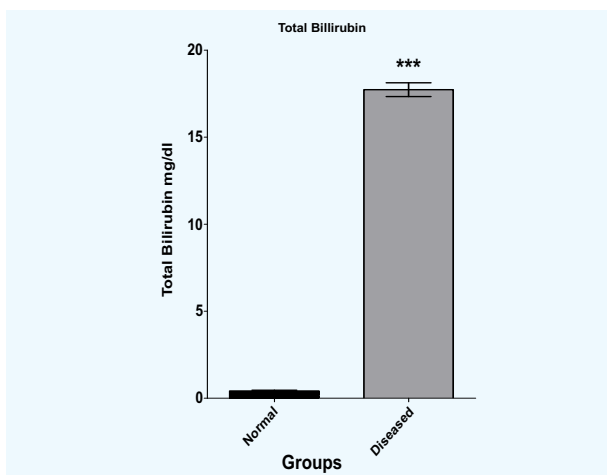
Total Bilirubin Assay

Levels of total bilirubin in disease group (17.7 ±0.396) is higher as compared to normal one (.420±



.038).

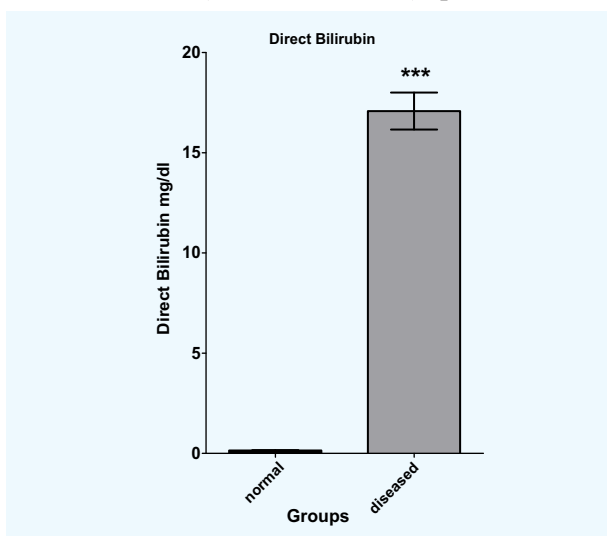
Bar graph shows level of total bilirubin in normal and diseased group. Values were expressed as mean ± SEM (normal vs disease) *p < 0.05



Direct Bilirubin Assay

Levels of direct bilirubin in disease group (17.1 ±0.923) is higher as compared to normal one (.1470± 0.012)

Bar graph shows level of direct bilirubin in normal and diseased group. Values were expressed as mean ± SEM (normal vs disease) *p < 0.05.

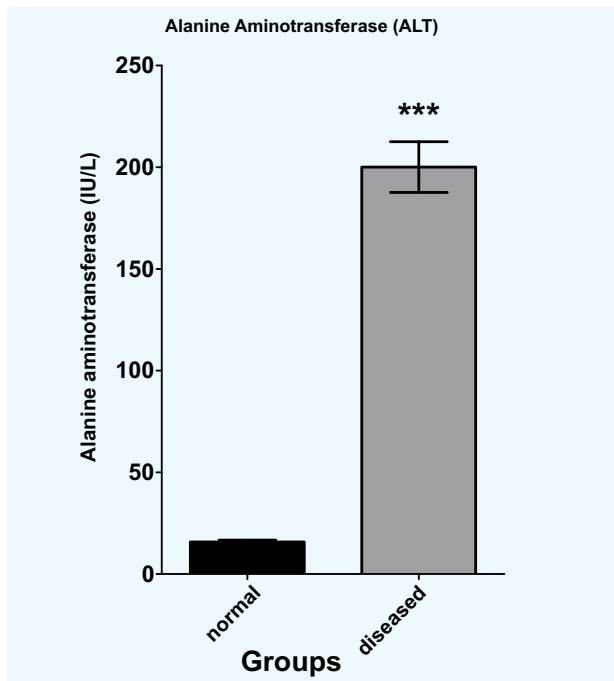


Alanine Aminotransferase

Levels of Alanine aminotransferase in disease group (200 ±12.5) is higher as compared to the normal one (15.8± 0.89).

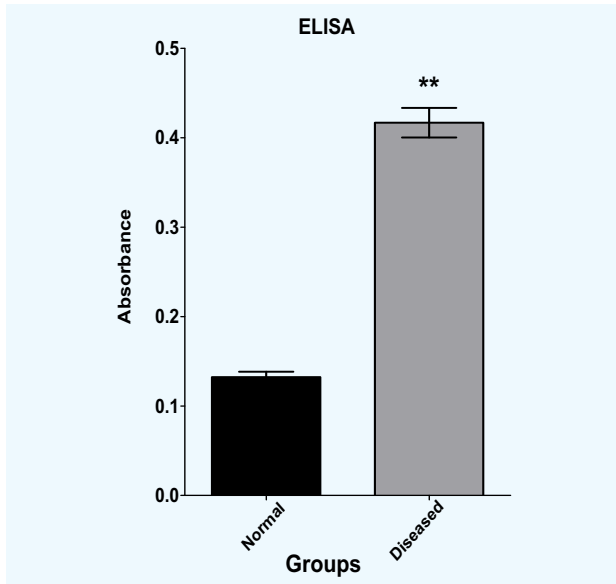
Bar graph shows level of ALT in normal and diseased group. Values were expressed as mean ±

SEM (normal vs disease) * $p < 0.05$.



disease group (0.417 ± 0.016) is higher as compared to normal one (0.132 ± 0.006)

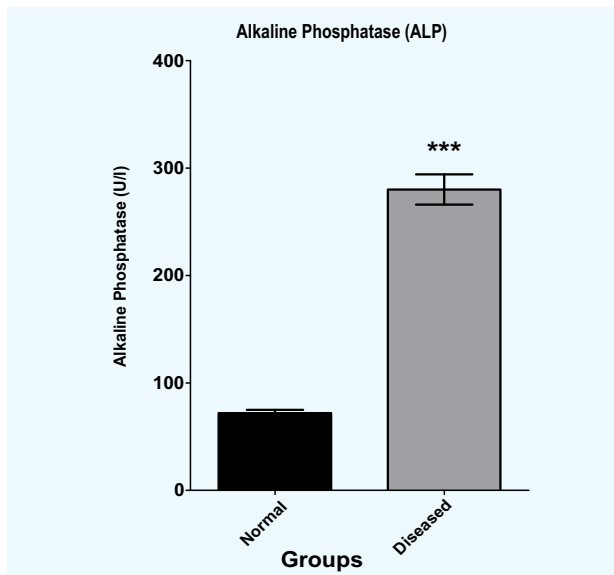
Bar graph shows level of ALP in normal and diseased group. Values were expressed as mean \pm SEM (normal vs disease) * $p < 0.05$.



Alkaline Phosphatase (ALP)

Levels of Alkaline phosphatase in disease group (280 ± 14.1) is higher as compared to normal one (71.9 ± 3.05)

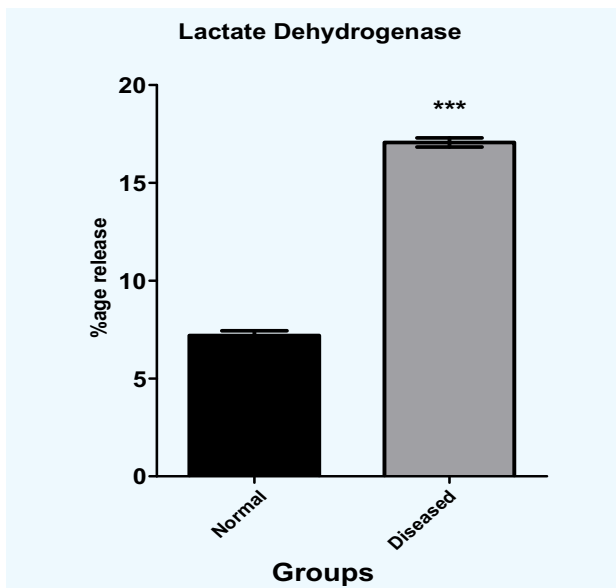
Bar graph shows level of ALP in normal or diseased group. Values were expressed as mean \pm SEM (normal vs disease) * $p < 0.05$



Lactate Dehydrogenase Assay

LDH release is significantly higher in disease group (17.06 ± 0.23) as compared to normal (7.2 ± 0.23)

Bar graph shows level of LDH in normal and diseased group. Values were expressed as mean \pm SEM (normal vs disease) * $p < 0.05$



Eliza

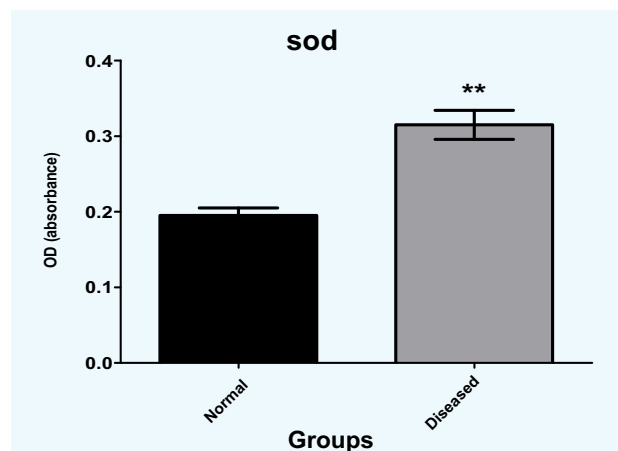
Levels of VEGF were highly increased in

Sod Assay

Levels of SOD in both groups were compared.

It was observed that levels of SOD in disease group (0.315 ± 0.019) is higher as compared to the normal (0.195 ± 0.009).

Bar graph shows level of SOD in normal and diseased group. Values were expressed as mean \pm SEM (normal vs disease) * $p < 0.05$.



GSH Assay

Levels of GSH in both groups were compared. It was observed that levels of GSH in disease group (0.075 ± 0.004) is higher as compared to normal (0.056 ± 0.002).

Bar graph shows level of GSH in normal and diseased group. Values were expressed as mean \pm SEM (normal vs disease) * $p < 0.05$.

DISCUSSION

The formation of new vessels being called angiogenesis and the organization of an irregular angioarchitecture of the liver is a process strictly correlated to the progressive fibrogenesis leading to cirrhosis and liver cancer. A well-known evidence noticeably indicates that chronic hepatic illnesses are characterized by intrahepatic vascular remodeling with capillarization of sinusoids, fibrogenesis and growth of intrahepatic shunts, which would lead to augmented hepatic resistance which would be resulting in high portal pressure and decreased effective perfusion of hepatocyte ultimately leading to liver failure. On top of it a new original data obtained by this study proposed that

vascular endothelial growth factor (VEGF)/platelet-derived growth factor (PDGF) driven angiogenesis is of paramount importance in the formation of portal-systemic collaterals and of the hyper-dynamic circulation which are liable for the main complications of cirrhosis often leading to death. In this study levels of VEGF were highly increased in disease group (0.417 ± 0.016) as compared to normal one (0.132 ± 0.006). Matthias Bartneck¹⁴ in his study suggested that angiogenesis is allied with progressive fibrosis in state of chronic liver insult. He further proposed that this may add to the development of hepatocellular carcinoma.

Essam et al.¹⁵ in his study suggested an elevated level of bilirubin in viral group (jaundice) than the cirrhotic and hepatic cancer groups. All groups show the raised bilirubin (total and direct and indirect) level than in control group. This is in accordance with our results that levels of total bilirubin and direct bilirubin in disease group (17.7 ± 0.396) and (17.1 ± 0.923) is higher as compared to normal one (4.20 ± 0.038) and (1.470 ± 0.012) respectively.

Aspartate aminotransferase (GOT) and Alanine aminotransferase (GPT) are of pivotal clinical importance in viral hepatitis and hepatic necrosis linked with various forms of liver disease. These enzymes are raised even before the clinical signs and symptoms of disease (such as jaundice) appear. They may both reach above upper limits of reference interval. The raised AST levels observed with higher than ALT in patients of cirrhosis. In primary or metastatic disease of liver, their levels are higher but contrary to this they are often normal in earlier stages of hepatic malignant infiltration. The study conducted by Essam et al.¹⁵ is in accordance with our study which narrated that liver enzyme tests show the concentration of AST ALT and ALP are increased significantly in cirrhotic patients compared to other groups of control patients ($p < 0.001$).

Matuishin et al.¹⁶ concluded that the interrelation of the antioxidative enzymes as a system of antioxidant protection of hepatocytes is impaired in chronic diseases of the liver. Significantly diminished rate of inactivation of superoxide radicals was

encountered in fibrosis and primary biliary cirrhosis. We have evaluated SOD, GSH levels, Levels of GSH and SOD in both groups. It was observed that levels of GSH and SOD in disease group (0.315 ± 0.019) and (0.075 ± 0.004) is higher as compared to normal (0.195 ± 0.009) and (0.056 ± 0.002) respectively. Likewise Matiushin et al.¹⁶ also evaluated that activity Of blood antioxidant enzymes in chronic liver damage and observed a decrease in plasma SOD activity in cirrhosis. A marked decrease in the antioxidant status was seen in serum and neutrophils' homogenate and serum of patients having chronic hepatic diseases compared to healthy subjects as proposed by Salem et al.¹⁷

Floreani et al.¹⁸ proposed that during early stages in cholestatic patients the plasma levels of antioxidants are low. He further suggested that dietary supplementation is needed and lesser levels are due to malabsorption of fat soluble vitamins as well as other mechanisms of hepatic release.

Lactate dehydrogenase (LDH) being an intracellular enzyme and important marker of tissue injury, thus its level will be raised in blood which normally lies in a very low range. Increase in the rate of tissue destruction is suggestive of increased level of LDH in blood, this matches with our results which showed that LDH release is significantly higher in disease group (17.06 ± 0.23) as compared to the normal (7.2 ± 0.23). Like that Farah et al.¹⁹ proposed that LDH measurement may be valuable to identify patients having disease with excessive destruction of tissues.

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INJUDICIOUS USE OF THYROID RADIOISOTOPE SCAN FOR THE DIAGNOSIS OF THYROID DISEASES.

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Abstract

Background: Isotope thyroid scan is very useful investigation for the diagnosis of thyroid diseases & there are specific indications for its use but it has been observed that it is advised for the patients, very frequently even without any indication. This investigation should be advised for justified indications. Injudicious use of thyroid scan is burden for the patients regarding the anxiety associated with delay in the treatment, cost and hazards due to its use.

Methods: The study was conducted at Avicenna Medical & Dental College from 1st January 2019 to 30th June 2019. Record of the fifty patients was evaluated retrospectively who were advised scan during their visits to surgical outdoor for thyroid symptoms. It was analyzed for the justification of radioisotope thyroid scan being advised. Patients with advanced thyroid carcinoma were excluded from the study

Results: The patients visiting to surgical outpatient department ranged from simple to complex thyroid diseases. Record of fifty patients who were advised radioisotope thyroid scan was analyzed. It showed that 28% scans were advised to the patients unnecessarily.

Conclusion: Radioisotope thyroid scan should be advised to the patients with thyroid diseases which have definite indications. This reduces not only the cost but time & anxiety related to delay in the management of the patient.

Key Words: Thyroid disease, Radioisotope thyroid scan

Radionuclide imaging or Scintigraphy is a diagnostic test where radioisotopes tagged to protein or other molecules or by themselves are administered orally or intravenously that travel specifically to tissues or an organ and specialized scanners known as Gamma Camera capture the emitted radiation to form two-dimensional images. The thyroid gland therefore is being imaged in thyroid scintigraphy.¹

For evaluation of thyroid disease, radionuclide imaging (RNI) has been used for many years. As it provides excellent information about the functional

status of the thyroid gland. The 99m Technetium pertechnetate, 131-Iodine, 18-fluoro-deoxy-glucose & gallium-67 are the most frequently used isotopes for thyroid scintigraphy.^{2,3}

In recent advances, thyroid imaging has significantly improved the diagnosis, treatment, follow-up and prognosis of high prevalence thyroid diseases such as goiter, thyroid nodule, cancer and thyroiditis that affect the normal thyroid function. A radioactive iodine uptake is performed to interpret the clinical presentation of thyrotoxicosis which is not diagnostic of Graves' disease. If thyroid nodules are

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identified, a neck scan should be added.⁴

Evaluation of focal thyroid nodule as hot, warm or cold on the basis of relative uptake of radioactive isotope, is done when radionuclide scanning is using 99m Technetium pertechnetate and 131-Iodine. 131-Iodine, In addition, is also used in the treatment of patients with thyroid cancer to evaluate for residual/recurrent disease, to assess distant metastasis, and in the follow-up of patients after thyroidectomy. Gallium-67 is particularly useful in assessing thyroid lymphoma.^{2,3}

Measurement of serum TSH is the first step in initial evaluation of thyroid disease as per recent American Thyroid Association (ATA) guidelines⁽⁵⁾. If the TSH is lower than normal, a radionuclide thyroid scan using either 99m Technetium pertechnetate or 123 Iodine is the next step.

Old age patients develop significant physiological changes in thyroid function & have coexistent chronic illness, so interpretation of thyroid function tests is difficult in this group.⁶⁻⁹ The initial diagnostic test for suspected hyperthyroidism in older adults is serum TSH as in younger patients. However, acutely ill old patients who are being hospitalized may demonstrate a depressed TSH without actually being hyperthyroid. In these patients, radioactive iodine ablation is often used because of its safety, efficacy and cost-effectiveness.¹⁰

Thyroid scan has small but safe amount of radionuclide radiation. Exposure to this radiation is minimal and within the acceptable range, if it is used for diagnostic purpose. There are no known long-term complications of having a nuclear medicine procedure. Radionuclide material has extremely rare allergic reactions which if occur, are very mild. At the injection site of the radionuclide, pain and redness can occur as well but for a short time.

Thyroid scan is not recommended for pregnant or breast-feeding women even though the radiation exposure is short term and minimal. Being pregnant or feeding a child for six months after the test, it is counseled to avoid except the patient needs a meta-static scan.¹¹

METHODOLOGY

The study was conducted at Avicenna medical college & hospital from 1st May 2018 to 30th June 2019. Total patients were fifty who were unaware about the study. Inclusion criteria were patients with thyroid disease symptoms visiting to surgical outdoor department. Exclusion criteria were the patients with advanced malignancy. All patients who were advised thyroid scan were enlisted according to disease category & justification of its use was analyzed.

RESULTS

In our study, the patients visiting to surgical outpatient department with thyroid diseases consisted of toxic multinodular goiter, toxic adenoma, simple multinodular goiter, grave’s disease, simple diffuse goiter, cold nodule, malignant nodule, puberty goiter, thyroiditis, congenital hypothyroidism & ectopic thyroid. The fifty patients advised for radioisotope thyroid scan were analyzed. It showed that 28% scans were advised to the patients for unjustified indications like simple multinodular goiter etc. (Table 1)

DISCUSSION

Nuclear scans can be performed on patients with biochemical hyperthyroidism and with radioactive iodine-123 (123-I) or technetium-99m (99m Tc). These isotopes are chosen for their shorter half-life and lower radiation exposure to the patients when compared with sodium iodide-131 (Na131 I).

Table 1:

Provisional diagnosis	Number	Percentage
Toxic multinodular goiter	08	16
Toxic adenoma	04	08
Simple multinodular goiter	05	10
Grave’s disease	06	12
Simple diffuse goiter	07	14
Cold nodule	06	12
Malignant nodule	03	06
Puberty goiter	06	12
Thyroiditis	03	10
Congenital hypothyroidism	01	02
Ectopic thyroid	01	02

The ^{99m}Tc is trapped in the thyroid but is not organified. Although convenient, ^{99m}Tc scanning may provide misleading results. Some nodules that appear hot or warm on ^{99m}Tc scan results, may be cold on ^{123}I scan results. Nodules with discordant ^{99m}Tc and ^{123}I scan results may be malignant, therefore ^{123}I scanning is preferred.

Nuclear scans allow determination of the cause of hyperthyroidism. Patients with Graves' disease usually have homogeneous diffuse uptake & glands with thyroiditis have low uptake. In patients with toxic nodular goiter (TNG), the scan results usually reveal patchy uptake, with areas of increased and decreased uptake. The uptake rate of radioiodine in 24 hours averages approximately 20-30%. Radioactive ^{131}I ablation of the thyroid gland may be considered if the thyroid uptake value is elevated. Several therapeutic modalities have been suggested to increase thyroid uptake (e.g. low iodine diet, lithium, recombinant TSH, propylthiouracil [PTU])¹²

Thyroid scintigraphy is now rarely used in the work-up of a thyroid nodule except in the presence of a low TSH value. Therefore, autonomously functioning thyroid nodules (AFTNs) with a normal TSH value are diagnosed only in few medical centers that use thyroid scan routinely for diagnosis of thyroid nodule.¹³ This does not mean that thyroid scan must be performed in every patient with a thyroid nodule but only in those with an indication of FNAC, i.e. nodule above 10–15 mm of diameter.

Thyroid scintigraphy is the technique that permits evaluation of the functional characteristics of a nodule. The $^{99m}\text{TcO}_4^-$ and ^{123}I radionuclides are mainly used for the evaluation of patients with thyroid nodules. ^{123}I is concentrated and organified within the gland, whereas $^{99m}\text{TcO}_4^-$ is only concentrated. When a thyroid scan is performed, ^{123}I should be preferred over $^{99m}\text{TcO}_4^-$ according to the 2015 American Thyroid Association (ATA) guidelines¹⁴ but this preference is not justified according to European Association for Nuclear Medicine.¹⁵

For detection of ectopic thyroid tissue, ^{99m}Tc -

pertechnetate scan is considered the most accurate test (Noussios et al., 2011). ^{123}I or, preferably, ^{99m}Tc -pertechnetate scan remains the most accurate test for the detection of ectopic thyroid tissue and the differential diagnosis between congenital hypothyroidism & thyroid dysgenesis (60–70% of cases), inherited disorders of thyroid metabolism (10–20% of cases) & athyreosis (10–30% of cases) (Meller and Becker, 2002). While neck ultrasound can miss the correct diagnosis in about 50% of cases, thyroid scan is the highly accurate for the detection and location of thyroid dysgenesis (De Bruyn et al., 1990)¹⁶

Because of the risk of exposing the fetus to radiation, the thyroid scan and thyroid uptake are not performed on patients who are pregnant. For breast-feeding women, these tests are also not recommended. Time consumption is an important factor in nuclear medicine procedures. Several hours to days are spent for radiotracer to accumulate in the area of interest and several hours are being used in imaging to be performed. Newer equipment can substantially shorten the procedure time in some cases.

CT scan or MRI has the high image resolution as compared to the nuclear medicine images. However, the functional information they provide is often not achieved by other imaging techniques & nuclear medicine scans are more sensitive for a variety of indications.¹⁷

In our study, it was observed that in outpatient, radioisotope thyroid scan was advised to many of patients which were not required it like simple diffuse & puberty goiter. It constituted total of 26% which could be avoided (Table # 1) It caused not only wastage of time & money but developed anxiety in patients due to delay in the definitive management.

CONCLUSION

Radioactive isotope thyroid scan should be advised only to those patients with thyroid diseases which have clear indications for it. It not only reduces the cost & time but anxiety due to delay in the patient management.

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There is nothing that can
have a more powerful effect
on your mental health than
the spirit of thankfulness

SCAR TENDERNESS AS A SIGN OF SCAR COMPLICATION

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Abstract

Objective: To evaluate the sensitivity and specificity of scar tenderness as a sign of scar complication.

Study Design: A Prospective Observational Study.

Place & Duration of Study: Department of Obs. & Gynae, Avicenna Hospital, Lahore for the period of One year from June 2018 to June 2019.

Methods: A Total of 69 eligible pregnant women with previous scar attending the OPD and labour room were enrolled in the study. These women with one or more previous caesarean deliveries at term were examined for signs of suspected scar complications. Scar tenderness was elicited by pressing below and behind the pubic symphysis in between uterine contractions while engaging the woman in conversation and noting for a visible wince. Caesarean Section was carried out for scar tenderness, unexplained maternal tachycardia, fresh vaginal bleeding, fetal heart rate abnormalities and non-progress of labor. Patients who had caesarean section due to scar tenderness were observed for condition of scar intra operatively. Scar complications were analyzed and data was collected on a predesigned performa.

Results: The sensitivity and specificity of scar tenderness as a predictor of scar complication was 91.30 % and 4.3 %, while accuracy was 33.3%. The likelihood ratio of a positive sign of scar tenderness being associated with scar complication was 1.7. Maternal tachycardia was not found to be a significant predictor of scar complication.

Key words: Scar tenderness, Uterine rupture, Scar Dehiscence.

Caesarean section is the most common Obstetric procedure carried out worldwide and its safety has increased over decades.¹ The incidence of repeat caesarean section is increased up to 90% after a primary caesarean section according to data from United States, which makes it worrisome as well.² Vaginal birth after caesarean section has a success rate of about 70% and is dependent upon many factors. Vaginal birth after caesarean section is also associated with antecedent risk of scar complications, scar rupture and poor fetomaternal outcome including mortality (10% and 6% respectively).^{1,3} Absolute risk of scar rupture is 1 in 1000. Patients

with two or more caesarean sections are planned for elective repeat caesarean section (ERCS) by most of medical authorities worldwide. So, it is crucial to monitor a patient carefully in antenatal period and labor with previous caesarean sections to avoid suspected scar complications. Signs of scar rupture include fetal tachycardia, maternal tachycardia, severe persistent abdominal pain in between the contractions, acute onset scar tenderness, hematuria, abnormal vaginal bleeding, fall in blood pressure, loss of sensation of presenting part and cessation of uterine activity.⁴ CTG abnormalities are most consistent and present in 80% of the patients with scar

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rupture.⁵ Abdominal pain is also important feature present in 22% of cases.⁶ Abnormal vaginal bleeding presents in 11–67% and maternal shock in 22–46% of cases. Cessation of uterine activity is reported in 76 women in a study of Rodrigues.⁷ Increased maternal pulse and scar tenderness are considered as important signs of scar complication in patients with previous scar. Scar dehiscence and scar rupture are known scar complications.⁴ Some studies also investigated the sonographic scar thinning and scar tenderness to predict scar complication.^{9,10} As continuous CTG monitoring and sonological equipment are not readily available in many of the clinical setups in a country like ours, most of the time clinicians have to rely on their clinical assessment to avoid undesirable complications.

The current study is conducted to find out clinical significance of scar tenderness as an independent predictive variable in relation to scar complication. This study will help us to determine sensitivity and specificity of this important sign.

METHODOLOGY

The study, Sensitivity and specificity of scar tenderness as a “sign of scar complication” was conducted in the department of Obs. & Gynae Avicenna Hospital, Lahore for a period of one year, from June 2018 to June 2019. 69 eligible pregnant women attending the OPD and labour room were included in the study after taking informed consent. A prospective observational study was carried out.

All patients who presented with previous caesarean section (one or more) were included in the study. Women with previous myomectomy and unknown scar status were excluded. Patients with previous one caesarean section who fulfilled the criteria of VBAC were monitored during labour. Monitoring was done by observation of maternal pulse and blood pressure every 30 minutes, scar tenderness, CTG and vaginal bleeding. Scar tenderness was elicited by pressing below and behind the pubic symphysis in between uterine contractions while engaging the woman in conversation and

noting for a visible wince. Fetal heart rate monitoring was done by intermittent auscultation every 30 minutes in the first stage and every 15 minutes in the second stage, followed by continuous CTG where required. Assessment for cervical changes was done every four hours or as required. Trial of scar was terminated for scar tenderness, unexplained maternal tachycardia, fresh vaginal bleeding, fetal heart rate abnormalities and non-progress of labor. The patients for whom trial of scar was terminated for scar tenderness were included in this analysis. Patients having two or more previous caesarean sections who presented in OPD or labour room were also evaluated and examined. Patients with positive scar tenderness were planned for emergency caesarean section and observed for scar complications intra operatively. Intra operative findings were recorded on a pre designed Performa depicting intact scar, thinned out scar, scar dehiscence or scar rupture. Statistical analysis was conducted using SPSS 17.0. Scar rupture is the presence of fetus outside the uterus and free communication between uterine and abdominal cavity.

Scar dehiscence is the defect at the site of previous scar.

Thinning of scar is scar thickness less than 4mm.

RESULTS

All the women who underwent cesarean delivery due to scar tenderness were included in the analysis. Operative findings categorizing the scar complications are as shown in figure 1. The sensitivity and specificity of scar tenderness as a predictor of scar complication was found to be 91.30% and 4.3%, respectively. The accuracy of scar tenderness as a predictive variable was 33.3%, while the positive and negative predictive values were 32.30% and 50% respectively. Table 2. The likelihood ratio of scar tenderness as a positive sign being associated with scar complication is 1.7. Scar tenderness therefore is a sensitive sign of scar complication, although not a very specific one. In addition, maternal tachy-

cardia was not a significant predictor of scar complication (27 out of 69), being nearly equally present in cases with and without scar complication. Although all patients were operated for suspected scar complications, the effect of other confounding variables was also noted. As given in the table 3. More risk of scar complication was found in the patients with high parity, with primary emergency caesarean sections and who were at gestation greater than 38 weeks. A thinned-out scar even at the outset can be the underlying factor. No major risk was observed related to the baby weight considering all the categories of 2--2.5 kg, 2.5--3 kg and 3--3.5 kg.

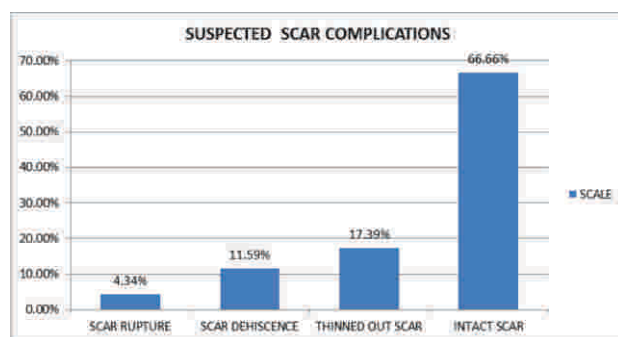


Figure 1

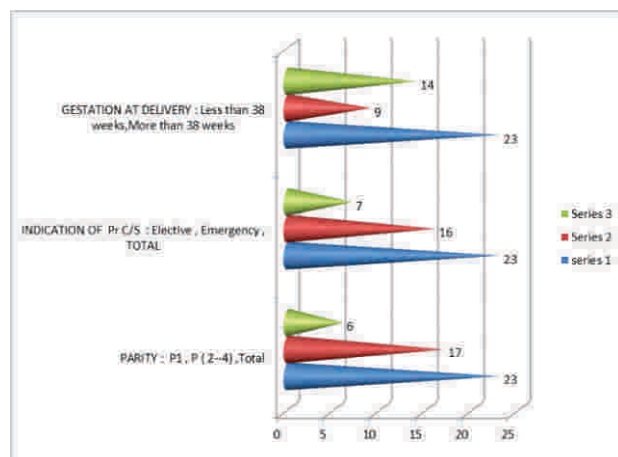


Figure 2

DISCUSSION

In the current study sensitivity and specificity of scar tenderness was found to be 91.3% and 4.3 % respectively, it is comparable to the study of Harsha S et al 7 where it is also found to be 92.3% and 3.8 %. Both of these studies were conducted at a tertiary care hospital. In the study of Harsha, only women

who were eligible for trial of scar were included unlike our study where all women who underwent caesarean section for positive scar tenderness were considered. (irrespective of the number of previous caesarean sections). Accuracy of the scar tenderness was found to be 33.3% which is same as in the said study.⁷ In the investigation carried out by S Khalil et al⁸ sensitivity was found to be 83.6% but specificity was high, 86% as compared to the current study. This study was conducted at Cantonment Hospital Rawalpindi and all women with previous scarred

Table 3: Confounding Variables of Patients with Scar Complications

Characteristics	Scar Complication (N=23)	Percentages (%)
Parity		
P (2-4)	17	73.91
P1	6	26.08
Indication of Pr C/S		
Emergency	16	69.56
Elective	7	30.43
Gestation at Delivery		
Less than 38 weeks	9	39.13
More than 38 weeks	14	60.86

uterus (except the one with unknown scar site) were included in the study as ours. High specificity unlike our study could be because false negative patients were not included in our study. As a large number of women with scar complications may not present with scar tenderness.¹² In another study conducted by M Mikakshi et al⁹, scar complications were present in 23 out of 50 patients with scar tenderness, In this study scar was also evaluated for thinning sonographically before caesarean section, and 5 patients out

Table 1: Operative Findings in Patients Operated for Suspected Scar Complications (n=69)

FINDING	NUMBERS	PERCENTAGE (%)
SCAR RUPTURE	3	4.34
SCAR DEHISCENCE	8	11.59
THINNED OUT SCAR	12	17.39
INTACT SCAR	46	66.66

Table 2: Accuracy Of Scar Tenderness

SCAR COMPLICATIONS			
SCAR TENDERNESS	YES	NO	TOTAL
YES	21	44	65
NO	2	2	4
TOTAL	23	46	69

of 47 with thinned out scar had scar complication while it was intact in rest of the 42 patients. Overall, the study concluded that scar tenderness and sonographic evaluation can help to reduce maternal morbidity and mortality. In a study of 206 patients 3 had caesarean section due to scar tenderness, out of which one had scar complication (scar rupture), but in this study patients were given trial of VBAC and mostly had VBAC. Only 12 patients had caesarean section, the one who had scar rupture had caesarean during labour due to failure of head to descend and positive scar tenderness.¹⁰ Maternal tachycardia is found to be a non specific sign like the study conducted at New Delhi⁷. In the present study it was present in 39.1% cases (27 out of 69) with scar complications. It could be because of multiple factors which influence maternal pulse. There is limited data regarding relationship of maternal tachycardia as a sign of scar dehiscence, but there are some case reports showing that maternal pulse was normal in a patient with uterine rupture till last moment.¹¹ Maternal tachycardia is considered as a non-specific sign. A healthy woman tries to compensate depletion volume initially by different mechanisms, it may not appear in scar complication till the patient went into shock. On the other hand, it can also appear in conditions like fever, dehydration, labor pains, anxiety and certain other medical conditions as hyperthyroidism.

It was also observed that most patients with scar complications had primary emergency caesarian section, were of high parity (can be explained by weak scar due to repeated caesarean sections and more fibrous tissue) and with greater gestational age (more thinned out lower segment thus more pressure on lower uterine segment). But scar complications have been found to be irrespective of the baby birth weight like the study of Harsha⁷. Limited data is found regarding these features in evaluating patients with scar complications, so further evaluation and research in future is needed. Scar tenderness was thus found to be a very effective tool to predict scar complications in a patient with previous scar.

CONCLUSION

Scar tenderness is quite a useful sign to predict scar complications in a low resource clinical setting in patients with previous caesarean sections.

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STATISTICAL ANALYSIS OF PREVALENCE OF SYMPTOMS AND CORRELATED DISEASE IN THE OUTPATIENT OF UROLOGY DEPARTMENT

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Abstract

Statistical analysis of prevalence of symptoms and correlated disease in the Urology department at Avicenna Hospital

Aim: To analyze and identify the prevalence and incidence of urological symptoms and disease in the Urology Department

Setting: Avicenna Medical College and Hospital, Lahore, Pakistan

Design: A Cross-sectional statistical study of 8000 patients

Methods: 8,000 patients in the department of urology were studied retrospectively to determine the symptoms and diseases most commonly received in our OPD. The duration of study contained a period of 2 years, from May 2017 to May 2019. Patients that were referred to other outpatient departments, presented with genetic diseases, congenital anomalies, or were scheduled to appear for dialysis were excluded from the study. The symptoms were recorded according to the patients presenting complaints. The disease was finalized after exploring numerous variables including taking a thorough patient history, physical examination, laboratory investigations, and radiological tests. Data was compiled into an analysis software and results were procured.

Results: After full evaluation and data collection the 8000 patients were categorized according to their respective symptoms, they were further place into groups according to their diagnosed diseases. Preliminary distribution by age and sex was the first variable and out of the assessed 8000 patients 5,710 were male while their cohort, females, accounted for 2,290. The top 5 symptoms consisted of lumbar pain, dysuria, LUTS, inguino-scrotal, and urinary incontinence. Lumbar pain accounted for the most common presenting symptom with 4,592 patients (57.4% of total) while the least common symptom was suprapubic/hypo gastric abdominal pain with 80 total subjects (1.1% overall). The top 5 most common diseases included ureterolithiasis, nephrolithiasis, musculoskeletal pain, UTI, and BPH. In contrast the 5 least common disease were erectile dysfunction, premature ejaculation, secondary infertility, renal cell carcinoma, and overactive bladder. The most common being ureterolithiasis with 1,816 patients (22.7% overall), on the other hand erectile dysfunction became the disease with the lowest occurrence accounting for 12 people (0.15%). The overall results gathered and portrayed in this section introduce a condensed picture of the common symptoms and diseases that have been seen in the urology department at Avicenna medical college and hospital.

Conclusion: In this study we have concluded that lumbar pain and ureterolithiasis were the highest prevalent

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symptom and disease. By way of this analysis our department has had the opportunity to effectively localize and categorize symptoms and diseases in the area surrounding our hospital. Through this information we can update our hospital with equipment, facilities, and education to adequately diagnose, prevent, and treat our patients. By performing this analysis in major hospitals all over the country we can advance our knowledge and develop countless ways to educate our general population and establish ample prevention techniques and treatment.

Keywords: Epidemiology, Urology, Prevalence, Incidence, LUTS, Dysuria, Hematuria, Inguino-scrotal, Incontinence, UTI, BPH, Varicocele, Primary Infertility, Stress Incontinence, Ureterolithiasis, Tumor, Stricture, Prostate

The field of Urology focuses and deals with ailments of specific anatomic areas of the body including the kidneys, ureters, bladder, urethra, and internal and external male genitalia. In the medical community statistical analysis of patients common symptoms can result in better comprehension of disease prevalence and can lead to newer approaches for prevention and treatment.¹ As mentioned by the World Health Organization (WHO) epidemiology is “the study of the distribution and determinants of health-related states... and the application of this study to the control of diseases and other health problems”.² This analysis was performed in order to grasp the prevalence of urological symptoms/disease in the patient population of the urology outpatient department. Disease is not normally distributed, which means that for any disease in a given population, everyone does not have an equal chance of acquiring the said disease.³ Multiple risk factors can lead to the occurrence of urological symptoms including mental, physical, and emotional ailments along with comorbidities. For example, in the elderly, dementia, stroke, cerebral infarction, spinal disc herniation, and excessive bed rest can contribute to an increased incidence of urological symptoms and disease.^{4,5} So, an important factor in combating these symptoms is by educating the general population and forming specific procedures of prevention. There are 3 levels of prevention in epidemiology. First you have primary (prevention of disease), then secondary (early detection, and lastly tertiary (prevention of complications) and in order for these preventive measures to be successful, identification of risk factors is required.⁶ This study

was performed to understand the endemic diseases and accompanying symptoms most commonly presented in our area.

METHODOLOGY

8,000 total patients in the department of urology were studied retrospectively to determine the symptoms and diseases most commonly received in our Urology OPD at Avicenna Hospital. The study period was determined over a course of 2 years, from May 2017 to May 2019. Patients that were referred to other outpatient departments, presented with genetic diseases, congenital anomalies, or were scheduled to appear for dialysis were excluded from the study. The symptoms were recorded according to the patients presenting complaints. The disease was finalized after exploring numerous variables including taking a thorough patient history, physical examination, laboratory investigations, and radiological tests. Data was input into an analytical operating software and results were procured.

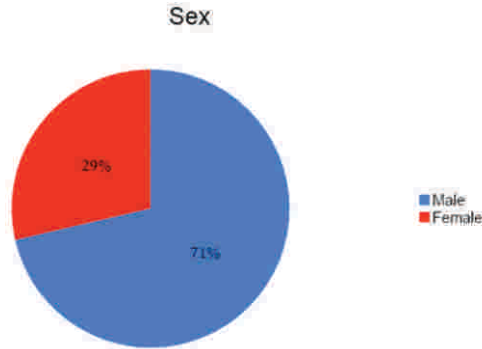
RESULTS

After full evaluation and data collection the 8000 patients were categorized according to their respective symptoms, they were further placed into groups according to their diagnosed diseases. Overall, the patients were first differentiated by their symptomatic presentation, by way of most common presenting complaint. There were total of 9 symptoms used and were further separated into 24 diseases after diagnosis was confirmed through multiple modalities. Preliminary distribution by age and sex was the first variable and out of the assessed 8000

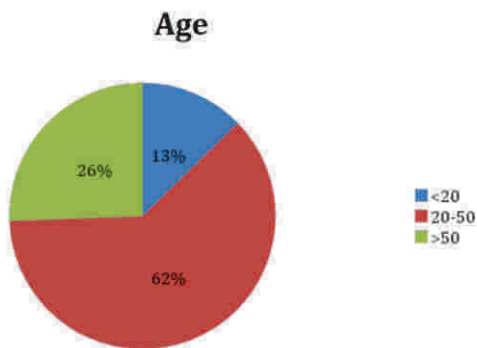
patients 5,710 were male while their cohort, females, accounted for 2,290.

For age we devised 3 categories consisting of age <20, between 20-50, and >50.

The nine symptoms that were studied included lumbar pain, dysuria/burning micturition, urethral discharge, suprapubic pain, LUTS (frequency, urgency, nocturia, intermittency, sense of incomplete evacuation, poor stream, and straining), hematuria, sexual dysfunction (psychological and pathological factors), inguinal-scrotal (testicular swelling, scrotal swelling, testicular pain, penile lesions and pain), and urinary incontinence. Lumbar pain accounted for the most common presenting symptom with 4,592



patients (57.4% of total) while the least common symptom was suprapubic/ hypo-gastric abdominal



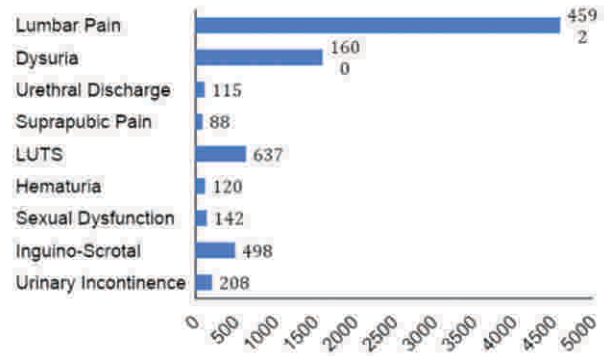
pain with 88 total subjects (1.1% overall).

The top 5 symptoms consisted of lumbar pain, dysuria, LUTS, inguino-scrotal, and urinary incontinence.

Post investigations and assessment the symptoms were clinically correlated to their diagnosis. A total of 24 diseases were diagnosed from the collected data. The most common being ureterolithiasis with 1,816 patients (22.7% overall), on the other hand

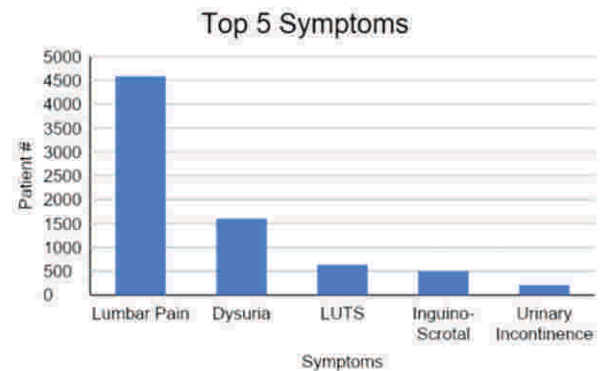
erectile dysfunction became the disease with the lowest occurrence accounting for 12 people (0.15%).

The top 5 most common diseases included ureterolithiasis, nephrolithiasis, musculoskeletal



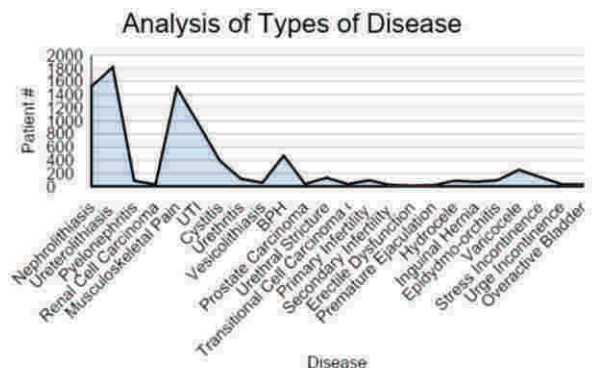
pain, UTI, and BPH.

In contrast the 5 least common disease were



erectile dysfunction, premature ejaculation, secondary infertility, renal cell carcinoma, and overactive bladder.

Once all symptoms and disease were tallied, further differentiation of the diseases was made into 7 categories. The most common disease in each category was calculated and observed. The seven

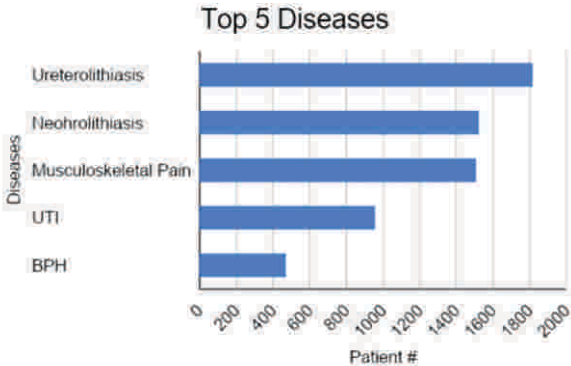


categories consisted of disease of stones, infectious causes, tumors, disease of LUTS, disease of sexual dysfunctions, inguino-scrotal disease, and disease of

symptoms the overall leader was BPH.

Most common disease correlating to the inguino-scrotal symptoms was varicocele while primary infertility leads the diseases of sexual dysfunction.

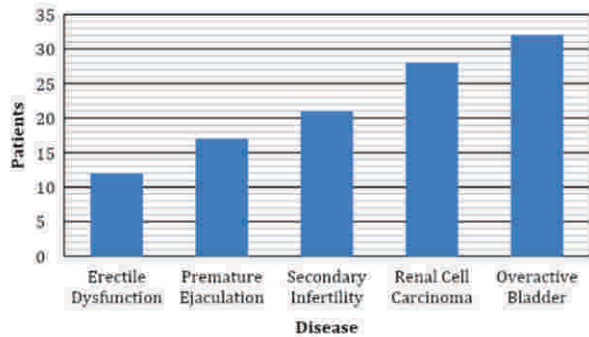
Stress Incontinence was the most common type of incontinence that presented in our studied



urinary incontinence. When it comes to disease of stones the most common location observed were the ureters (ureterolithiasis).

While comparing the data of the infectious

Least Common Disease

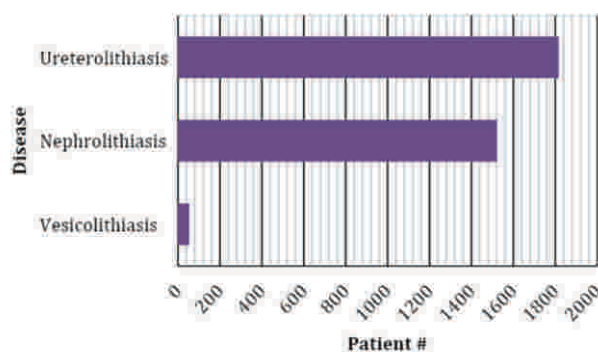


category, urinary tract infections lead the pack.

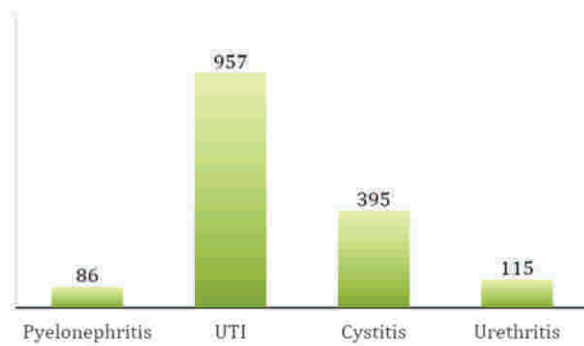
The most common malignancy present in our collected analysis turned out to be prostate carcinoma, followed by transitional cell carcinoma of the bladder and renal cell carcinoma respectively.

When it came to the lower urinary tract

Disease of Stones



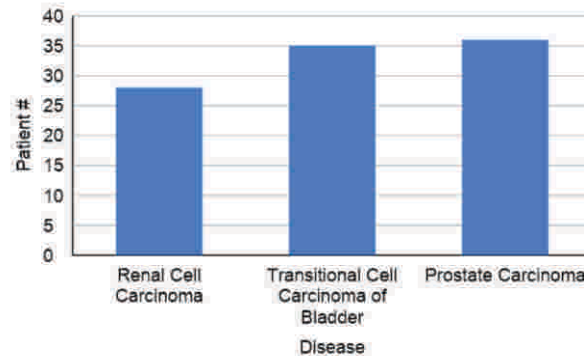
Infectious Disease



population.

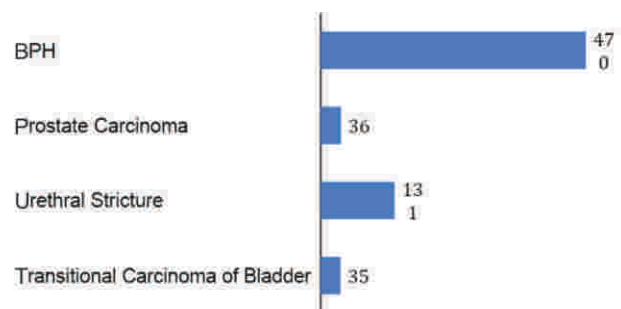
The overall results gathered and portrayed in this section introduce a condensed picture of the common symptoms and diseases that have been seen

Most Common Tumors



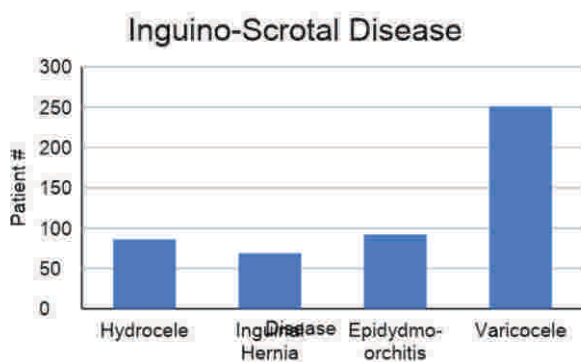
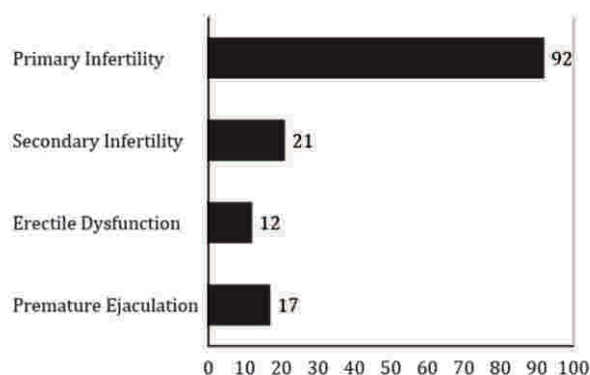
in the urology department at Avicenna medical college and hospital.

Most Common LUTS disease

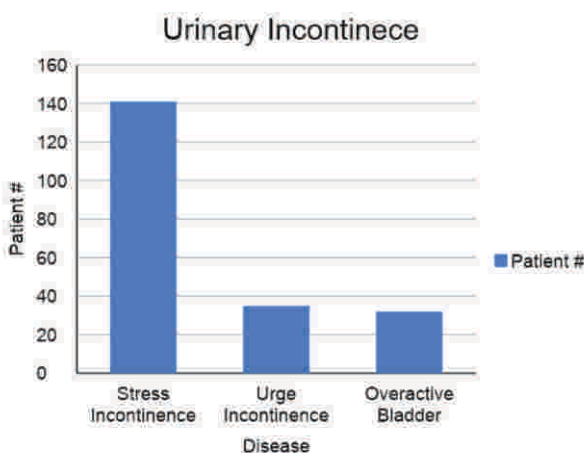


DISCUSSION

Although multiple diseases and symptoms are present in the Urology subspecialty, through this



study we have come to the decision that ureterolithiasis has the largest prevalence in the area surrounding Avicenna Hospital. Among the symptoms,



lumbar pain in general was the leader. The reason for this study was to establish a preliminary understanding of prevalence of symptoms and disease in our surrounding area. We have accomplished the answer

to this question by observing the trend of the patients presenting into our outpatient department. By way of this information we can better prepare ourselves to efficiently tackle and improve treatment for the most prevalent diseases. Which in turn will help improve patient care in our department. Our result of ureterolithiasis being the most prevalent disease in our studied population also correlates to a specific study performed in South East Asia.⁷ BPH resulting in the most common disease of lower urinary tract symptoms also correlates with a similar study performed in the Asian subcontinent.⁸ The rate of response for our study was comparable to similar population-based studies.⁹ Recall bias is inevitable due to the study being based upon the patients self-relayed history. The reporting of urological symptoms in all age populations varied considerably, the limitation of collection of symptoms from patients could be improved based on improved doctor-patient relations.¹⁰ This study can in turn lead to multiple statistical researches in order to grasp the real prevalence for the whole city of Lahore.

CONCLUSION

In this study we have concluded that lumbar pain is the symptom that was most commonly presented in our OPD. Along with ureterolithiasis being the disease with the highest prevalence. By way of this analysis our department has had the opportunity to effectively localize and categorize symptoms and diseases in the area surrounding our hospital. Through this information we can update our hospital with equipment, facilities, and further our education to adequately diagnose, prevent, and treat our patients. By performing this analysis in major hospitals all over the country we can advance our knowledge and develop countless ways to educate our general population and establish ample prevention techniques and treatment. This can also lead to further research in each individual disease, which can result in an overall improvement in our health sector.

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**“You don’t have to
struggle in silence**

You can be **un-silent**. You can live well with a mental health condition, as long as you open up to somebody about it.”

SUPINE PERCUTANEOUS NEPHROLITHOTOMY: AN EFFECTIVE APPROACH FOR PATIENTS OF RENAL CALCULUS

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Abstract

Background: Supine percutaneous nephrolithotomy (PCNL) has become increasingly widespread during the last two decades. The aim of this study was to establish that the supine PCNL is an effective approach in the management of renal calculi.

Method: It is an observational study of case series. The serial patients coming in Urology Out Patient Department from 1st January 2017 to 31st December 2019 were included in the study. All these patients were suffering from renal calculi with collective stone size more than 2.5 cm and surgery was indicated. All patients were operated under general anesthesia and in supine position. During the procedure anesthesia time, per operative bleeding, total time of procedure, nephrostomy tube and ureteric stenting was noted. The peroperative bleeding was calculated by Clavien grading system. Total time for hospital stay in days and residual stone noted. All information collected was entered in a Performa.

Results: Total 250 patients were included in the study. Among these 160 were male and 90 were female patients. The average anesthesia time was 137.96 minutes, the average surgery time was 93.33 minutes, per-operative bleeding (grade 2) was present in 8 patients, 9 patient required a nephrostomy tube while 5 required ureteric stent, average hospital stay was 2 days while 38 patients had residual stones.

Conclusion: Supine PCNL is a safe and effective procedure and can be carried out in all kind of stones and patients.

Key Words: Kidney calculi, Percutaneous nephrolithotomy, Supine position, Surgical outcome

Staghorn and multiple renal calculi, especially bilateral, represent one of the most challenging issues presenting to a Urologist. These patients are prone to functional deterioration of the affected kidney, recurrent infections along with prolonged hospital stay and multiple endourologic interventions. Percutaneous nephrolithotomy (PCNL) is the treatment of choice in such patients.^{1,2}

PCNL was first reported in 1976 and ever since then it has been established as a procedure routinely performed in the prone position.^{3,4,5} This position was selected based on the anatomy of the kidney which is located retroperitoneally on the posterior abdominal wall. Easy access to the posterior calyces situated on the avascular Brodel line, decreased risks of perforation of other viscera along the path and the

large surface area for puncture favored a prone position.⁸ Prone PCNL gained wide popularity and replaced open surgery for renal stones, emerging as the standard operation and exclusive position for 2 decades.

On the other hand, with the passage of time, several inconveniences due to prone position of the patient have been encountered. For the surgeons, the surgery starts with the lithotomy position and later changed to the prone position which is time consuming and strenuous for the para-medical staff as well. Patients suffer from an increased ventilation pressure while the surgeon faces ergonomic inconveniences. Moreover, the anesthesiologists are concerned regarding safety of the patients while providing ventilatory access to the patient as well as

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monitoring the airways during the procedure. Eventually such drawbacks led surgeons to search for solutions for a more optimal patient position.⁸

Later in 1987, Valdivia et al. described the supine position for performing PCNL.⁹ This reduced patient-, anesthesia- and surgery-related difficulties of the prone position. Supine PCNL allows the entire surgery to be carried out in a single position, easier patient ventilation, avoidance of undue positional injuries, convenience to the anesthesiologist to access the patient and a comfortable environment for the urologist (who can sit while operating).^{10,11,12}

Despite these merits, supine PCNL still remains modest among urologists worldwide and urologist are still hesitant in opting supine position as a standard position for PCNL.^{10,12} This is largely due to a conservative viewpoint of majority of the treating physicians and by the traditional consensus that prone PCNL is the best and only treatment of a large and complex stone.^{11,12} This theory of preferring PCNL in prone position was challenged in a recent study which showed effective surveillance of the renal collecting system endoscopically by approaching a lower calyx in supine PCNL.¹³

This study demonstrate that supine PCNL is a safe and effective approach to all calyces and has excellent result in terms of stone clearance and least intra-operative and post-operative complications favoring not only the patient and surgeon but also the anesthetist.

METHODOLOGY

It is an observational study of case series. The serial patients coming in Urology Out Patient Department from 1st January 2017 to 31st December 2019 were included in the study. All these patients were suffering from renal calculi with collective stone size more than 2.5 cm and surgery was indicated. The patients with secondary stones and who did not gave consent for the procedure or were unfit for surgery were not included in the study. An informed consent was taken from the patient before the procedure. All patients were operated under

general anesthesia and in supine position. During the procedure anesthesia time, per operative bleeding, total time of procedure, nephrostomy tube and ureteric stenting was noted. The peroperative bleeding was calculated by Clavien grading system. Total time for hospital stay in days and residual stone noted. A Performa was designed which consist of two parts. First part consist of demographic data while second part contain the information regarding different variables. All information collected was entered in this Performa and presented for statistical analysis. All the data collected was entered in SPSS version 20. The frequencies of each variable was calculated.

RESULTS

Total 250 patients were included in the study. Among these 160 were male and 90 were female patients. The average age of these patients was 36.6 + 4.6 years (Range = 20 - 58 years). Regarding the side 120 patients had Right renal calculi while 130 patients had Left renal calculi. The average size of renal calculi was 31.5 + 4.2 mm (Range = 25 - 52 mm). Out of these 250 patients 112 (44.8%) has Staghorn Calculus while 70 (28%) have recurrent stone with history of previous Pyelolithotomy of the same side. All other variables are shown in the table.

DISCUSSION

PCNL was first introduced into the spectrum of endourology about 40 years ago.⁹ All urologists who put forward the operative technique of PCNL were in consensus that the procedure should be done in the prone position.^{1,4,5,9} In our study all the variables which can make a procedure safe and effective were within an acceptable limits. In a study standard supine PCNL was compared with prone position in 80 patients and outcome showed that supine PCNL is efficiently performed when the flank is positioned near the edge of operating table.¹⁴ They concluded that supine PCNL has numerous advantages, the most important being performing the surgery in a single position.¹⁴ In another study comparative

analysis was done which showed that despite the fact that there was minimal difference between the positions in terms of success rate, complication, trans-

Table 1: Different Variables and their Values

Variable	Result
Anesthesia time (min)	137.96 ± 12.2 (Range 110 - 165)
Operative time (min)	93.33 ± 8.4 (Range 56 - 122)
Per-Operative Bleeding (Grade 2)	8 (3.2%)
Nephrostomy tube	9 (3.7%)
Ureteric Stent	5 (2.1%)
Hospital stay (days)	2 ± 1 (Range 1-4)
Residual Stone	38 (15.2%)

fusion and fever, the mean operative time in supine PCNL was significantly shorter than the prone position. They concluded that supine PCNL is as effective and safe as PCNL in the prone position.¹⁵ Another study conducted in 2010 evaluated the safety and efficacy in supine PCNL in 20 patients. They concluded that the subcostal approach with the lung inflation was possible in the supine position which led the surgeon to avoid supracostal puncture.¹⁶

The results of our study show that renal stones of all sizes and all locations can be dealt with supine PCNL with modest success. The dilated pelvicalyceal system offers more difficulty in searching the fragmented pieces of stone for removal which caused a higher residual stone burden. Radiolucent stones were not visible on fluoroscope so fluoroscopic guidance during lithotripsy and clearance was limited to direct endoscopic vision alone. In cases of difficulty in puncture, ultrasound guidance was used. In some cases, to precisely access the stone, the middle calyx had to be punctured but it was safe. Another significant advantage we found in our study was that most of the stone fragments could be evacuated under gravity assistance by jets of saline injection through the Amplatz sheath.

We did not find obesity to be a limitation for performing supine PCNL and the anesthesiologists were comfortably managing the patients at all times. It was convenient to the surgeon to perform endoscopy and intra-corporeal lithotripsy in supine PCNL

as the surgeon could easily carry out procedures while sitting. In our study, almost all cases were carried out without the placement of a nephrostomy tube and a few cases did not even require a double J stent to be placed. Only a single case required placement of a nephrostomy tube which was removed on the very next day.

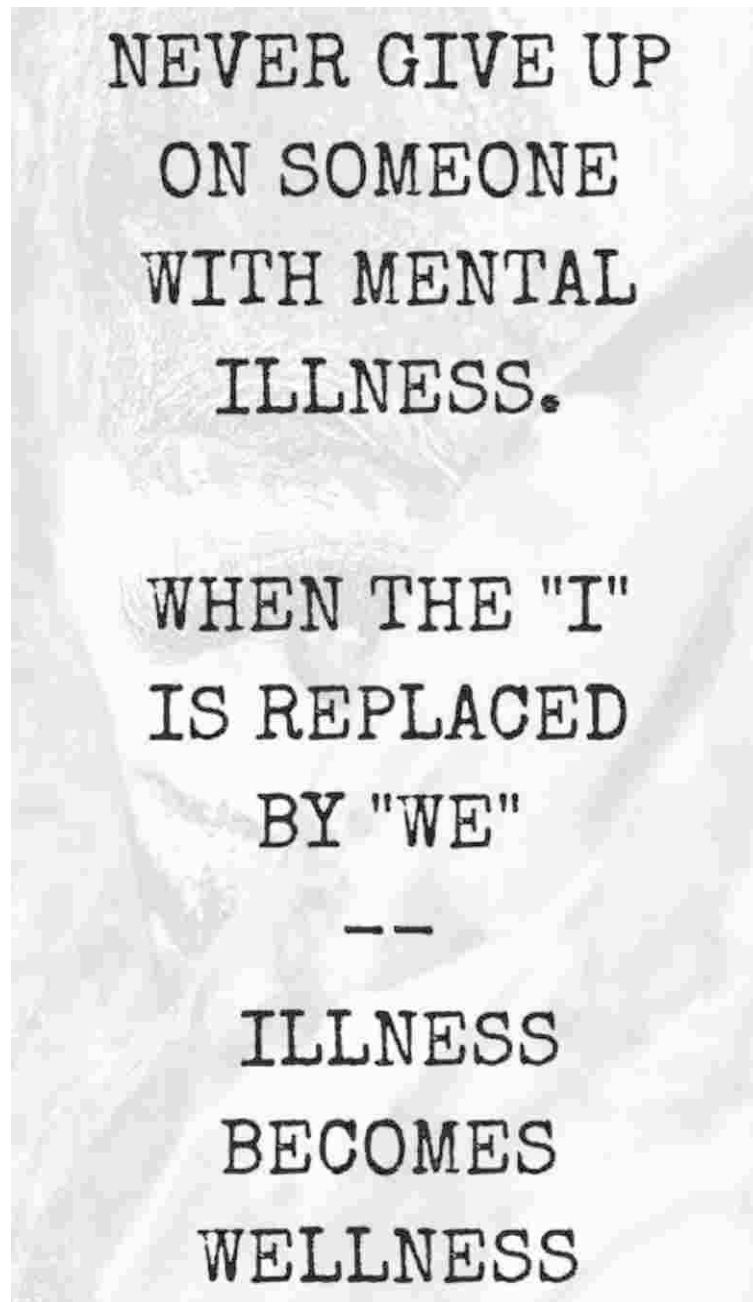
CONCLUSION

Our study showed that supine PCNL is an effective and safe procedure for excellent clearance of renal stones of all sizes and all locations.

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URINARY TRACT INFECTIONS: BACTERIOLOGICAL PROFILE AND ITS ANTIMICROBIAL SUSCEPTIBILITY PROFILE FROM A TERTIARY CARE HOSPITAL OF LAHORE.

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Abstract

Urinary tract infection (UTI) is one of the most common bacterial illnesses and hence one of the most important indications for antibiotic treatment. Current knowledge of the common organisms implicated in causing UTI in the local community and surveillance to monitor the changes in susceptibility of uropathogens are imperative to ensure appropriate therapy. The study objectives were to assess the proportion of UTI caused by each of the common urinary pathogens, to study the antibiotic drug sensitivity patterns by analyzing the culture and sensitivity reports and to identify the drugs which would be potentially favorable candidates for empirical therapy in the study locale. A total of 405 culture positive bacterial isolates from 1562 urine samples; submitted over a period of 6 months from 1st May 2019 to 31 October 2019 were included in this study. Identification of bacterial isolates was done by standard biochemical profile of the organisms. The antimicrobial susceptibility of culture positive bacterial isolates was performed by modified Kirby beaur disk diffusion method as recommended by Clinical Laboratory Standard Institute guidelines (CLSI 2019). *Klebsiella pneumoniae* was the predominant organism (36%) followed by *E.coli*(34%), *Enterococcus spp.* (9%),*Pseudomonas aeurogenosa* (8%), *Staphylovoccus seprophyticus* (5%), *Proteus mirabilis* (3%), *Acinetobacter spp* (3%), *Enterobacter spp.* (1%) and *Streptococcus spp.* (1%). Majority of the gram negative isolates were sensitive to polymyxim and imipenem while gram positive were sensitive to vancomycin, teicoplanin and linezolid. In conclusion majority of the bacterial isolates were sensitive to imipenem, meropenem, and piperacillin/tazobactam while susceptibility to cephalosporins was very low. Among the oral antimicrobials, nitrofurantoin showed good susceptibility against Enterobacteriaceae

Key words: Urinary tract infections, Polymyxin, antibiotic resistance

Urinary tract infections are the second most common cause of morbidity and mortality worldwide¹. It affects all age groups but females are affected more due to the anatomy of their genital tract.² The proliferation rate of UTI is almost equal in either hospital settings or community acquired but they differ in their antibiotic sensitivity patterns. Hospital acquired UTIs can be a serious threat especially for immunocompromised patients.³ It is esti-

mated that 20% or more of the female population suffers some form of UTI in their lifetime. Infection in the male population remains uncommon through the fifth decade of life, when enlargement of the prostate begins to interfere with emptying of the bladder.⁴ Persons suffering from UTI show various symptoms like fever, nausea, vomiting, burning during urination, dysuria, pelvic pain in women and rectal pain in male.^{4,5}

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Urinary tract infections are becoming more challenging day by day because of the inappropriate diagnosis or increasing antibiotic resistance pattern among organisms^{6,7}. Both gram positive and gram negative bacteria are involved in urinary tract infections. The most common pathogens of UTI are *E.coli*⁸ and *Klebsiella pneumoniae* followed by *Enterococcus* spp., *Pseudomonas aeruginosa*, *Staphylococcus* spp., *Acinetobacter* spp., *Proteus mirabilis* and *enterobacter* spp.⁸

Area specific self-monitored studies with their organisms and antibiotic susceptibility profiles can be helpful for the clinician in starting the prophylactic treatment of patients prior to the availability of their laboratory results. Ampicillin, Ciprofloxacin and nitrofurantoin are the most common drugs that are used orally in treatment of UTI.⁹

The eclectic use of antibiotics has resulted in selective pressure on bacterial population with emergence of resistant mutants. Extended Spectrum Beta-Lactamase (ESBL), Metallo Beta-Lactamase (MBL) and Amp-C mediated beta-lactamases are some of the enzymes produced by Enterobacteriaceae and other non-lactose fermenters causing UTIs.¹⁰ In addition to cephalosporins, the uropathogens are also exhibiting increasing resistance to antibiotics like cotrimoxazole, quinolones and nitrofurantoin. The wide array of resistance mechanism has threatened the empirical use of quinolones and cephalosporins. The therapeutic options to treat UTIs caused by multidrug resistant bacteria have forced the clinicians to resort to carbapenems, colistin and fosfomycin.^{11,12}

In patients with suspected UTI, antibiotic treatment is usually started empirically, before urine culture results are available. To ensure appropriate treatment, knowledge of the organisms that cause UTI and their antibiotic susceptibility is mandatory.⁸

Hence this study was undertaken to determine the common pathogens responsible for UTI and their antibiotic sensitivity pattern.

METHODOLOGY

This laboratory-based study was carried out in the Microbiology section, pathology department of Allama iqbal medical college Lahore. Non-probability consecutive sampling was done. All culture positive urinary specimens from patients reporting at tertiary care hospital from May to October 2019 were included in this study.

Mid-stream urine samples were collected using sterile, wide mouthed container with screw cap tops. The samples were subjected to microscopy and culture.

The urine samples were mixed and aliquots centrifuged at 5000 rpm for 5 min. The deposits were examined using both 10X and 40X objectives. A volume of the urine samples was applied to a glass microscope slide, allowed to air dry, stained with gram stain, and examined microscopically.

A calibrated sterile micron wire loop for the semi-quantitative method (MAST Bacteruritest) was used for the plating and it has a 4.0 mm diameter designed to deliver 0.01 ml. A loopful of the well mixed urine sample was inoculated into duplicate plates of Blood and CLED agar. All plates were then incubated at 37°C aerobically for 24 h. The plates were then examined for bacterial growth. Identification of the microorganisms was done through Gram staining, biochemical tests and serology. Analytical profile index API-20E (Biomérieux, France) was used to identify Enterobacteriaceae family and associated organisms according to manufacturer's directions. The bacterial colonies were counted and multiplied by 100 to give an estimate of the number of bacteria present per milliliter of urine. A significant bacterial count was taken as any count equal to or in excess of 10⁵ cfu/ml.⁹

Antibacterial susceptibility of the isolates was done using modified Kirby-Bauer disk diffusion method following CLSI protocols. Commercially available standard antibiotic discs (Oxoid UK) were used. The zones of inhibition were measured and recorded according to the CLSI 2019 guidelines. The

isolates were tested for Ampicillin (AMP) (10 µg), Cefazolin (CZ) (30 µg), Cefuroxime (CXM) (30 µg), Ceftriaxone (CTR) (30 µg), Cefepime (CPM) (30 µg), Nitrofurantoin (NIT) (300 µg), Amoxicillin-Clavulanic acid (AMC) (10/20 µg), Co-trimoxazole (COT) (1.25/23.75 µg), Ciprofloxacin (CIP) (5 µg), Gentamicin (G) (10 µg), Amikacin (AK) (30 µg), Tobramycin (TOB) (10 µg), Piperacillin-Tazobac-



tam (PIT) (100/10 µg) and Imipenem (I) (10 µg), Meropenem (MR) (10 µg) Antibacterial susceptibility of the isolates was done using Kirby-Bauer disk diffusion method following CLSI protocol.

RESULTS

Out of 1562 urine samples 405 were culture positive. 274 (18%) of them showed bacterial growth

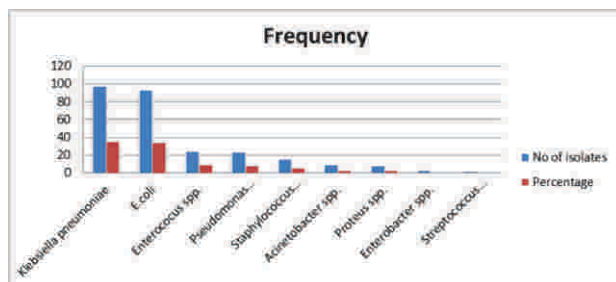


Table 1: Antibiotic Susceptibility Pattern of Gram Negative Organisms

Antibiotics	E.coli n=93	P.aeru- ginosa n=23	Pro- teus spp. n=8	Acineto- bacter spp. n=9	Kleb- siella spp. n=97
Poly(Polymyxin B)	0%	0%	-	0%	0%
Fos (Fosfomycin)	35%	-	34%	100%	40%
Amp (Ampicillin)	97%	-	100%	-	90%
Aug (Augmentin)	100%	-	100%	-	90%
TZP (tazobactam/ Piperacillin)	65%	30%	-	100%	65%
Cef (Cefotaxim)	80%	-	64%	-	95%
CTR (Ceftriaxon)	80%	-	80%	100%	95%
CPR (ciprofloxacin)	85%	87%	100%	50%	90%
Imi (imipenem)	45%	69%	16%	50%	55%
Mero (meropenem)	35%	-	-	75%	50%
Gen (Gentamycin)	30%	88%	40%	50%	70%
Nitro(Nitrofurantoin)	20%	70%	-	100%	50%
Amk (Amikacin)	-	-	-	-	25%
CAZ (Ceftazidime)	-	90%	-	50%	-

Table 2: Antibiotic Susceptibility Pattern Of Gram Positive organisms

Antibiotics	Staph spp. n=15	Enterococcus spp. n=24
Amp(Ampicillin)	-	73%
Aug(Augmentin)	45%	50%
Imi(imioenem)	-	62%
Van(vancomycin)	0%	5%
Teic(teicoplanin)	0%	5%
Nitro(Nitrofurantoin)	50%	29%
LNZ(Linezolid)	0%	5%
CPR(Ciprofloxacin)	100%	80%
Fos(Fosfomycin)	14%	70%
Pen(penicillin)	100%	20%
CXT(Cefoxitin)	45%	-
Gen(Gentamycin)	56%	-
COT(cotrimoxazole)	63%	-
Gentamicin	56%	-

and 131(8%) were identified as Candida species. Predominant organism was Klebsiella Pneumoniae 97(35%), E. coli 93(34%), Pseudomonas aeruginosa 23(8%), Acinetobacter beumini 9(3%), Proteus spp 8(3%) and Enterobacter spp 3(1%).

DISCUSSION

Bacterial infections of the urinary tract are one of the frequent cause for seeking medical attention in community.¹¹ Effective management of patients suffering from bacterial UTIs commonly relies on the identification of the bacterial isolate and the selection of an effective antibiotic agent used for the treatment of bacterial organisms in question.¹² Antimicrobial resistance is a serious public health threat. Treatment failure is caused by resistance developed by different bacterial pathogens against commonly used antimicrobials. In community and hospital settings the etiology of UTIs and the antimicrobial susceptibility of UTI causing bacteria's have been changing over the years.^{13,14}

UTI is the most common bacterial infection and second common cause of morbidity and mortality in all age groups. In a study from Pakistan Institute of Medical Science, out of 1363 urine samples 289 were found positive for UTI.¹⁵ Similar findings were observed in a study from Agha Khan University Hospital, Pakistan, where out of 9892 urine samples

37% were culture positive.¹⁶ The most common urinary tract bacteria was found to be *E. coli*, a frequent causative agent of UTIs. A similar study conducted at Department of Microbiology, Armed Forces Institute of Pathology, Rawalpindi in 2010 and at Mayo Hospital, Lahore in 2013 revealed *E. coli* as the most common bacteria accounting for 63% and 80% of the total culture positive isolates.^{15,16} A similar study conducted in Peshawar, Khyber Pakhtunkhwa Pakistan has revealed similar results showing *E. coli* (77%) as the predominant uropathogen.¹⁷ The frequency of *E. coli* as the causative agent of UTIs was found to be 80 - 90 % in two similar studies carried out in Canada and Ethiopia in the recent years.^{18,19}

Klebsiella pneumoniae is the predominant urinary pathogen followed by *Escherichia coli* (*E. coli*) in our study. Our results are similar to that were reported by Patel., et al. in Jamnagar, Gujrat and of Savitha., et al. India who had also found *E. coli* and *K. pneumoniae* as one of the most common uropathogen.¹⁷ They reported *E. coli* causing UTI in 53.38% and 48.04% and *Klebsiella* spp in 18.98% and 8.82% of the isolates respectively. Yadav., et al. have reported *E. coli* (61%), followed by *S. aureus* (12%), *CONS* (7%), *Enterococcus* (5%), *K. pneumoniae* (5%), *Candida* spp. (3%), *Proteus* spp. (2%) and others (6%)¹⁸. In our study *K. pneumoniae* was predominant (36%), followed by *E. coli* (34%), *Enterococcus* spp. (9%), *Pseudomonas aeruginosa* (8%), *Staphylococcus saprophyticus* (5%), *Proteus mirabilis* (3%), *Acinetobacter* spp. (3%), *Enterobacter* (1%) and *Streptococcus* spp. (1%).

In this study, 65% of *E. coli* isolates were susceptible to imipenem, the result being consistent with similar study carried out at AFIP, two years ago and the study conducted in Peshawar.^{15,17} These results are contrary to earlier studies carried out in India where 96% of *E. coli* isolates were susceptible to imipenem.²⁴ The results of this study are contrary to a similar study conducted recently in Lahore, Pakistan, where *E. coli* showed 44% resistance to carbapenems.¹⁶

In this study, the susceptibility of *E. coli* to Nitrofurantoin was 80 % compared to 94% and 92% in a study done in London and India.²⁵ Nitrofurantoin is effective against many Gram positive and Gram negative urinary isolates and activity of this antimicrobial is greatly enhanced at pH 5.5 and below. It is a cheap antimicrobial and can be given orally for months for the suppression of chronic UTIs. It shows that Nitrofurantoin is still effective against majority of the urinary isolates and can be used prophylactically for recurrent urinary tract infections.²³

Most of the organisms showed resistance to Ampicillin, Augmentin and Ciprofloxacin in our study. It could be attributed to empirical use of these antibiotics to treat common infections including pneumonias in ischaemic patients beside preoperative and postoperative prophylactic use of these antibiotics in our hospital. Similar findings have been observed by Nozarian S., et al. and Keah SH., et al.^{21,22} Resistance to Ampicillin (50.1%) and Cotrimoxazole (22.1%) was observed in patients with complicated UTI and acute pyelonephritis in a study from United States.²³

Enterococcus spp. is most prevalent in UTI causing bacteria after *E. coli* and *Klebsiella* spp. The antibiogram of enterococcal isolates showed that all isolates were susceptible to vancomycin, teicoplanin and linezolid. The antimicrobial susceptibility of the enterococcal isolates against amoxicillin/clavulanic acid and ciprofloxacin was quite low.²⁴ However there is 5% resistance of organism towards vancomycin, teicoplanin and linezolid in this study. These results are slightly different from the study carried out in Armed forces institute of pathology in 2012. In *Staphylococcus* spp. zero resistance observed against vancomycin, teicoplanin and linezolid.

The antimicrobial susceptibility of *Acinetobacter* spp. causing UTI's in the studied population revealed its high degree resistance towards almost all the routinely used antibiotics necessitating its susceptibility testing for newer drugs. All the uropathogens showed high degree of resistance to trimethoprim/ sulphamethoxazole. This is possibly due to the opportunistic nature of the organism and its versatility in causing nosocomial infections in hospitalized patients especially those fitted with catheters.

Carbapenems, Amikacin, Ceftazidime and antipseudomonal penicillin such as Piperacillin are the recommended antibiotics to treat UTIs caused by *P. aeruginosa*. The antimicrobial susceptibility profile of *Pseudomonas aeruginosa* in this study revealed that a good percentage of the isolates were sensitive to Polymyxin, Tazobactam/ piperacillin, Nitrofurantoin.

toin and Imipenem. These results are slightly contrary to earlier study carried out at Armed forces institute of pathology (2010), when 86% of the isolates were sensitive to ceftazidime and imipenem followed by antipseudomonal penicillins (76%).²⁵ This is a worrying trend with this indication that *P. aeruginosa* is gradually developing resistance against carbapenems and antipseudomonal third generation cephalosporins. The results of this study will benefit clinicians to know the local pattern of antimicrobial susceptibilities and formulate the empirical antibiotic strategies in patients presenting with UTIs.

CONCLUSIONS

Majority of the isolates were sensitive to Polymyxin B, imipenem. As far as the oral antibiotics are concerned, nitrofurantoin revealed encouraging results proving to be the only effective oral antibiotic in this study. As drug resistance among bacterial pathogens is an developing process, routine surveillance and monitoring studies should be conducted in different parts of the country to provide physicians, an effective knowledge regarding the empirical treatment of UTIs in that particular area.

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TRENDS IN TRANSFUSION TRANSMISSIBLE INFECTIONS: A TERTIARY CARE HOSPITAL EXPERIENCE

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Abstract

Objective: Present study was planned to evaluate the trends of TTIs among blood donors community attending blood bank Lahore General Hospital, Lahore

Methods: This cross sectional retrospective type study was conducted at blood bank bank Lahore General Hospital, Lahore, a total of 14985 blood donors were enrolled, every donor was processed for the screening of TTIs (HBV, HCV, HIV, TP, Malaria), demographic and socioeconomic factors were noted,

Statistical Analysis: Data was analyzed through SPSS 21.0

Results: Of total 14985 blood donors male and females were 99.9% and 0.06% respectively, mean age was 43+10 years, prevalence of TTIs was 7.4%, year wise increasing trends were observed for blood donation, for TTIs trends were 7.3%, 7.7% and 7.1 respectively in 2015-17, co-infectivity rate was 0.6%, , most prevalent co-infections was HBV+HCV, HCV was noticed as most prevalent TTI 3.9% followed by HBV 1.8% TP 1.1% , MP 0.5% and HIV 0% . Year wise Sero-pravelence of HBV was 1.8%, 2.3% and 2.1%, HCV 4.2%, 4.1% and 3.3%, syphilis 1.0%, 1.0% and 1.2%, malaria 0.2%, 0.6% and 0.7% respectively in 2015-17, while not a single case of HIV detected during study period. Maximum frequency of blood donations 55.8% were found in 16-35 year adults, while maximum frequency of TTIs 25.2% was observed in >45 years age group, similarly maximum blood donations as well as maximum TTIs were observed among male blood donors, very high frequency of blood donation were found among students 46.0%, followed by farmers 25.2%, while high rate of TTIs was seen in farmers followed by businessman. Replacement and volunteer blood donation was 99.8% and 0.1% respectively,

Conclusion: We concluded high Seroprevalence (1111 out of 14985, 7.4 %) of TTIs, low percentage of voluntary donors and low participation of female donors. Promoting the culture of voluntary donors, recruitment of female blood donors and proper testing of donor's blood by using standard methods are recommended.

Keywords: Transfusion transmissible infections, HCV, HBV, HIV, Malaria, Syphilis

Blood is transfused for life saving determinations; every second, millions of lives are dependent on blood or its component therapies. Although blood transfusion is well-known and essential medical practice. However it is not risk free therapy and carries hazardous penalties. Every unit of blood or its components transfusion is

spring of risk transmitting any TTI to the recipient.¹ Unsafe transfusions can result in hazardous consequences therefore TTI are main problems linked with blood transfusion especially in developing countries. The extent of this issue is straight associated with the prevalence of burden of TTI among blood donor community of any society.² According

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to sub-Saharan Africa study, after blood transfusion almost 5-12% of patients are at risk of post transfusion HIV and hepatitis related infections.³ Therefore WHO major concern and top most concern is prevention and control of TTI.

At present TTI is a significant threat to global blood safety, producing grave concerns in numerous developing republics. In chase of global blood safety, WHO endorses that every blood donation must be screened and free from TTI.⁴ Burden of TTI is drastically decreased in developed countries but still on the rise in developing continents, this alarming rise is may credited to poor awareness among general community about prevention and treatment of infectious disease. Therefore the median rate of TTI in blood donors community of middle and low income countries is higher than tall income countries⁽⁵⁾. Blood safety leftovers as serious issue in developing countries. Although screening of blood donors for infectious disease like HBV, HCV, MP, Syphilis and HIV is part of routine practices in every public and private sector, however, Transfusion based transmission of these diseases still occurs.^{6,7}

HBV can progress to chronic hepatitis, chronic liver disease (CLD) and hepatocellular carcinoma (HCC). Globally every year almost one million death attributed to chronic HBV Infections.⁸ HCV is most common asymptomatic infectious disease among blood donors community of Pakistan. according to World Health Organisation almost 200 Million individuals were infected with HCV 2 billion people infected with HBV, and 33.4 million with HIV in 2013.⁹ HIV still present as warrior retrovirus, HIV infected individuals become immunocompromised because it infects and destroy CD4 helper T Cells, resulting in the loss of cell mediated immunity. Similarly Syphilis a *Treponema pallidum* associated sexual transmissible disease, now the days it working as replacement for HIV, infected individuals present with lesions of skin and mucous membrane of genitalia, mouth and rectum.

Evaluation of TTIs burden is the simple and best way to make policies and to now the burden of

infectious disease like HBV HCV malaria HIV and syphilis etc among the community, therefore study was planned to evaluate the trends of TTIs among blood donors community of a tertiary care hospital

METHODOLOGY

The study protocols were approved from ethical and research committee of the institute. Replacement and voluntary blood donors attending blood bank Lahore General Hospital, Lahore were enrolled, before proceeding for blood donation, every blood donor was verified for eligibility according to standard blood donation criteria, A donor was accepted for blood donation if he/she was, 18 and 55 years old, body weight >50 kg and >45 in male and female respectively, physically and mentally fit. Already known positive donors were excluded. About 3-5 ml blood sample was collected by using standard venipuncture technique. Every sample was processed for HbsAg, Anti HCV, Malaria ICT, *Treponema pallidum* antibodies and anti HIV by using immune-chromatographic technique. Demographic details were recorded on pre designed questionnaire, Both genders were included.

RESULTS

Of total 14985 blood donors male and females were 99.9% and 0.06% respectively, mean age was 43+10 years, prevalence of TTIs was 7.4%, year wise increasing trends were observed for blood donation, for TTIs trends were 7.3%, 7.7% and 7.1 respectively in 2015-17, co-infectivity rate was 0.6%, most prevalent co-infections was HBV+HCV, HCV was noticed as most prevalent TTI 3.9% followed by HBV 1.8% TP 1.1%, MP 0.5% and HIV 0% . Year wise Sero-pravelence of HBV was 1.8%, 2.3% and 2.1%, HCV 4.2%, 4.1% and 3.3%, syphilis 1.0%, 1.0% and 1.2%, malaria 0.2%, 0.6% and 0.7% respectively in 2015-17, while not a single case of HIV detected in three years. Maximum frequency of blood donations 55.8% were found in 16-35 year adults, while maximum frequency of TTIs 25.2% was observed in >45 years age group, similarly

maximum blood donations as well as maximum TTIs were observed among male blood donors, young generation is donating blood, very high frequency of blood donation were found among students 46.0%, followed by farmers 25.2%, while high rate of TTIs was seen in farmers followed by businessman. Unfortunately very low volunteer blood donation rate is observed, replacement and volunteer blood donation was 99.8% and 0.1% respectively.

DISCUSSION

Literature showed that annual blood donation is 81 million units around the globe. Unfortunately 18 million of them are not screened as per standard guidelines and become source of transmission of various infectious diseases. If we talk about Pakistan about 03 million transfusions reported each year. Studies suggested that every single unit of blood has 1% chance of transmission of transfusion associated infections. WHO clearly mentioned that safe blood

Table 1: Distribution of TTIs by Socio Demographic Factors at Blood Bank Lahore General Hospital, Lahore from 2015-2017 (n=14985)

Socio demographic variables	Total tested	HBV	HCV	HIV	TP	Malaria	Total infected
16-35	8365	55	95	0	25	50	225
36-45	4520	85	150	0	110	11	356
>45	2100	130	341	0	35	24	530
Total	14985	270	586	0	170	85	1111
Statistical significance		p=0.78	p=0.58		p=0.48	p=0.18	p=0.49
Male	14985	269	585	0	170	85	1109
Female	10	1	1	0	0	0	2
Total	14985	270	586	0	170	85	1111
Statistical significance		P=0.01	P=0.08		P=0.00	P=0.00	P=0.000

Table 2: Distribution of TTIs by Occupation at Blood Bank Lahore General Hospital, Lahore from 2015-2017 (n=14985)

Occupation	Total tested	HBV	HCV	HIV	TP	Malaria	Total Infected
Student	6895	45	111	0	3	31	190
Government employ	1138	25	79	0	10	5	119
Non-government employ	1321	41	120	0	19	3	183
Farmers	3785	85	141	0	45	30	301
Businessman	851	39	85	0	60	2	186
Others	995	35	50	0	33	14	132
Total	14985	270	586	0	170	85	1111
Statistical significance		P=0.78	P=0.58		P=0.48	P=0.18	P=0.49

Table 3: Blood Donation Type Wise Distribution of TTIs at Blood Bank Lahore General Hospital Lahore from 2015-2017 (n=14985)

Donation type	Total tested	HBV	HCV	HIV	TP	Malaria	Total Infected
Replacement	14966	267	582	0	169	85	1103
Volunteer	19	3	4	0	1	0	8
Total	14985	270	586	0	170	85	1111
Statistical significance		P=0.00	P=0.000		P=0.000	P=0.000	P=0.000

TRENDS IN TRANSFUSION TRANSMISSIBLE INFECTIONS: A TERTIARY CARE HOSPITAL EXPERIENCE

Table 4: Overall Month Wise Frequency Distribution of TTIs at Blood Bank Lahore General Hospital, Lahore from 2015-2017 (n=14985)

Years	Month	Blood Donors	HBV	HCV	HIV	Syphilis	Malaria	Total TTIs	P Value
2015	January	212	7	14	0	1	0	22	0.789
	February	254	4	20	0	12	0	36	0.682
	March	280	7	18	0	2	0	27	0.159
	April	335	4	14	0	2	4	24	0.365
	May	388	7	4	0	6	1	18	0.459
	Jun	327	6	12	0	1	1	20	0.255
	July	296	7	10	0	1	1	19	0.151
	August	374	6	18	0	1	1	26	0.245
	September	368	4	8	0	2	1	15	0.015
	October	485	12	16	0	3	0	31	0.250
	November	399	7	15	0	7	0	29	0.005
	December	467	7	27	0	6	0	40	0.015
Total		4185	78	176	0	45	9	308	0.005
2016	January	458	9	28	0	1	0	38	0.024
	February	416	6	15	0	5	0	26	0.012
	March	433	10	22	0	7	0	39	0.025
	April	472	11	19	0	6	11	47	0.325
	May	534	12	32	0	7	5	56	0.215
	Jun	389	3	19	0	8	2	32	0.158
	July	479	9	16	0	1	2	28	0.126
	August	468	6	16	0	0	0	25	0.259
	September	442	7	20	0	2	4	33	0.358
	October	470	6	11	0	6	2	25	0.322
	November	402	9	16	0	4	6	35	0.022
	December	444	12	13	0	9	3	37	0.010
Total		5407	100	227	0	56	35	418	0.258
2017	January	493	6	13	0	9	2	30	0.315
	February	428	9	16	0	5	5	35	0.369
	March	391	5	17	0	8	5	35	0.125
	April	422	10	8	0	2	7	27	0.050
	May	416	9	18	0	0	0	27	0.005
	Jun	433	8	12	0	6	2	28	0.015
	July	453	13	18	0	8	8	39	0.005
	August	457	4	16	0	0	0	20	0.002
	September	552	2	27	0	9	5	43	0.021
	October	456	8	15	0	3	3	29	0.102
	November	430	10	11	0	11	2	34	0.020
	December	462	8	12	0	8	2	30	0.025
Total		5393	92	183	0	69	41	385	0.378

is universal right and every blood bags shall must be screened for TTI as per standard guidelines, then why we are facing this critical issue, why burden of

these infectious diseases is not the decreasing in the state, still it is big question mark. We can say burden credited to multiple factors, over health care Practi-

ces and many more things.

At present facing multiple critical issue like terrorism, natural disaster and bomb blast are multiple scenarios for which we have to become prepared every time, we paid a lot many lives to eradicate terrorism, Constantly increasing demand of blood transfusion among thalassemia haemodialysis, haemophilia patients and in roadside accidents. Approximately 100,000 patients of thalassemia are dependent on blood transfusions and are at risk of developing TTI. This can limit their life expectancy. Many normal-looking individuals carry infectious agents of life threatening diseases. These carriers are a persistent threat to the community if donor or donated blood is not properly screened.

Burden of TTI among blood donors community contingent on the prevalence of these infection in general community therefore varies around the globe as well as with in the countries especially in Developing countries.^{10,11} Evaluation of TTI trends among blood donors is key process to get evidence for the assessment of efficiency of blood supply screening programs and may show deviations in disease prevalence in communities.

A similar study reported overall 2.6% (n=1769) of the donated blood had single infection and 0.07% (n=44) had multiple infection, the rate of HBV HCV, HIV, and syphilis infections was 0.87%, 0.86%, 0.31%, 0.70% respectively. Trend analysis of six years TTI burden showed significant upsurge from 2.44% to 3.71% ($\chi^2=100.72$, $p=0.00$). Positive rate was varied among demographic lines Age, education level and frequency of donation were the top three risk factors among test positive blood donors community. Lower education level and older age group were connected to upper level prevalence of TTIs while very low rate was observed among regular blood donors ($\chi^2=562.78$, $p=0.00$)(12)

Another study mentioned among 6471 donors 5311 were male and 382 were female blood donors. Overall single pathogen associated sero positivity was 6.5% (n=424) briefly 3.6% (n=233) were HBV Positive 2.2% (n=145) HIV Positive and 0.8% (n=

51) were HCV positive. Co-infection rate was 0.062% (n=4) of which 3 blood donors were HBV and HCV Co-infected and only one case was detected HIV, HBV and HCV three pathogen associated co-infected. Frequency of TTIs was high among employed and unemployed blood donors as compare to student blood donors.¹³

Of total 67123 blood bag secured over all TTIs positivity was 4.0% (n=2747) ($p=0.000005$) of which HBV Positivity was 3.5% (n=2360) ($p=0.000005$) HIV 0.13% (n=91) HCV 0.2% (n=161) VDRL 0.17% (n=114) and Malaria 0.03% (n=21).¹⁴

Another study reported that out of 1204 male blood donors 9.6% (n=115) were viral infectious. The sero-prevalence of HCV and HIV 3.4% (n=41) and 0.7% (n=8) respectively while rate of Hbs Ag very high 5.5% (n=66).¹⁵ Mohammad et al reported of total 4224 blood donors majority. Males formed the majority of donors were male 98.7% (n=4171). Furthermore 98% (n=4139) were replacement blood donors. Overall TTIs burden was 11.5% (n=487), of which HBsAg, HCV, HIV, & Syphilis was 10.9% (n= 460) 0.4% (n=17) 0.1% (n=6) and 0.1% (n=4) respectively.¹⁶

CONCLUSION

We concluded high Seroprevalence (1111 out of 14985, 7.4 %) of TTIs, low percentage of voluntary donors and low participation of female donors. Promoting the culture of voluntary donors, recruitment of female blood donors and proper testing of donor's blood by using standard methods are recommended.

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FREQUENCY OF OVARIAN TUMORS AT A TERTIARY CARE HOSPITAL IN LAHORE.

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Abstract

Introduction: The ovaries are an important part of the female reproductive system. They can be the home to various benign and malignant tumors.

Objective: To determine the frequency of benign and malignant ovarian tumors in various age groups and to determine the most frequent histological type in the ovarian specimens received at the pathology department of Akhtar Saeed Medical and Dental College, Lahore.

Methods: It was a retrospective study carried out at the histopathology department of Akhtar Saeed Medical and Dental College, Lahore. The ovarian biopsies of the female patients presenting in the histopathology department were included in this study. The duration of study was one year (2014-2015). These biopsies were routinely processed and slides were made. The slides were stained by standard Hematoxylin & Eosin staining and studied under the microscope. The classification of ovarian tumors was carried out according to WHO.

Results: The surface epithelial tumors were the most common (62%) followed by the germ cell tumors (21%). The frequency of benign tumors was 54.1% and that of malignant tumors was 45.9%.

Conclusion: The surface epithelial tumors were the most common followed by the germ cell tumors. The ovarian tumors are found in all age groups but the frequency of malignant tumors is more in older age group.

Key Words: Ovarian tumors, histopathology

The ovaries constitute an important organ of reproduction in the females.¹ There are various types of cells in the ovary from which various neoplastic and non-neoplastic lesions can arise. These lesions can be benign or malignant.² Even the benign tumors can be challenging when they fill the pelvis and present as pelvic masses³. Therefore, it is important to categorize these tumors for proper treatment.² The peak age of presentation of ovarian tumors is 50 to 60 years, however, the prognosis is better in patients less than 40 years of age⁴. PMRC Pakistan medical research council carried a multi-centre study regarding frequency of malignant ovarian tumors and found its incidence to be 3.37% in 19735. It has been reported to be the sixth most common female cancer and fourth leading cause of death in women.⁶

The ovarian malignancies constitute a major

health concern for females in our set up as well⁷. The SEER Surveillance Epidemiology and End Results calculations done in USA determined that 1 in 55 women have life time risk for ovarian cancer.⁸

The detection of ovarian malignancies occurs at an advanced stage. This is because the symptoms in early stage are vague and ignored by the women.⁸ In Asia and Japan, the detection rate of new cases is 2 to 6.5/100,000 women per year.⁷ The delay in diagnosis is due to ineffective screening tests. The precursor lesions are missed and can be detected only after removal of the ovary. Some risk factors include nulliparity and family history. Most of the tumors occur in reproductive age group. The ovarian tumors show diverse range of patterns on microscopy. They can be of epithelial origin, sex cord or stromal origin.⁷ It is important to determine the histological pattern.

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METHODOLOGY

This retrospective study was carried out at Akhtar Saeed Medical and Dental College, Lahore. The ovarian biopsies of the female patients presenting in the histopathology department were included in this study. The duration of study was one year (2014-2015). These biopsies were routinely processed, stained by Hematoxylin & eosin and slides were made. The slides were examined under the microscope and classification was carried out according to WHO.⁷

RESULTS

In our study, the age range of the patients was 16 to 80 years (Table 1). The frequency of surface epithelial tumors was the 62%, germ cell tumors 21%, sex cord stromal tumors 13% and other tumors 4%. (Fig 2). The frequency of benign tumors was 54.1% and that of malignant tumors was 45.9% (Fig 1). In our study, no tumor with borderline malignancy was found. We also found that the malignant

tumors arouse most frequently in the older age group.(Table 2).

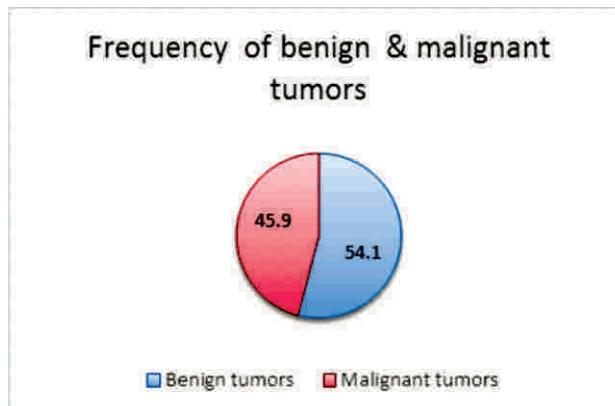


Fig 1. Frequency of benign and malignant tumors

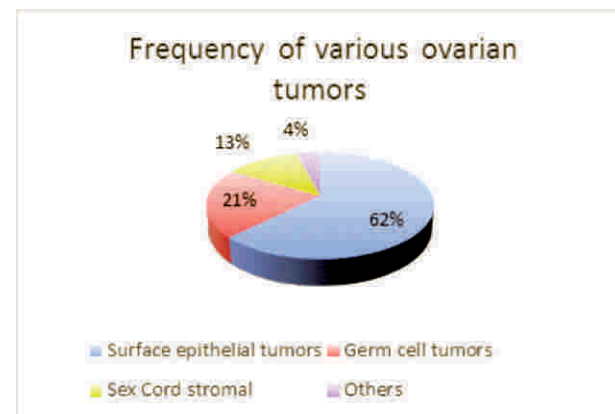


Fig 2. Frequency of Various Ovarian Tumors

Table 1: Distribution of Histological Type Ovarian Tumors According to Age

Age (Years)	Surface epithelial tumors	Sex cord stromal tumors	Germ cell tumors	Others	Total
≤ 20	3		1		4
21 to 30	3	1	1		5
31 to 40	1		3		4
41 to 50	3	1		1	5
51 to 60					0
61 to 70	4				4
71 to 80	1	1			2

Table 2: Frequency of Benign & Malignant Tumors in Various Age Groups

Age range (years)	Benign ovarian tumors	Malignant ovarian tumors
≤ 20	4	0
21 to 40	7	2
41 to 60	2	3
61 to 80	1	5

DISCUSSION

The result of our study is consistent with the result of study carried out by Iftikhar F et al. In their study, they found that majority of tumors were found to be benign and were more frequent in age group <40 years 6 . The result of our study also coincides with the results of Khan MA et al. They found that ovarian tumors were common between 15 to 29 years and benign tumors were more common than the malignant ones.⁷ Yasmin S et showed in their study that the commonest category of ovarian tumors was of epithelial origin followed by the germ cell tumors.⁹ This study showed that the most frequent benign tumor was serous cystadenoma (24.59%) followed by mature cystic teratoma. In our study, we also found that the most frequent tumors were of serous type. Another study by Thanikasalam

revealed that serous cystadenoma was the commonest among Indians and teratomas were the commonest among Malays and Chinese.¹⁰ Prabhakar et al carried out a study revealing similar results.¹¹ In Belgium, a study by Pilli showed that surface epithelial tumors constituted 70.9% of ovarian tumors being followed by germ cell tumors.¹² This result is also consistent with our study. However, a study by Ong et al found teratoma to be the most common ovarian neoplasm.


A study carried out by Hasan Y et al showed 66.41% of ovarian tumors were benign and 24.42% were malignant.⁸ In Nepal, study by R Jha et al reported that 83.9% of ovarian tumors were benign, 16.1% malignant and 2.8% borderline.¹³ In Pakistan, a similar study by Ahmed et al showed frequency of benign tumors to be 59.18% and frequency of malignant tumors to be 40.81%.¹⁴ The findings of these studies were consistent with the results of our study.

CONCLUSION

The surface epithelial tumors were the most common followed by the germ cell tumors. The ovarian tumors are found in all age groups but the frequency of malignant tumors is more in older age group.

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EVALUATION OF CERVICAL CANCER SCREENING AND CERVICAL CYTOLOGICAL ABNORMALITIES ON PAP SMEAR AMONG WOMEN IN SARGODHA REGION

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Abstract

Objectives: This study presents the evaluation of screening programs and also reveals cervical cytological abnormalities on Pap smear in a peripheral part of Punjab. This study was planned to see that how far we have to work up to overcome the rising incidence of cervical cancer.

Methods: This was a prospective study, carried out in university medical complex and research center (UMC&RC), Sargodha Medical College, Sargodha, Punjab, in order to understand the magnitude of problem in our region and to address the need of effective screening programs.

Results: During the period of August 2016 to August 2019, 293 female patients aged 20-70 years attending UMC&RC were taken through non-probability convenient sampling method. Pap-smear test was performed and frequency of epithelial abnormalities was noted. Out of 293 patients, 6 smears (2.04%) were unsatisfactory and 117 (39.93%) were normal. 170 patients (58.02%) showed abnormal pap smear, out of which 150 patients (88.23 % of abnormal smear or 60% of total smears) were negative for intraepithelial lesions or malignancy. LSIL, ASC-US, HSIL, ASC-H, AGUS, squamous cell carcinoma were seen in 2.38 %, 1.70 %, 1.02 %, 0.68 %, 0.68 % and 0.34 % respectively.

Conclusion: The results indicate that we have to motivate and encourage the females for active screening. It also emphasizes the need of an effective and well-organized program of screening to reduce mortality and morbidity for cervical cancer in Pakistan.

Key Words: Pap smear, Screening, Cervical cancer

In women, among cancers, gynecological malignancies are most common and are a major cause of morbidity and mortality.¹ Cervical cancer is one of them and is the 4th most common cancer worldwide in females and is at number seven in overall frequency. In developed countries it is at number 11 (83,000 cases) whereas it is the second most common cancer (445,000 cases) in developing countries.² One fourth cases of cervical cancer are in South Asian region and usually present late with

advanced disease, resulting in high mortality rate.³ In Pakistan the exact data of incidence and prevalence of cervical cancer is not well known because it is an ignored disease in terms of vaccination, screening and prevention.⁴

According to world Health Organization (WHO) the incidence rate of cervical cancer in 2002 was less than 9/100,000 whereas in 2008 it raised up to 13.6/100,000. This indicates that our country is moving in danger zone, where on each day almost 20

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women become victim of cervical cancer making it one of the top ten nations having high death rates.⁵ Cervical cancer is basically preventable malignancy by identifying the pre-invasive stage of the disease.⁶ Cervical cancer usually has a long history of pre-malignant lesions which usually takes more than 10 years to progress into high grade and then to invasive stage.⁷ Thus, mortality from cervical cancer can be prevented by early detection through adequate screening by Papanicolaou smear.⁸ Pap smear test is easy to use, simple, affordable, economical, and remains the mainstay for mass screening programs for cervical cancer.⁹

It is used for both screening as well as for diagnostic purposes.^{10,11} It is projected that screening at regular intervals lessens the risk of cervical cancer up to 80%.¹² Worldwide cytology based well organized screening programs drastically reduce the mortality rate of females due to cervical cancer.¹³ In developing countries like Pakistan there is still high incidence of cervical cancer and there is marked variation in the frequency of cervical cancer due to difference in the prevalence of risk factors and little or no activity of screening programs.^{6,7,14} The main objective of this study was to assess the frequency of abnormal smears and to address the need of screening programs in our region. In this study cytological patterns of pap-smear obtained from the females attending UMC&RC were observed. The results gave an idea and guided us how far we have to build up the cervical screening programs and create awareness in general population to decrease the incidence and mortality of cervical cancer.

METHODOLOGY

A total of 293 married females, aged 20 to 70 years, were evaluated thoroughly over a period of 3 years (August 2016 to August 2019). Females who attended UMC&RC during study period for various reasons were asked to participate. Inclusion Criteria was married women of 20-70 years age presenting with low backache, leukorrhea and abnormal vaginal bleeding. Exclusion Criteria were pregnant or

lactating women, and patients having history of any cancer or hysterectomy. The study was conducted after approval from our Institutional Research Ethics Committee (Ethical committee approval letter reference number is 3595/20.08.16). For each patient, after informed consent, a detailed history regarding demographic information, socioeconomic status, number of marriages of both partners, parity, any abnormal sexual behavior including multiple sexual partners, smoking history, and any past history of pap-smear was taken. After this a general and abdomino-pelvic physical examination was done. Then, pap-smear test was performed in each patient.

Cusco's speculum was used for visualization of cervix and pap smears were obtained from transformation zone with the help of Ayer's spatula. Spatula was gently smeared on pre-numbered glass slides and then was fixed with 95% ethyl alcohol. After pap staining, the slides were then examined under microscope and cytological analysis was done on Bethesda System-2001. On a predesigned proforma all the collected information was recorded. Data was expressed as frequency and percentage and analyzed by Statistical Package for Social Sciences, version 20 (SPSS for Windows, SPSS Inc., Chicago, IL, USA).

RESULTS

In present study, 293 pap-smears were collected from the patients aged between 20-70 years and reported. Among them, 6 were unsatisfactory (2.04%), 117 were normal smears (39.93%) i.e. have no evidence of inflammatory, pre-malignant or malignant lesion, and 170 smears (58.02%) were abnormal (Table 1).

Out of 170 abnormal smears, 150(88.23%) smears were negative for intraepithelial lesions (NILM) or malignancy (51.19% of total smears or 88.23% of abnormal smears). Infectious smears (Figure 1) were 102 (34.81% of total smears or 60% of abnormal smears). Atrophic changes were observed in 14 cases (4.77% of total smears or 8.23% of

abnormal smears) while 34 (11.60 % of total smears or 20% of abnormal smears) reactive cellular changes. Epithelial lesions were found in 21 smears (7.16% of total smears or 12.35% of abnormal smears). Out of these epithelial lesions LSIL(Fig.2), ASCUS, HSIL(Fig.3), ASC-H, AGUS, SCC were found in 2.38%, 1.70%, 1.02%, 0.68%, 0.68% and 0.34% respectively (Table 2, Figure 2,3).

Table 1: Results of Pap-Smear Cytology (293 Smears)

Pap smear result	Number
Unsatisfactory	6
Normal	117
Abnormal	170
Total	293

Table 2: Cytological Patterns of Abnormal Pap-Smears (170 Abnormal Smears Out of a Total of 293 Smears)

Sr. No	Abnormal PAP Smears	Number	Percentage Out of Abnormal Smears	Percentage Out of Total Smears
1	NILM	150	88.23 %	51.19 %
	Infections	102	60 %	34.81 %
	Bacterial Vaginosis	63	37.05%	21.50 %
	Candidiasis	31	18.23 %	10.58 %
	Trichomonas Vaginitis	5	2.94 %	1.70 %
	Actinomyces	3	1.76 %	1.02 %
	Atrophy	14	8.23 %	4.77 %
	Reactive Cellular Changes	34	20 %	11.60 %
2	Epithelial Lesions	21	12.35 %	7.16 %
	LSIL	07	4.11 %	2.38 %
	ASCUS	05	2.94 %	1.70 %
	HSIL	03	1.76 %	1.02 %
	ASC-H	02	1.17 %	0.68 %
	AGUS	02	1.17 %	0.68 %
	SCC	01	0.58 %	0.34 %

LSIL (Low grade squamous intraepithelial lesion), ASCUS (Atypical squamous cells of undetermined significance), HSIL (High grade squamous intraepithelial lesion), ASC-H (Atypical squamous cells can not exclude high grade), AGUS (Atypical glandular cells of undetermined significance), SCC (Squamous cell carcinoma)

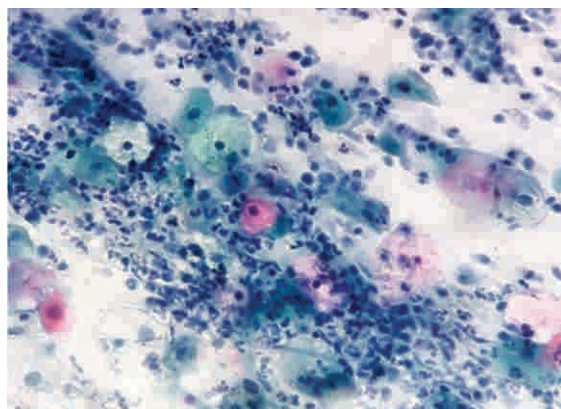


Figure 1: Photomicrograph showing Acute Inflammation (Hematoxylin and Eosin Stain, 400X)

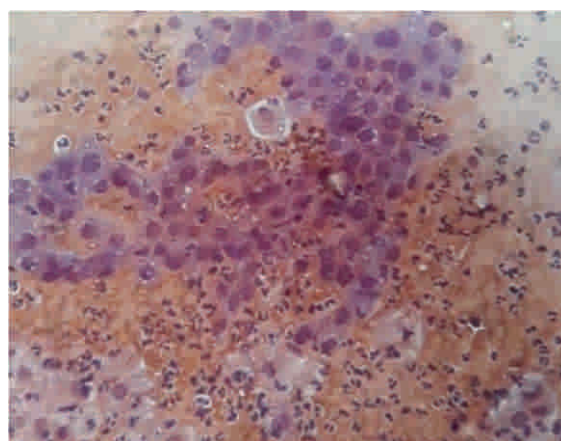


Figure 2: Photomicrograph showing HSIL (Hematoxylin and Eosin Stain, 400X)

DISCUSSION

In Pakistan, according to WHO, incidence rate of cervical cancer is 13.6 cases per 100,000 women per year compared to 8.1 cases per 100,000 per women in United States.^{5,15} Cervical cancer has a long natural history of premalignant lesions which allows an ample opportunity for early detection by pap smear and help the physician to reduce the mortality rate by treating the premalignant lesions by simple procedures.^{10,8}

In present study, cytological reports showed that 117 smears (39.93%) out of 293 were normal i.e. have no evidence of inflammatory, pre-malignant or malignant lesions. This study is in accordance with the study of^{16,17} which shows a similar percentage of negative results of 38.1 % and 35.7 % respectively. Other scientists Tailor et al (2016) and Haider et al

(2013) noted relatively a smaller number of normal smears, that is 24.84 and 18.34 % respectively.^{18,19}

Among abnormal smears, 150 (88.23%) were negative for malignancy or intra-epithelial lesions (51.19 % of total smears or 88.23% of abnormal smears). In present study percentage of inflammatory smears (34.81%) are comparable to inflammatory smears of 36.12%, 32.8% and 27.9% reported by Mainali, Kanyina et al (2017) and Dhakal et al (2016).^{20,21,22} High incidence of infectious smears in these patients might be due to poor hygiene, malnutrition and high parity which ultimately contribute to low resistance and results in development of infections.

In 21 smears (7.16% of total smears or 12.35% of abnormal smears) were diagnosed as epithelial lesions. Among these lesions, we found LSIL, ASCUS, HSIL, ASC-H, AGUS, SCC constituting 2.38%, 1.70%, 1.02%, 0.68%, 0.68% and 0.34% respectively. Rathinamangalam (2016) in his study reported that 6.6 % of smears showed epithelial abnormalities.²³ Percentages of LSIL, ASCUS, HSIL, ASC-H, AGUS, and SCC were 0.5%, 0.9%, 0.6%, 0.5%, 0.2%, 0.8% respectively. In another study conducted in Ghana by Donkoh and his colleagues showed 3.7% epithelial abnormalities.²⁴ LSIL, ASCUS, HSIL, and SCC were found 1.5%, 1.4%, 0.3%, and 0.5% respectively.

In a study conducted by Turkish Cervical Cancer and Cervical Cytology Research Group (2009) showed 1.8 % epithelial abnormalities.²⁵ Similar results were observed in another study of Afrakhteh showing 1.18%.²⁶ These low numbers in Islamic countries indicate a more effective and advanced step towards the awareness and screening programs, thus reduce the figure of advanced cases.

When we compare our results with western world, prevention and treatment of cervical cancer in Pakistan remains a great challenge. Still there have been a need of research studies addressing cost effective screening option for possible wide scale implementation in future.^{27,28}

CONCLUSIONS

It is concluded that we have to encourage and motivate the women for active screening. Physicians, when seeing female patients for non-gynecologic problems, should not miss the opportunity to obtain a Pap smear whenever appropriate. It should be continuous process in order to prevent people dropping out for follow up visits and treatment procedures. It is our responsibility to sensitize the entire community on all aspects with respect to cancer cervix. Screening programs should be established taking into consideration of available sources. Data collection should be improved on screening, protocols should be established for patient follow up and guidelines should be identified for patient referrals similar to well developed countries. By doing so, morbidity and mortality due to cervical cancer will definitely reduce in near future.

LIMITATIONS

The limitation of this study was that we selected the participants that came to hospital for different health issues, so it may over represent the findings. Follow up was not available. Moreover convenient sampling may cause selection biasness into the study.

ACKNOWLEDGMENT

We acknowledge and are extremely thankful to the administration, clinicians and surgeons of Sargodha Medical College, Sargodha, for helping us to conduct this study.

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PREVALENCE OF ANXIETY AND DEPRESSION IN OLDER AGE GROUP WITH IRREVERSIBLE VISUAL IMPAIRMENT

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Abstract

The present study was conducted to assess the prevalence of depression and anxiety among older patients with visual problems presented in different tertiary care and private Outpatient setups, from Jan 2018 to Dec 2019. The data of 1112 older adults Average age 62.2 years was collected through convenience sampling. The Hospital Anxiety and Depression Scale (HADS) was administered on sample to assess the level of anxiety and depression. The Descriptive statistics was used to assess the level of depression and anxiety. Results were discussed in light of available literature.

Key words: Depression; Anxiety; Irreversible; Vision; Impairments

While in most of cases, the prevalence of mental disorders declines with age, but in certain cases many older adults are may be at risk of developing mental disorders especially with certain physical disorders and or impairments such as visual impairments¹ especially irreversible ones¹.

Because of its threatening consequences, old age depression is very important public health problem.² It is associated with increased risk of morbidity and suicide, poor physical, cognitive and social functioning, and greater self-neglect, which are in turn associated with increased mortality. According to research findings of U.S. National Health and Aging Trends Study, the older people with impaired vision tend to have symptoms of depression or anxiety whereas older adults with symptoms of depression or anxiety are more likely to develop vision impairment.¹⁻²

In a study, around 40 percent of participants with impaired vision had depression or anxiety symptoms as compared to those without any visual

impairment (less than 19 percent).² The literature indicating that depression and anxiety are major health problems in visually impaired older population.³ These findings alarm professionals to investigate the intensity of depression and anxiety among older people with vision impairment in order to improve not only their vision problems but also overall quality of life and wellbeing.⁴

Vision loss is considered one of the major causes of disability in older persons, and is associated with increased symptoms of depression and anxiety, and impaired quality of life and.⁶ In turn, this increase in depression and anxiety may cause a more decline in quality of life, that may aggravate disability caused by the visual impairment, and also may warrant a vulnerability for health decline.⁷⁻⁹ The seriousness of this issue can be indicated with the fact that, by the year 2021 depression is expected to be a major cause of disease burden for older adults.^{10,11}

Researches done on prevalence of anxiety and

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depression among visually impaired older adults have focused mainly on symptoms of depression and anxiety by using screening tools. These researches indicated an alarming number of older adults experiencing clinically significant anxiety and depression.^{2,4-7,12-16} Which is approximately twice as high as found in general elderly populations.¹⁶

Previous studies have found high levels of depression among patients with age-related macular degeneration (AMD)¹⁻³, although for glaucoma results are not convincing.⁴⁻⁷ Some studies have commented on possible reasons of high depression and anxiety among patients with eye diseases. Among those, reduced life space, poor quality of life, reduced mobility, etc, are worth mentioning.^{6-7,16}

Literature review is indicative of strong association between irreversible vision impairments and poor mental conditions such as increased rate of anxiety and depression among older population¹³ but there is limited data available on the topic from Pakistan. Therefore, this study has attempted to assess prevalence of depression and anxiety among older age patients presented in OPDs of ophthalmology departments of tertiary care.

METHODOLOGY

Objective: To assess the prevalence of depression and anxiety among older adults with irreversible vision problems.

Research Design: The Ex post Facto design was used to study the levels of anxiety and depression among older adults with irreversible vision problems.

Sample and Sampling Strategy:

The sample of 1112 patients with irreversible vision impairments was collected through convenience sampling from tertiary care and private settings.

settings.

RESULTS

The Hospital and Anxiety Scale (HADS) was used to assess the intensity of depression and anxiety. Developed by Zigmond and Snaith, HADS is commonly used to screen the anxiety and depression.¹⁶ The sample of 1112 patients with irreversible vision impairment was collected from tertiary care and private hospitals of Lahore. After taking consent, the sample was briefed about rationale of study and HADS was administered in exclusive setting. The patients who have got significant scores on scale were also referred to mental health settings. The results were analyzed by using Descriptive statistics.

DISCUSSION

The current study aimed to assess the prevalence of anxiety and depression among older individuals with irreversible vision impairments. For that purpose a representative sample of 1112 older age patients, who came in outpatient settings of ophthalmology of tertiary care hospitals for the treatment of irreversible vision impairments, was selected through convenience sampling technique. After completion of all the ethical requirements, a screening tool for anxiety and depression, the Hospital Anxiety and Depression Scale (HADS) was administered to assess the severity of anxiety and depression in sample.

The data was analyzed by calculating percentages of sample having different intensities of depression and anxiety. Table 1 indicated prevalence of depression and anxiety in patients, with different eye diseases that may cause irreversible vision

Table 1: Comparison of vision problems on severity of depression and anxiety on HADs

Variable (Disease)	No Depression N (%)	Mild Depression N (%)	Symptomatic Depression N (%)	No Anxiety N (%)	Mild Anxiety N (%)	Symptomatic Anxiety N (%)	Total
AMD	41(23)	98(55)	39(22)	52(29)	71(40)	55(31)	178
Glaucoma	160(33)	251 (52)	72(15)	154(32)	237(49)	92(19)	483
Untreatable Cataract	121(39)	146(47)	43(14)	161(52)	93(30)	56(18)	310
Others	41(29)	69(49)	31(22)	41(29)	72(51)	28(20)	141

impairments. As revealed by results, more remarkable percentages (49% to 55%) of patients with irreversible vision impairments caused by different diseases have been experiencing mild symptoms of depression and anxiety. Around 14 to 22% patients are having severe depression that may require treatment. This data is in line with research findings previously available.

Although severity of anxiety in sample is lower than depression but percentages of patients having mild symptoms of anxiety (30 to 51%) are quite high that needs to be managed by mental health professionals.

This high levels of anxiety and depression among older people with irreversible vision problems may have different possible causes such as lack of mobility due to health issues (poor vision), lack of subjective feelings of control over self and life due to loss of vision, deteriorating quality of life, low self-esteem associated with poor self-image in older age, old-age crisis, and death anxiety,¹⁶ etc.

Limitations & Suggestions:

1. The data should be increased more to get more generalizable results.
2. The demographic characteristics of sample should be compared.
3. The possible causes of high levels of anxiety and depression should be identified so to minimize mental health problems among older adults.

Future Implications:

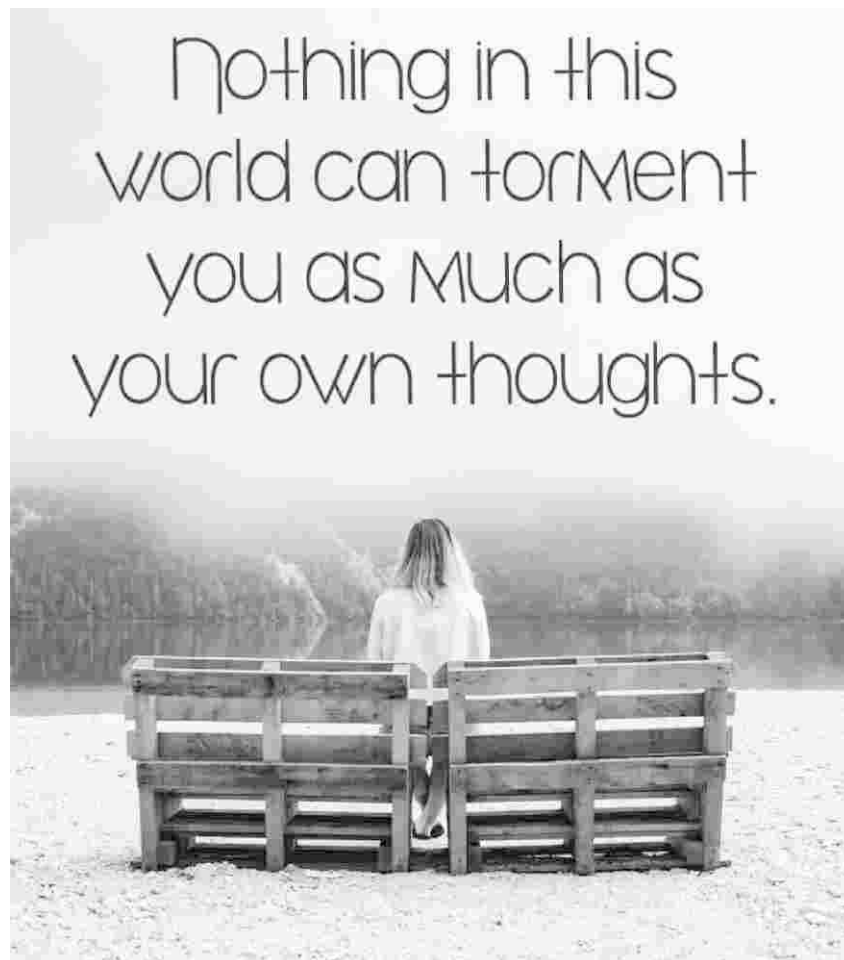
The study has tried to identify the prevalence of anxiety and depression among older patients with irreversible vision impairments in Pakistani patients. This research is providing first time a rich data on prevalence of depression and anxiety among older patients with vision impairments based on Pakistani data. By that, study has attempted to highlight the need for ophthalmologist to see their patients' mental health issues that may have affected patients' prognosis and overall quality of life adversely. Study highlighted involvement of mental health profes-

sionals in treatment protocol of these patients to improve their physical, psychological, and social wellbeing.

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MANAGEMENT OF SOLITARE RECTAL POLYP BY BAND LIGATION VERSUS TRANSFIXATION

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Abstract

Objective: To assess and compare the results of management of solitaire rectal polyp by band Ligation with the trans fixation of the polyp.

Design: It is an experimental & comparative study.

Place and Duration of Study: This study was carried out at Fauji Foundation Hospital Lahore, and Mohsin Medical Complex Walton Lahore in the period from January 2018– March 2020

Patients and Methods: A total of 90 patients were included in this study reported with bleeding per rectum. Bleeding per rectum with no co-morbidities or other systemic illness their age ranges between 3-5 years patients were examined and divided into two equal groups (A & B) containing 45 patients each group A underwent band ligation while group B underwent trans fixation using vicryl.

Results: A total of 90 patients were included in this study between 3-10 years of age who presented to the surgical out door department of Fauji Foundation Hospital Lahore. And at Mohsin Medical Complex Lahore. With complaints of bleeding per rectum and something coming out of anus and results revealed that, mostly the patients were females' children 69 out of 90 and that makes 62.1 % and 21 patients were male children which is 18.9% the total patients the highest prevalence was seen in the age group of 5-7 years of age that was 57 patients which makes 51.3% of the total patients. 05 patients [2.25%] out of 45 patients did not respond to the band ligation and band did not result in ischemic necrosis of polyp. It was also observed that 7 patients out of 45 [3.15%] continued to have mild bleeding per rectum. After band Ligation.

Conclusion: We can conclude that trans fixation of rectal polyp is far superior method as compared to Band ligation for the reason that band in some case did not cause ischaemic necrosis and moreover it cannot be applied to sessile polyp.

Keywords: Transfixation, polypectomy, band ligation

Rectal polyps are small growths that project from the lining of the rectum or colon.¹ Although they are benign, but they have the potential to become malignant. As most Polyps do not become cancerous, but most cancers of the large gut start with polyps.² That is why polyps should be removed and the entire colon checked for and screened for the more polyps. Solitaire rectal polyp is a disease mostly affecting childhood age and children under 10 years are likely affected or they report earlier because of symptoms like weakness and bleeding per rectum and it is also interesting and surprising to note that many patients do not know if there is

something coming out of anus.³ Many patients present with occasional bleeding problems and few patients present with persistent and profuse bleeding every time they pass stools. 90% of the patients have been found having constipation.⁴

Polyps do not usually cause any serious symptoms in most of the patients many at times the only symptom remains to be as undetected blood loss and resulting anemia and unexplained weakness may occur in some patients.⁵ A large polyp may form an ulcer, which usually results in blood in the stools.⁶ Colitis may also be seen when there are multiples of polyps and colitis can lead to a crampy abdomen

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Polyps usually run in the families and if polyp found in one person may warrants and require the need of screening of all family members.⁷ There are a certain inherited conditions in which many polyps appear at an early age. In these conditions, malignant change is almost always expected, so the standard treatment is to remove the entire colon or the affected part of the colon.^{8,9} The conditions are quite rare and account for less than 1 percent of all colon and rectal cancers but makes an extra responsibility on the clinician to screen the entire family and put that patient on regular follow up so that further screening tests if required can be planned.^{10,11}

Cancer screening tests are important to identify polyps and detection of malignant change in the colon.¹² The tests for examining the colon include digital rectal examination, proctoscopy, a fecal occult blood test, a colonoscopy, flexible sigmoidoscopy, or barium enema with and without double contrast.¹³ A fecal occult blood test is a quick sampling of stool to check for blood. Although it is not a specific test for carcinoma of colon.¹⁴ Even though the healthcare provider may do a quick sample in the laboratory, the right way for the fecal occult blood test to be done is a take-home multiple test with samples of stool from 3 different days sent to the provider.¹⁵ A colonoscopy is a visual check of the colon with a long flexible instrument through which the physician can look at the lining of the colon and remove polyps for histological evidence of the disease by taking a biopsy.¹⁶ A sigmoidoscopy is a flexible tube with a light that allows direct viewing of the lining of the lower one-third of the colon up to 30 cm of the lower part of the large gut¹⁷. A barium x-ray combines a barium enema with x-rays of the colon and it would give more mucosal details if it is done with double contrast using air.¹⁸

The solitary rectal polyp seen in the children is almost and always is a benign disease.¹⁹ The parents usually bring their children in the surgical OPD for rectal bleeding that is off & on and also there is history of something coming out of anus.²⁰ Such patients are examined in the outdoor department by

doing DRE and proctoscopy and these children also undergo sigmoidoscopy to rule out the presence of any other polyp.²¹

METHODOLOGY

A total of 90 patients were included in this study and the age range was 3 to 10 years and mean age was 5.8 years. Out of 90 patients 64 [71.11] were males children and 26 [28.88] were females. Children 50% of the patients [45] were subjected to band ligation in the outdoor department and 50% [45] were admitted in the ward and were assessed for General anesthesia and were prepared for transfixation of the rectal polyp with vicry 2/0 carried out in the operation theatre with full protocol. . these patients were followed up and assessed after six months.

Sample Collection

Patients were included reporting at Mohsin Medical Complex, a medical centre at Walton and also main bulk of patients were collected from Fauji Foundation Hospital.

Inclusion Criteria

Children between 3-10 years were included and both male and female.

Exclusion Criteria

Patients above 10 years of age were not included and also those with systemic illness and also those living outside the city of Lahore were excluded as follow up was difficult in such cases .

RESULTS

A Total of 90 patients were included in this comparative study between 3-10 tears of age both male and female children were included in this study. 45 patients were grouped in Group A and 45 patients were in Group B. Group A Were subjected to band Ligation and group B were subjected to transfixatio Mostly the patients were female children 69 out of 90 making 62.1 % and 21 patients were males making 18.9%. the highest prevalence was seen in the age group from 4-6 years that makes 39.6% of the total

patients the least incidence was seen in the age group 9-10 years making 4.55 of the total sample. 05 patients out of 45 of group A did not respond to band ligation[2.25%] and did lead to ischaemic necrosis of the polyp. 07 patients of the group A [3.15%] continued to bleed and they were subjected to transfixation of the polyp in group B all patients showed good response to the treatment and improved markedly and did not show any complication or the failure of procedure and were symptoms free and declared cured. It is clear from the data that 12 patients in group A did not show the desired results and can not be declared as superior to the conventional procedure of transfixation of the polyp and more there was a limitation of applying band to sessile polyp or the polyp with broad base so again it

Table 1: Age Distribution of Patients

Age group [years]	Frequency [%]
3 to 3.5 years	7 [6.3%]
4-6 years	44 [39.6%]
7-8 years	34 [30.6]
9-10 years	05 [4.5%]

does not stand a procedure of choice for all kind of polyps.

DISCUSSION

Most of the children with bleeding per rectum or something coming out of anus present in the age group 6-8 years of age and after that the incidence is unlikely for the reason that usually parents report to surgical out door to seek help and treatment Once a polyp is completely removed, its recurrence is very unusual. However, if the same factors that caused the polyp to form are still present then polyps will develop in at least 30 percent of people who have previously had polyps. Patients should have regular exams by a clinician specially trained to treat diseases of the colon and rectum. Most polyps, with the exception of the inflammatory pseudopolyps, result from some form of genetic (DNA) mutation in one of the colon lining cells. Fortunately, several, probably at least five, mutations are needed in the same cell before cancer occurs and most benign

polyps probably only have one gene mutated. DNA damage occurs surprisingly often even in a healthy adult colon . about 10 % of the lining cells on average contain major abnormalities of the chromosome ie packages of DNA that have many genetic material. Interestingly almost all these cells seem to undergo a form of natural programmed death called apoptosis and then fall off harmlessly into the bowel lumen the polyps even those from individuals do not have familial polyposis commonly contain mutations that stop the gene working in both copies of the adenomatous polyposis coli, the gene which is responsible for the mutation and undergoes change. Polyps Polyps usually cause no symptoms until they grow to 2cm or more in diameter. Then the most common symptom is rectal bleeding. If a polyp is large enough, say 2cm in diameter, it can simulate faeces so the colon undergoes vigorous muscular movements (peristalsis) in a futile attempt to expel the polyp. This can lead to severe colicky pains. Occasionally, large polyps with a characteristic villous (frondy) appearance will cause profuse watery diarrhoea which can then result in severe potassium deficiency causing muscle weakness. The patients undergoing polypectomy are kept under surveillance and need to be screened and under go a series of tests in due course of time to keep them safe and healthy it includes fecal occult blood test every year OR flexible sigmoidoscopy every 5 years OR fecal occult blood test every year with a flexible sigmoidoscopy every 5 years OR colonoscopy every 10 years OR .double contrast barium enema every 5 years of these all options the American Cancer Society recommends the fecal occult blood test every year and the flexible sigmoidoscopy every 5 years. If the fecal occult blood test is positive then a colonoscopy would be done instead of the sigmoidoscopy. The take-home multiple sample method of fecal occult blood test is the one that should be done. This is important because once a person has one polyp, they are more likely to have another polyp later. If any of these tests (except colonoscopy) are positive, they should be followed up with a colono-

scopy. Anyone who has a relative in the immediate family who has had colon cancer, or has a history of polyps is considered at higher risk. Most polyps produce no symptoms and often are found incidentally during lower endoscopy or barium enema of the bowel. Some polyps, however, can produce bleeding, mucous discharge, alteration in bowel function, or in rare cases, abdominal pain. Since there is no fool-proof way of predicting whether or not a polyp is or will become malignant, total removal of all polyps is recommended. The majority of polyps can be removed by snaring them with a wire loop passed through the instrument. Small polyps can be destroyed simply by touching them with a coagulating electrical coagulating diathermy.

Most colon examinations using the flexible colonoscope, including polyp removal, can be performed on an outpatient basis with minimal discomfort. Large polyps may require more than one treatment for complete removal. Some polyps cannot be removed by instruments because of their size or position; surgery is then required.

Once a polyp is completely removed, its recurrence is very unlikely. However, if the same factors that caused the polyp to form are still present. New polyps will develop in at least 30 percent of the patients who have previously had polyps. Patients should have regular exams by a physician specially trained to treat diseases of the colon and rectum.

CONCLUSION

We can conclude that the solitary rectal polyp is best treated by doing its transfixation using vicryl. Band ligation in this study has come up with certain limitations and can not be applied to all types of polyps and more over it is not a method of choice to take a biopsy of the polyp to get histological evidence of the disease.

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**HEALTH ISN'T
JUST ABOUT
WHAT YOU
EAT. IT'S ABOUT
WHAT YOU
ARE THINKING
AND FEELING
TOO.**

ROLE OF INDIRECT LARYNGOSCOPY AS PRE REQUISITE BEFORE THYROID SURGERY

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Abstract

Objective: To assess the Role of indirect laryngoscopy as a pre requisite before thyroid surgery

Design: It is an experimental & analytical study.

Place and Duration of Study: This study was carried out in surgical unit Fauji Foundation Hospital Lahore in the period from march 2017 –May, 2020.

Results: A total of 100 patients were included in this study who presented to the surgical out door department of fauji foundation Hospital Lahore. .Mostly patients were females ie 92% of the total patients . it has been seen that 64% of the patients undergoing indirect laryngoscopy experierced gag reflex and were uncomfortable during the procedure and more over it did not make any change in type of surgery and the out come of the surgery.

Conclusion: In this study we have seen that patients undergoing indirect laryngoscopy did not affect the outcome of surgery and was quite uncomfortable in most of the patients and should be omitted as a pre requisite in uncomplicated thyroid disorders.

Keywords: Indirect laryngoscopy, vocal cords, Thyroidectomy

Laryngoscopy is a visual examination below the back of the throat, where the voice box (larynx) containing the vocal cords is located.¹ Anaesthesia has become a fine art, with modern anaesthetic agents and techniques resulting in improving outcomes.²

Technological advances are relatively slow, but occasionally a product comes along that revolutionizes the way we practice. The laryngeal mask airway is a prime example. Perhaps rigid indirect laryngoscopy (RIL) is the next such procedure.³ Direct conventional laryngoscopy (DCL) has been the ‘gold standard’ for endotracheal intubation since the 1940s.⁴ It has a high success rate and hundreds of different sizes of the laryngoscopes blades have been developed. There are two types of RIL because they are both handled blades but they involve inherently different techniques. The Glidescope® has a conventional ‘feel’ requiring bimanual manipulation of the endotracheal tube,⁵ a technique described as

‘steering’. The AirTraQ6 has the direction of passage of the endotracheal tube determined by the scope itself, a technique described as ‘tube-guided’ the procedure is done by using mirrors and a light source at the back of the throat or by inserting a thin instrument (a laryngoscope) through the nose or mouth into the throat.^{7,8} This scope lights and magnifies images within the throat. Laryngoscopy is an effective procedure for discovering the causes of voice and breathing problems, throat or ear pain, difficulty in swallowing, narrowing of the throat (strictures or stenosis), and airway blockages.⁹ It also can help diagnose problems in the vocal cords. The procedure is relatively painless, but the idea of having a scope inserted into the throat can be a little scary for the patients,¹⁰ and many patients even counselled before doing the procedure are not comfortable and bluntly refuse to under go and many times ask the necessity of it. The indirect procedure¹¹ is very easy to perform and can be performed in a doctor's office using a

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small hand mirror held at the back of the throat the patient is sitting on the stool upright.¹²

The doctor will aim at throwing light at the back of the throat, usually and commonly by wearing headgear that has a bright light attached to it and to examine the larynx, and vocal cords, and hypopharynx.¹³ Indirect laryngoscopy is not typically used with kids and children under 13 years of age as they are found to be non cooperative and most of the time it tends to cause gagging and further examination becomes impossible.

Laryngoscopy is performed to diagnose a persistent cough,¹⁴ and possible cause of it and throat pain, bleeding, hoarseness, or persistent bad breath, so it completely examines the any deformity, any disorder and any growth which may or may not change the pre operative diagnosis and treatment plan.¹⁵ It is also used to check for inflammation, or to discover a possible narrowing or blockage of the throat. It visualizes a mass or tumor in the throat¹⁶ or on the vocal cords. It diagnoses difficulty in swallowing, suspected cancer and evaluates causes of persistent ear ache and diagnoses voice problems, such as weak voice, hoarse voice, breathy voice, or no voice. All such findings should be recorded and explained to the patient and also can be discussed to appreciate and recognize the possible complication and outcome.

Indirect Laryngoscopy is also done before thyroid surgery for the medicolegal purpose to see the position of vocal cords, and their mobility.¹⁷ Laryngoscopy is also performed to remove foreign objects stuck in the throat or to biopsy a growth in the throat or on the vocal cords. Indirect laryngoscopy and fiber-optic laryngoscopies often are performed in the doctor's office, sometimes using local anesthetic. They usually take only 5 to 10 minutes. Indirect laryngoscopy requires patient to sit up straight in a high-backed chair with a headrest and open his or her mouth wide. The doctor sprays the throat with an anesthetic or numbing medication then cover the tongue with gauze and hold it down.¹⁸

The doctor will hold up a warm mirror to the

back of the throat and, with a light attached to his or her headgear, will tilt the mirror to view various areas of the throat. Patient may be asked to make high-pitched or low-pitched sounds so that the doctor can view the larynx and see the vocal cords movement.

METHODOLOGY

This Analytical study included 100 patients with enlargement of thyroid gland and presenting to the surgical outdoor department of Fauji Foundation Hospital Lahore from March 2017 to May 2020. Patients of either sex and age, above 35 years and below 60 years were included in this study. Patients presenting in outdoor with goitre were assessed and underwent clinical examination followed by all basic laboratory and thyroid profile and were admitted in euthyroid state. All patients of either sex were included and those without any comorbidities. Patients above sixty years of age were excluded and those with hypertension, diabetes and other cardiorespiratory disorders were excluded. Patients already with changed tone and pitch of voice and patients coming from outside city were excluded.

RESULTS

A total of 100 patients aged 35 to 60 years were included. In this study, 92 (92%) patients were women, and 08 (8%) were men and the average age was 45 years and 42.8 years for men and 47.2 years for women. The patients were admitted 02 days before surgery and remained admitted 05 days after the surgery, a total of 07 days stay.

Comparatively in young patients total thyroidectomy was carried out and in patients above 55 years were subjected to near total thyroidectomy leaving only a rim of thyroid tissue posteriorly. The patient's vocal cords were checked during extubation. 30 patients [60%] out of 50 [Group A] who underwent indirect laryngoscopy showed gag reflex and felt uncomfortable during the procedure. 5 patients [10%] out of 50 of Group A did not show any gag response during the indirect laryngoscopy.

and remained well 01[2%] patient of Group A refused to under go indirect laryngoscopy and feared that it might lead to a very uncomfortable situation for him. 9 patients[18%] out of 50 expressed a feeling of nausea and vomiting during the procedure and further refused the procedure 04 [8%] patients asked about the necessity of this procedure before the surgery and on explaining to them they said that their voice is ok .and did not under go indirect laryngoscopy. 06 patients out of 50 [Group A] developed husky voice soon after the operation and these patients improved markedly during the hospital stay as patient were on anti inflammatory drugs and also using steam inhalation.

In the other group of 50 patients [Group B] did not under go the procedure of indirect laryngoscopy and these patients were only externally examined and their voice checked for quality ,tone and for pitch by only talking to them and recorded on file and signed by the patient, operating surgeon and one witness The patients were examined in the follow up after 01 month and 03 months interval. Out of 100 patients, 27 patients reported after 01 month and 11 patients reported after 03 months and none of them developed any change in voice or did not develop any breathing problem

DISCUSSION

Indirect laryngoscopy has been a good tool in the field of otolaryngology to examine the Back of the throat and airway. Indirect laryngoscopy is, however, difficult for clinicians because they are Not used to the headgear and the mirrors. The light is thrown from the bulb to the mirror through the optic fiber, and then it is reflected on the convex mirror to illuminate the upper airway and back of throat The gag reflex was seen in a good number of patients, even when the experienced clinicians were doing the examination of the upper airway. It has been seen that an excessive gag reflex is not a predictor of difficult intubation. As by doing it, a gag reflex could increase intracranial pressure and could cause hypertensive crises which can be lethal as there is

massive sympathetic stimulation

It has been observed that difficult intubation in surgical patients has been reported as varying from 0.05% to 2%.^{1,4,8,10} In other words,the epiglottis was visible in almost every case of unanticipated difficult intubation in our study.

Wilson et al.¹ proposed a risk sum score that predicts difficult intubation using multiple anatomic measurements. Their original data yielded a PPV of 8.7%, sensitivity of 75%, and specificity of 87.9%. Oates et al.⁴ evaluated the Wilson risk sum score in 675 cases.

Positive predictive value was 8.9% with a low sensitivity (42%) and high specificity (92%). Laplace et al.¹⁷ found high PPV (25%) and specificity (91.6%) at the cost of low sensitivity (35%) for the score. Our evaluation of the Wilson risk sum score was low Positive Predictive Value (5.9%), low sensitivity rate (55.4%), and high specificity rate (86.1%), and it was quite similar to the Results which were reported by Oates et al.⁴

The Mallampati score² estimates the size of the base of the tongue to predict difficult intubation. Because the tongue is the largest structure in the mouth, its size might partly affect the ease of direct laryngoscopy. Frerk⁵ reported that the modified Mallampati score had a PPV of 17.3%, a sensitivity rate of 81.2%, and a specificity rate of 81.5% .

Although the line of vision of the observer in indirect laryngoscopy may not precisely correspond to that obtained at direct laryngoscopy, our results showed that indirect laryngoscopy is an excellent method for predicting difficult intubation but is not necessary to see the change in quality of voice.^{11,12} Furthermore, it provided valuable information about the obstacles in the patient's pharynx and larynx that could not be determined whenever the Wilson or the modified Mallampati scoring systems were used.^{17,18} The indirect laryngoscopy is performed in pakistan as a routine and pre requisite before thyroid surgery as a medico legal cover as even the normal routine thyroid surgery can lead to a little change in the pitch

and tone of the voice because there is handling of thyroid lobes and identification and location of recurrent laryngeal nerve can cause neuropraxia and that can reflect the injury to the nerve.

Visualization of the larynx by indirect laryngoscopy requires that anesthetist not familiar with the technique acquire some experience to become proficient. In addition, many patients cannot tolerate indirect laryngoscopy because of an excessive gag reflex.^{14,15} Nevertheless, this technique might be considered as an integral part of preoperative evaluation and assessment of patients requiring surgery and anesthesia and requiring tracheal intubation. especially in difficult cancer surgery of the neck. In uncomplicated neck and thyroid disorders, any procedure or test which does not alter the treatment plan seems unnecessary and can easily be omitted. We believe that more research work is required in this context which can support or improve our work.

CONCLUSION

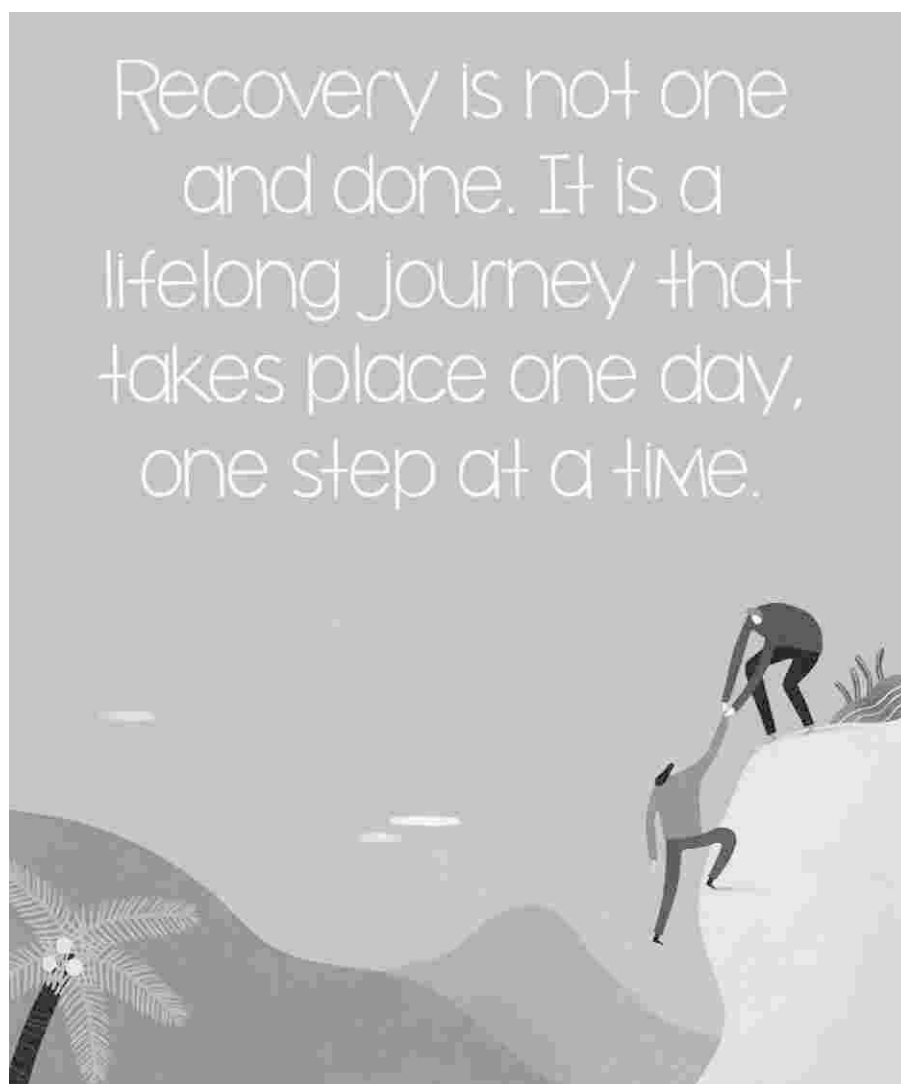
It is concluded that the indirect laryngoscopy although a procedure which can be done in the surgeon's office and not taking for more than 10 minutes. The patients are not very comfortable during and after the procedure and some of them develop gag reflex leading to breathlessness, increased intracranial pressure and even syncope.

It has been seen during this study that indirect laryngoscopy is quite uncomfortable procedure before thyroid surgery and it does not help to appreciate and compare the tone, pitch and quality of voice before and after the thyroid surgery. It should be reserved only for the special cases like very short neck, carcinoma of thyroid, thyroid enlargement with dysphagia and odynophagia, and also in cases in which patient gives history of change in the voice in the recent past. Our study reveals that indirect laryngoscopy is not required in the uncomplicated thyroid disorders requiring surgery.

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DEPRESSION AND ANXIETY IN A DOCTOR'S LIFE; A CROSS-SECTIONAL STUDY IN LAHORE, PAKISTAN

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Abstract

Objectives: To analyze prevalence of anxiety and depression among doctors serving in three tertiary care hospitals in Lahore, with a study of impact of relevant demographic features.

Methods: A cross sectional study was conducted at three Hospitals in Lahore: Jinnah Hospital, Mayo Hospital and Kishwer Fazal Teaching Hospital from 5th January to 20th February, 2020. We took formal approval from the ethical committee of the hospitals and written informed consent from the participants. Participants were doctors serving in the subject hospitals for at least six months duration. Standardized Hospital Anxiety Depression Scale (HADS) was selected as screening instrument. Demographic characteristics of participants were recorded as independent variables; anxiety and depression scores being outcome variables. All data analyses were performed using SPSS, version 26. The qualitative data was expressed as frequencies, percentages; quantitative as mean \pm standard deviation(SD). We used chi-square for cross-tabulation. A p-value of < 0.05 was considered significant.

Results: Out of 660 volunteers, 291 (44.09%) responded. Score of anxiety was 7.07 ± 4.462 , maximum being 18, scores of depression was 4.93 ± 3.601 , maximum score being 14. Mild to moderate anxiety and depression were revealed in 102 (35.0%) and 72 (24.7%) respectively, while 19 (6.5%) and 3 (1.0%) had severe anxiety and depression respectively. There was a strong positive relation between anxiety and depression ($p < 0.001$). There was significant impact of service years on depression ($p = 0.015$). Gender had a significant ($p = 0.001$) impact on anxiety scores, 27 (22.3%) males and 75 (62.0%) females had mild to moderate anxiety while 10 (8.3%) males and 9 (7.4%) females had severe anxiety. Other variables did not have significant impact on HADS scores.

Conclusion: Doctors showed high grades of anxiety and depression. They must be promptly screened and managed at all medical institutions.

Key Words: Health Care Professional, Physician, Developing Countries, Psychological Stress

At present, almost everyone of us knows about the terms “Anxiety” and “Depression”. Anxiety and depression exists in almost every part of the world.^[1] Yet just like the iceberg phenomenon, these diseases are under-estimated, under-diagnosed and under-treated. Proper mental health is a basic need of every human as an essential to spend a comfortable life. Anxiety and depression pose negative effects on our personal and professional lives.² However, the majority of people are not ready

to accept and undergo scrutinization and screening or proper treatment for health related issues. Health care professionals are also included in this.

Normally, the formal examination, assessment and testing of mental health issues including anxiety and depression is not generally put into practice. According to studies, almost two thirds of total psychiatric patients in the world are present in the developing countries, and it is expected that the situation will worsen.³

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As a result of their profession, doctors are at a higher risk of suffering from mental health challenges which may result in or enhance anxiety and depression. The general public and even the doctors themselves don't pay much attention to the mental health issues of doctors. In developed countries like the US and Canada, praiseworthy efforts have been made to check and grade the psychological status of physicians, however developing countries are considerably on the backfoot in this regard.⁴

In Pakistan, thorough studies regarding depression and anxiety amongst the general public and health care officials are scanty. According to some studies, almost 25% to 30% of the population in Karachi was suffering from anxiety and depression.⁵ According to another study, the presence of anxiety and depression among family practitioners in Karachi is high.² Studies show that risk of depression and suicidal thoughts was twice as high in physicians as compared to the general population.⁶ But effective screening of doctors does not give any credible evidence to it.

This purpose of this study is to reveal concrete results in investigating the prevalence of anxiety and depression among doctors providing services in three tertiary care hospitals in Lahore. The risk and contributory factors were also studied and observed. Hopefully it will provide successful guidelines for further approach in future. Hospital Anxiety and Depression Scale (HADS) was selected as a hospital inventory as its scores are a useful guideline to plan lifestyle modifications and proper management for anxiety and depression.⁷

METHODOLOGY

Study Design: This is a cross sectional type of study.

Setting: This study was conducted at three Hospitals in Lahore: Jinnah Hospital, Mayo Hospital and Kishwer Fazal Teaching Hospital.

Duration of Study: The study was carried out from 5th January to 20th February, 2020.

Sample Size: 660 demographic forms and HADS-

inventory were distributed to the volunteers. The non-response rate was over 50%. So, the final sample contained 291 participants.

Sampling Technique: Non-Probability Purposive Technique was employed for conducting this research.

Sample Selection: The inclusion criteria included doctors serving in subject hospitals for at least six months duration and consented to filling the form. Standardized Hospital Anxiety Depression Scale (HADS) was selected as a screening instrument. Doctors serving since lesser duration, diagnosed or under treatment for any psychiatric condition, with history of recent stress or past mental health problems, and those with comorbid conditions (e.g diabetes, hypertension, tuberculosis, and chronic pain in any body part) were excluded from the study.

Data Collection Procedure:

We took formal approval from the ethical committee of the hospitals and written informed consent from the participants. Subjects were doctors serving in tertiary care hospitals for at least six months' duration, both genders from different departments. We distributed 660 demographic forms and HADS-inventory to the volunteers. The non-response rate was over 50%. So, the final sample contained 291 participants.

Statistical Analysis:

All data analyses were performed using Statistical Package for the Social Sciences (SPSS) software, version 26. The qualitative data was expressed as frequencies and percentages. On the other hand, quantitative data was expressed as mean \pm standard deviation (SD). Main outcome variables, depression and anxiety, were cross-tabulated with independent variables (age, education, marital status, number of children, nature of job, current employment, service years, income per month in PKR, working hours per week, additional duties, and socioeconomic class).

RESULTS

Out of 660 volunteer doctors, respondents were 44.09% (n=291). Mean age was 33.49 \pm 9.634 years.

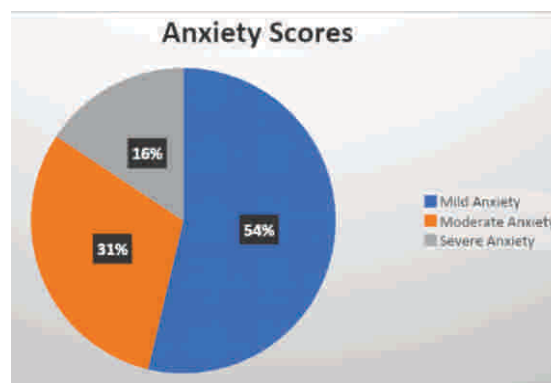
Table 1: Demographic Characteristics of Study Participants (Frequency/Percentage) (n-291)

Age group (Years)				
22-29 Yrs (130/44.7%)	30-39 Yrs (80/27.5%)	40-49 Yrs (46/15.8%)	50-59 Yrs (32/11.0%)	≥ 60 Yrs (0/0%)
Marital Status				
Single (100/34.4%)	Once Married (189/64.9%)	Divorced (2/0.7%)	Widowed (0/0%)	≥ 1 Marriage (0/0%)
Number of Children				
Nil (145/49.8%)	1 (26/8.9%)	2 (35/12.1%)	3 (61/21.0%)	≥ 4 (24/8.2%)
Education				
MBBS (185/63.6%)	MBBS And/Or MPH (10/3.4%)	Msc And/Or MPH (15/5.2%)	Single FCPS Or Equivalent (64/22.0%)	≥ 1 FCPS Or Equivalent (17/5.8%)
Service Years				
< 4 Yrs (140/48.1%)	5-9 Yrs (51/17.5%)	10-14 Yrs (21/7.2%)	15-19 Yrs (22/7.6%)	≥ 20 Yrs (57/19.6%)
Nature Of Job				
HO (90/30.9%)	MO Administration (8/2.8%)	MO Clinical (49/16.8%)	Trainee (70/24.1%)	Consultant (74/25.4%)
Working Hours per Week				
35 Hrs (20/6.9%)	36-95 Hrs (67/23.0%)	96-125 Hrs (39/13.4%)	126-175 Hrs (109/37.5%)	175-245 Hrs (56/19.2%)
Additional Duties				
Nil (20/6.9%)	Resident MO (61/20.9%)	Resident (135/46.4%)	On Call From Home (50/17.2%)	Resident MO + On Call From Home (25/8.6%)
Income per Month (Thousands PKR)				
Nil (45/15.5%)	30-49 (95/32.6%)	50-74 (61/20.9%)	75-99 (20/6.9%)	≥ 100 (70/24.1%)
Socio Economic Class				
Low (6/2.1%)	Low-Middle (15/5.1%)	Middle-Middle (146/50.2%)	Upper-Middle (99/34.0%)	Upper Class (25/8.6%)

Males were 157 (54%) and females 134 (46%). Frequencies of other demographic characteristics are mentioned in Table 1. The scores of anxiety and depression are shown in Table 2. There was a strong positive relation between anxiety and depression scores ($p < 0.001$). Gender had a significant ($p = 0.001$) impact on anxiety scores, 27 (22.3%) males and 75 (62.0%) females had mild to moderate anxiety while 10 (8.3%) males and 9 (7.4%) females had severe anxiety.

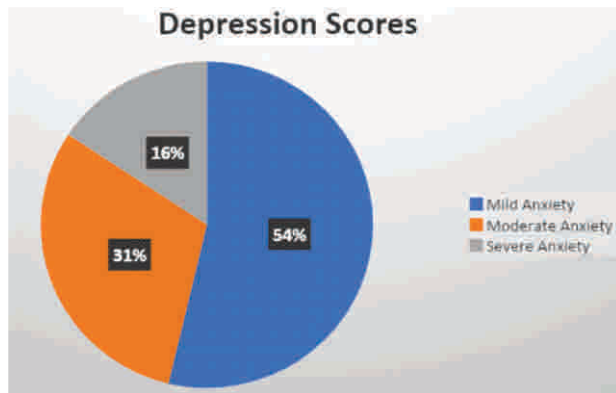
There was no significant impact of age group ($p = 0.335$), marital status ($p = 0.154$), education ($p = 0.647$), number of children ($p = 0.508$), current employment ($p = 0.295$), service years ($p = 0.672$), nature of job ($p = 0.864$), income per month in PKR ($p = 0.333$), working hours per week ($p = 0.335$), additional duties ($p = 0.442$), and socioeconomic class ($p = 0.676$) on anxiety scores.

Regarding depression, doctors with lesser

**Table 2:** Scores of Anxiety and Depression in Study Participants as per HADS (n-291)

S. No.	Category	Grade	Anxiety	
			Frequency	Percent
1	Anxiety	Mild	65	22.3
		Moderate	37	12.7
		Severe	19	6.5
2	Depression	Mild	59	20.3
		Moderate	13	4.5
		Severe	3	1.0

service had higher scores ($p=0.015$); 11.73% and 8.2% had less than 4 years and 5-9 years of service respectively. The impact of gender ($p=0.337$), age group ($p=0.073$), education ($p=0.405$), marital status ($p=0.552$), number of children ($p=0.178$), socioeconomic class ($p=0.556$), current employment ($p=0.983$), income per month in PKR ($p=0.292$), nature of job ($p=0.429$), working hours per week ($p=0.206$), and additional duties ($p=0.353$) on depression scores



was not significant.

DISCUSSION

Many people at one point or another in their lives, tell about having depression and anxiety. However, they would mostly be hesitant to undergo formal evaluation and treatment. Even the patients with knowledge about anxiety and depression often avoid screening and treatment. The fear of stigmatization and becoming a taboo results in people denying the mental health issues.

Anxiety is defined as the state of anguish and overwhelming worry.⁸ It may lead to an unpleasant state, whether considering the mental and physical symptoms.⁹ The state of being low key and having a low mood and abhorrence to participate in daily activities is called depression.¹⁰ There is a greater chance to develop mental, physical and personality changes in people suffering from anxiety and depression.² Similar is the case with doctors. A doctor who is psychologically unwell cannot perform his services on the same level as his colleagues who are mentally well. Their work efficiency is decreased.² There has been a lack of studies about substance

abuse, suicide, anxiety and depression and other psychological issues amongst doctors.⁶

The aim of this study is to evaluate doctors serving at three tertiary care hospitals at Lahore for anxiety and depression, including the severity of disorder and accompanying risk factors. HADS was selected as a hospital inventory. It is an authentic and comprehensive assessment tool for anxiety or depression.¹¹ Zigmond and Snaith developed this scale.¹²

In this study, 35.0% of doctors had mild to moderate anxiety and 24.7% had depression respectively, while 6.5% had severe anxiety and 1% had depression respectively. None of them told to have undergone any evaluation or screening. There is not sufficient data about the anxiety and depression among doctors in Pakistan and its individual cities, however some studies show that 39% of the family practitioners in Karachi had anxiety and depression.² There was a strong link between anxiety and depression; more anxious were more depressed and vice versa.

In this study, 62.68% females were significantly more prone to have anxiety as compared to males 23.56%, while there was no significant impact of gender on depression scores. According to the study conducted amongst doctors in Karachi, females have a six time higher risk to develop anxiety and depression,^{4,13} suicidal ideation and psychological distress.²

In this study, depression was greater in doctors with lesser service years, while service years had no significant impact on anxiety scores. In the United Kingdom, higher levels of stress were seen in senior medical staff.¹⁵ In another study, emotional disturbance was found in 50% of junior doctors.¹⁶

In this study, marital status and extra working hours had no significant effect on HADS scores of the respondents. Researchers documented varying results. "Medical marriages" are documented in some studies to be unhappy ones, as physicians remain so engaged and committed to their work that they tend to neglect their families, marriage and leisure time.⁶

There are a number of factors that lead to depression and anxiety amongst doctors like extensive workload, extended duty hours, over demanding patients, scanty resources, ethical and legal issues and traumatic or critical decision making.² In Karachi, those who worked more than 48 hours per week, were at a greater risk to develop depression and anxiety.² Another study showed doctors who worked more than 46 hours per week had a higher chance to face psychological challenges.¹⁴ In Turkey, low income resulted in more anxiety amongst physicians.⁴ The basic aim to carry out this study was to reach productive conclusions and forthcoming tactics to break the existing shackles of anxiety and depression among doctors, with a hope to adopt measures to attenuate its plight. Prevention should be employed as the best cure in this matter.²

Limitations

This study could not be generalized as all the doctors in Lahore were not examined and screened. The response of the doctors was low, thus the selection bias was unavoidable. The doctors who responded could have been more health conscious, could show more interest and passion in medical research and studies, could invest more time in such researches or they may be less afraid of being labelled of having a mental health disorder. There is a high probability of interview bias as at least some of respondents may not be willing to tell about their actual mental health state.

This research is novel and the first one of its type that was conducted amongst the doctors serving in tertiary care hospitals in Lahore. The study helped to acquire substantial data about the astonishingly high prevalence of anxiety and depression amongst those who took part. Better results can be obtained through further research and analysis, helping us to develop guidelines to screen anxiety and depression in doctors, and deal with those who are suffering in a better way and at early stages. Healthy doctors can assure explicit health care delivery.

CONCLUSION

Doctors are not immune to anxiety and depression. They should be properly examined for anxiety and depression at regular intervals in life to avoid deterioration of their health, and to reduce chances of patient maltreatment and neglect.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of the paper.

Acknowledgement

Authors acknowledge all the doctors who responded to our questionnaire, and helped us with data collection.

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Mental health is not a
destination, but a
process. It’s about how
you drive, not where
you’re going

EUGLYCEMIA & HYPERINSULINEMIA IN NORMAL PREGNANCY AND ITS RELATIONSHIP WITH AGE

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Abstract

Background: Purpose of insulin resistance (IR) adapted by mother is to deliver enough quantity of nutrients to the growing fetus. Many maternal hormones and factors play role in causation of IR during pregnancy.

Objectives: The study aims at evaluating insulin resistance in different age groups of pregnant subjects in first and second trimesters of pregnancy and non-pregnant controls.

Methodology: Pregnant women at 1st and 2nd trimester were grouped into two groups according to age, less than 30 years (Group 1; n=42) and more than 30 years (Group 3; n=23) & (n=65 total pregnant subjects). Healthy non-pregnant women were taken as controls (n=25). Same two groups of non-pregnant control subjects, according to age, less than 30 years (Group 2; n=15) and more than 30 years (Group 4; n=10). Fasting plasma glucose (FPG) and fasting serum insulin (FSI) were measured. The student's t-test was used for data analysis.

Results: Highly significant increase in insulin levels in both age groups of pregnancy as compare to non-pregnant state of local populations has been observed. The results demonstrate that there is certainly adapted insulin sensitivity in the pregnancy but there is no significant difference in adaptation of insulin in younger and older age groups of pregnant subjects.

Conclusion: The adaptations of the gestation are necessary ingredients for the successful outcome of the pregnancy for the mother as well as the growing fetus. Increased IR is associated with poor maternal and fetal outcome. Screening of all pregnancy for IR and early intervention may help to reduce the associated complications.

Key Words: Insulin, glucose, pregnancy, insulin resistance (IR), gestation, trimester

Normal pregnancy is associated with many metabolic, biochemical, physiological, hematological and immunological changes. With no complications, these changes are reversible after delivery.¹ There is variable degree of resistance to the action of insulin on glucose uptake and utilization in healthy women with pregnancy.² IR is defined as decreased ability of target tissues such as liver, adipose tissue and muscle to respond to normal circulating concentrations of insulin. It is reported that pregnant women require an additional energy of

300 kcal/day over routine energy intake³ while the average glucose utilized by a growing fetus at the 3rd trimester reaches approximately to 33 $\mu\text{mol/kg/min}$.⁴ Maternal IR leads to more use of fats than carbohydrates for energy by mother and spares carbohydrates for fetus. Thus, the development of IR serve as a physiological adaptation of the mother to ensure adequate carbohydrate supply for the rapidly growing fetus.⁴ As the pregnancy advances, insulin sensitivity may gradually decline to 50% of the normal expected value.⁵ This decline is reported to

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be mediated by a number of factors such as increase in the levels of estrogen, progesterone and human placental lactogen (hPL), among other factors.^{6,7}

Normally, insulin binding to insulin receptor causes phosphorylation of β -subunit of receptor and it further leads to phosphorylation of Insulin Receptor Substrate-I (IRS-I) at tyrosine residue which act as docking site for further signal transduction molecules.⁸ Progesterone suppresses the phosphoinositol 3-kinase-mediated pathway by reducing the expression of IRS-1. Gradually increasing progesterone concentration with advancement of normal pregnancy is associated with increased inhibition of insulin-induced GLUT4 translocation and glucose uptake.⁹ Estrogen concentration is also high in pregnancy. 17β -estradiol diminishes insulin sensitivity at high concentrations.¹⁰ Human placental lactogen (hPL) has both insulin-like and anti-insulin effects. In vitro, it has been shown to increase lipolysis and free fatty acids (FFAs) in adipocytes. Increased hPL level in pregnancy is found to increase glucose uptake, oxidation, and incorporation of glucose into glycogen, which may favor glycogen storage in the mother.¹¹ Human placental growth hormone (hPGH), a product of the human growth hormone variant gene, is not regulated by growth hormone-releasing hormone (GH-RH) and is secreted tonically rather than in a pulsatile fashion. hPGH has the same affinity for the growth hormone receptor as pituitary GH. The hPGH may also have the same diabetogenic effects as pituitary growth hormone such as hyperinsulinemia, decreased insulin-stimulated glucose uptake and glycogen synthesis, and impairment of the ability of insulin to suppress hepatic gluconeogenesis.¹² Other factors such as increased levels of serum cortisol, Tumor necrosis factor α (TNF α), ILs etc., can interrupt the insulin signaling pathway and can lead to IR during normal pregnancy.¹³

Aging is associated with an increase in body-weight and fat mass. Not only abdominal fat is associated with hyperinsulinemia but visceral adiposity is correlated with insulin resistance as well.¹⁴

Modifications of the changes in body composition with aging by diet and exercise training could delay the onset of insulin resistance.¹⁵ There are also selective forms of insulin resistance with unique features, including vascular insulin resistance. Insulin resistance, both classical and vascular, contributes to vascular impairment resulting in increased risk of cardiovascular disease.¹⁶ Furthermore, in the elderly population, additional factors including redistribution of fat concentrations, low-grade inflammation, and decreased self-repair capacity or cell senescence, enhances the vascular abnormalities related to insulin resistance.¹⁷ Most studies have demonstrated normal or increased insulin secretion as a function of aging following an oral or intravenous glucose load. However, some studies have demonstrated a delayed rise in insulin levels in the elderly during oral glucose tolerance testing and other investigators have shown a decrease in the early phase of insulin secretion following intravenous glucose tolerance tests.^{18,19} Because of the generally increased or normal insulin levels associated with elevated glucose levels during glucose tolerance tests, insulin resistance has been considered as a mechanism responsible for the glucose intolerance of aging.²⁰ Some studies however were not able to demonstrate a decrease in insulin sensitivity as a function of aging.²¹

Available literature suggests that there is a rise in IR in 3rd trimester of pregnancy.²² However less literature is available about the 1st and 2nd trimester. Moreover there are controversial results about the insulin resistance mechanism and aging. So the present study was undertaken to evaluate the status of IR in early phases of normal pregnancy and effect of age in its occurrence.

METHODOLOGY

Study design: It was a comparative cross-sectional hospital based study.

Place of study: This study was conducted at Jinnah Postgraduate Hospital Lahore which is second largest teaching hospital of Punjab. The study was

carried out at the antenatal clinic of Gynae and Obstetrics OPD of the Jinnah Postgraduate Hospital Lahore.

Duration of Study: The duration of study for sampling at the hospital was one month and study was performed in March 2019.

Sample size: The sample size of the study was 90 women, 65 pregnant subjects and 25 non-pregnant healthy controls which were further divided into two age groups less than thirty and more than thirty years of age. Pregnant women at 1st and 2nd trimester were grouped randomly into two groups according to age, less than 30 years (Group 1; n=42) and more than 30 years (Group 3; n=23). Same two groups of non-pregnant control subjects, according to age, less than 30 years (Group 2; n=15) and more than 30 years (Group 4; n=10).

Ethical Considerations and Consent Process: Ethical clearance was obtained from the Committee on Human Research, Publications and Ethics (CHRPE), Principal of Allama Iqbal Medical College and Head of Gynae Department. Informed verbal consent of all the subjects was taken.

Eligibility Criteria: Participants as subjects /cases were pregnant and attending antenatal clinic in their first and second trimester while the subjects as control were non-pregnant women visiting as attendants of patients or for minor ailments to Gynae OPD clinic. Participants with adequate health were included. Women with doubtful pregnancy and with recent or chronic conditions that could affect or interfere with target markers were excluded. Pregnant women in their third trimester and unwilling women also excluded.

Sample Collection and Analysis: 5ml blood was taken via the standard venipuncture technique into yellow top gel test tubes during the first trimester. Immediately after the drawal of blood, blood glucose level was checked by the use of Glucometer and entered in the corresponding column. These samples were allowed to freely clot, spun at 3000 rpm for 15 minutes and then sera separated into

appropriate tubes and frozen at -80°C until analysis were done. The frozen serum samples were removed from the freezer and allowed to thaw at room temperature before being analyzed for insulin by ELIZA kit, according to manufacturer's protocol.

Statistical analysis: Results were expressed as mean+S.D. Statistical analysis was performed using SPSS version 20.0 (SPSS Inc.) and Graph Pad prism 5 for Windows. Frequencies and percentages were calculated and data was presented in tables and figures Student t-test (unpaired t test) was used to compare the significance of the difference in the mean values of any two groups. $P < 0.05$ was considered statistically significant.

RESULTS

In a random study, glycemia and insulinemia were studied in the pregnant females and also in non-pregnant females as controls.

INSULIN LEVELS (Table 1 & Figure1)

In pregnant women of both age groups of less than thirty and more than thirty years of age collectively, mean insulin level was $41.68 + 0.8658$ mIU/L. In the controls the values were $24.86 + 1.426$ mIU/L. In pregnant subjects insulinemia was about 67% greater as compare to the controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been comparatively hyperinsulinemia in the phases of the pregnancy studied

Age 30 Years and Younger: In pregnant women with the age = < 30 years insulin level was $40.58 + 1.018$ mIU/L and in non-pregnant controls with the age = < 30 years insulin level was $24.39 + 1.888$ mIU/L. In the studied phases of pregnancy insulinemia was about 66% greater as compare to the controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been significant hyperinsulinemia in younger group of studied pregnant subjects as compare to controls.

Age above 30 Years: In pregnant women with the age > 30 years insulin level was $43.07 + 1.615$ mIU/L and

in non-pregnant controls with the age >30 years insulin level was 28.29±2.369mIU/L. In the studied phases of pregnancy insulinemia was about 52% greater as compare to the controls. The values had been highly significantly different in both the comparing groups (p<0.0001). There has been hyperinsulinemia also in the older age group in studied phases of the pregnancy as compared to controls.

Comparison of Insulin Levels in both Age Groups of Pregnant Women: It is notable that hyperinsulinemia in older pregnant women was about 14% lower than the younger group subjects. The difference between both the age related pregnant groups was statistically non-significant (p=0.176).

Comparison of Insulin Levels in both Age Groups of Non-Pregnant Controls: In non-pregnant women with the age = &<30 years insulin level was 24.39±1.888mIU/L and in non-pregnant controls with the age >30 years insulin level was 28.29±2.369mIU/L. There is 3.9% higher insulin levels in the non-pregnant subjects of older age as compared to younger ones(p>0.0001).

GLUCOSE LEVELS (Table 2 & Figure 2)

In pregnant women both age groups collectively, mean glucose level was 104.6 ± 2.082 mg/dl. In non-pregnant control the values were 110.5±2.430 mg/dl. In early pregnancy glycemia was about 5.4% lesser as compare to the controls. The values had been not significantly different in both the comparing groups (p: 0.1136). Thus there has been comparatively lower glycemia in the phases of the

pregnancy studied as compared to the non-pregnant state

Age 30 Years and Younger: In pregnant women with the age= &<30 years, glucose level was 101.8± 2.251 mg/dl and in non-pregnant controls with the age= &<30 years glucose level was 112.9±3.64 mg/dl.

In the studied phases of pregnancy glycemia was about 10.9% lower as compare to the non-pregnant controls. The values had not been statistically significant in both the comparing groups (p: 0.0135). Thus there has been comparatively significantly lower glycemia in younger group of studied pregnant subjects.

Age above 30 Years: In pregnant women with the age >30 years glucose level was 111±3.857mg/dl and in non-pregnant controls with the age >30 years glucose level was 107±2.486mg/dl. In the studied phases of pregnancy glycemia was about 3.74% greater as compare to the controls. The values had not been statistically significant in both the comparing groups (p: 0.5179). Thus there has been comparatively non-significantly greater glycemia in the older age group in studied phase of pregnancy.

Comparison of Glucose levels in both age groups of pregnant subjects: It is demonstrated that there is significant lowering of glycemia in the pregnancy of women of the age less than 30 years. Such response is not observed in the older age subjects where non-significant greater glycemia is observed as compared to their non-pregnant controls. In younger pregnant subject significant lower glycemia is also found as compared to the older pregnant sub-

Table 1: Average Insulinemia in Pregnant and Non-Pregnant Control Subjects in different Groups of = &<30 Years and >30 Years of Age.

Grp.No	Age Group	N	Status	Mean ±SEM mIU/L	P Value
	Both Age Groups	65	Pregnant Cases	41.68 ± 0.8658	p<0.0001
	Both Age Groups	25	Non-Pregnant Controls	24.86 ±1.426	
1	=&<30 Years of age	42	Pregnant Cases	40.58 ± 1.018	p<0.0001 Comparison b/w Group 1 & 2
2	=&<30 Years of age	15	Non-pregnant controls	24.39 ± 1.888	p>0.0001 Comparison b/w Group 2 & 4
3	>30 Years of age	23	Pregnant cases	43.07 ± 1.615	p=0.1766 Comparison b/w Group 1 & 3
4	>30 Years of Age	10	Non-pregnant Controls	28.29 ± 2.369	p<0.0001 Comparison b/w Group 3& 4.

Table 2: Average Glycemia in Pregnant and Non-Pregnant Control Subjects in different Groups of = &<30 Years and >30 Years of Age. b/w: Between

Grp. No	Age Group	N	Status	Mean \pm SEM mg/dl	P Value
	Both Age Groups	65	Pregnant Cases	104.6 \pm 2.082	P=0.1136
	Both Age Groups	25	Non-Pregnant Controls	110.5 \pm 2.430	
1	= &<30 Years of age	42	Pregnant	101.8 \pm 2.251	0.0135 Comparison b/w Group 1 & 2 p>0.0001 Comparison b/w Group 2 & 4
2	= &<30 Years of age	15	Non-pregnant	112.9 \pm 3.64	
3	>30 Years of age	23	Pregnant	111 \pm 3.857	0.0302 Comparison b/w Group 1 & 3 0.5179 Comparison b/w Group 3 and 4
4	>30 Years of age	10	Non-pregnant	107 \pm 2.486	

jects. Therefore it is notable that in older pregnant women glycemia was about 13.5% higher than the younger group subjects. The difference between both the age related pregnant groups was statistically significant (p=0.03).

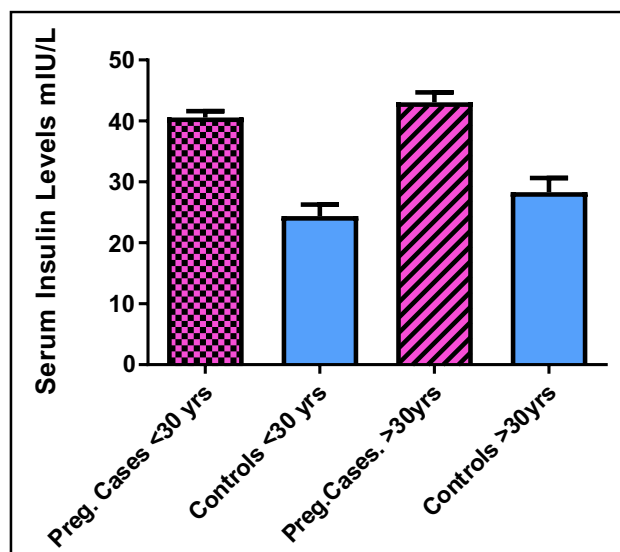


Fig. 1 Average Insulinemia Mean + SEM in Two Category of Comparatively Younger and Older Pregnant and Non-pregnant Control Subjects. Statistically significant difference: $p < 0.05$.

Comparison of Glucose levels in both age groups of non-pregnant controls: In non-pregnant women with the age = &<30 years glucose level was 112.4+3.64 mg/dl and in non-pregnant controls with the age >30 years glucose level was 107+2.486 mg/dl. There is 5.4% lower glucose levels in the non-pregnant subjects of older age as compared to younger ones (p>0.0001) which co-relates with the higher insulinemia in older age group.

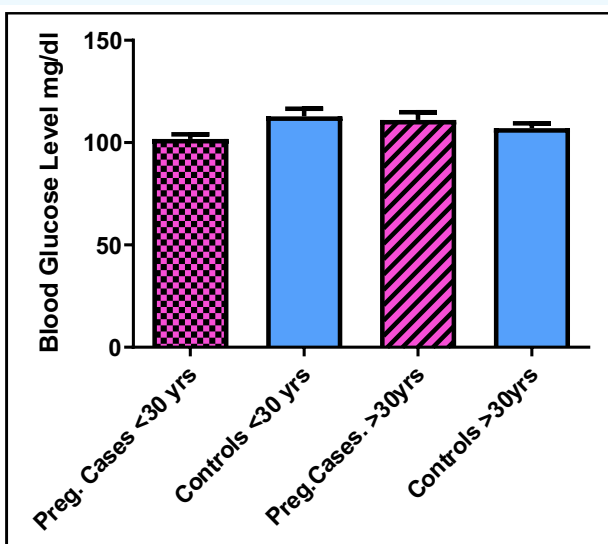


Fig. 2. Average Glycemia Mean+ SEM in Two Category of Comparatively Younger and Older Pregnant and Non-Pregnant Control Subjects. Statistically Non-Significant Difference:

DISCUSSION

The adaptations of the gestation are necessary ingredients for the successful outcome of the pregnancy. The emergence of placenta during the pregnancy is the source of several adaptations with the productions of several substances, the prominent are the hormone. The development of fetus requires the primary energy constituent and the supply of glucose is almost exclusive from the maternal environment. Thus there is enhanced transport of glucose specifically in the early pregnancy when maternal is the only available source. Basal level of insulin may be normal; however there is hyperscretion of insulin in responses to a meal. Along with this, mild insulin insensitivity is characteristic feature of pregnancy because of the enhanced fetal

demand for glucose⁽²³⁾. IR is the condition in which there is a decreased action of insulin on body tissue at normal concentration of plasma insulin. This can be as a result of a number of factors such as defective molecular structure of insulin, defective receptor functioning or defective signal transduction pathway. In the pregnancy acquired condition, the defect is either in receptor affinity for insulin or as a result of some interruption in signalling pathway of insulin down the receptor.²⁴ To compensate this IR, there is increased production of insulin from beta cells of islet of Langerhans leading to hyperinsulinemia. Insulin producing capacity of pancreatic beta cells is not infinite. Gradually beta cell functioning also declines leading to a reduction in insulin production and the condition progresses to glucose intolerance and subsequently, to diabetes mellitus.²⁵

In the present study, it was observed that the mean insulin levels were 67% higher as compared with non-pregnant controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been comparatively hyperinsulinemia in the phases of the pregnancy studied. The mean plasma glucose concentrations in both groups are not significantly different ($p: 0.1136$), but there has been comparatively lower glycemia about 5.4% in the phases of the pregnancy studied as compared to the non-pregnant state. It shows increase in insulin requirement to maintain the similar plasma glucose concentration in pregnant women. In the study done by Buchanan T et al., researchers found that there is gradual decline in insulin sensitivity as the pregnancy advances. So the amount of insulin produced in response to glucose concentration also gradually increases. In normal pregnancy, there is an approximate 50% decrease in insulin mediated glucose disposal and a 200% to 250% increase in insulin secretion to maintain euglycemia in the mother.²⁶

Many researchers^{27,28} have noted that age is one factor affecting insulin sensitivity and that with an increase in age, there is a progressive increase in IR. In the present study, there was no significant diffe-

rence in insulin levels according to age of mothers in both the case groups ($p > 0.05$). In general in present study there had been elevated insulinemia in early pregnancy, however it was observed that that hyperinsulinemia in older pregnant women was about 14% lower than the younger group subjects, although the difference between both the age related pregnant groups was statistically non-significant ($p = 0.176$). Possibly that insulin resistance mechanism in early pregnancy is comparatively aggressive in younger than older mothers. It is suggested that it will be informative to further study age related difference in the early pregnancy insulin resistance phenomenon. It has been demonstrated that there was however significant lowering of glycemia in the early phases of the pregnancy of women of the age less than 30 years. Such response however has not been observed in the older age subjects where non-significant greater glycemia was observed as compared to their non-pregnant controls. In younger age mothers in early pregnancy there is greater requirement of energy for the mother thus justify the lower glycemia as compare to older mothers as had been observed in the study. Hence in younger mothers the intensity of insulin resistance is high than the older mothers. Therefore the availability of glucose to fetus is also low in younger mothers. It may be assumed that abortion rate excluding the induced ones is higher in younger females than the older expecting females. There is higher rate of threatening abortions in the younger than the older mothers. The fetus in the early age pregnancy is at greater risk because of comparatively reduced insulin resistance and low availability of glucose to the emerging fetus. Hodson et al. (2013) have been reported that the effect of pregnancy on muscle insulin resistance is distinct from that underlying type 2 diabetes. Thus a different mechanism more specific to pregnancy may be the reason of this unexpected results.

Age matched cases and controls were taken in order to remove one of the main confounding factor. The present study looks at the status of IR in first and second trimesters of pregnancy. Diseases such as hypertension, diabetes etc. are associated with

presence of IR. Such subjects were excluded from study to remove the bias. Women with increased IR are more prone to develop preeclampsia & gestational diabetes. Preeclampsia is associated with increased expression of TNF α and other inflammatory marker which causes IR.^{28,29} Increased IR leads to dyslipidemia that can worsen the placental ischemia leading to vicious cycle of ischemia, inflammation-IR-dyslipidemia-ischemia.³⁰ In prospective studies it is proven that most women, who develop gestational diabetes, have increased IR caused by alteration in insulin signaling pathway, abnormal subcellular localization of GLUT4 transporters, increased expression of the membrane glycoprotein PC-1 or reduced insulin mediated glucose transport.³¹ Increased IR is also associated with occurrence of premature labour, antepartum or postpartum hemorrhage and fetal complications like intrauterine growth retardation or fetal overgrowth and prematurity. Presence of IR also increases risk of development of metabolic syndrome, diabetes mellitus, hypertension, hyperlipidemia, and cardiovascular disorders later in life.²⁹ Screening for IR can be advised to all pregnant women. Insulin sensitivity can be improved in these women by modifying diet, lifestyle, amount and type of physical activity. Balanced diet providing required quantity of macro and micro nutrients with good amount of dietary fibers can be prescribed⁽³²⁾. Avoidance of sedentary lifestyle and increasing amount of activity should be advised before, during and after pregnancy. Mild exercises such as walking, climbing stairs etc. can be advised for women with increased IR during pregnancy.³³ Such intervention should be done at an early stage well before the IR related complication develops.³⁴

CONCLUSION

The adaptations of the gestation are necessary ingredients for the successful outcome of the pregnancy for the mother as well as the growing fetus. In present study, the highly significant increase in insulin levels in both age groups of pregnancy as compare to non-pregnant state of local populations has been observed. The results demonstrate that there is certainly adapted insulin sensitivity in the pregnancy but there is no significant difference in adaptation of insulin in younger and older age groups of pregnant subjects. Increased IR is associated with poor maternal and fetal outcome. Screening of all pregnancy for IR and early intervention may help to reduce the associated complications.

AUTHORS' CONTRIBUTIONS

Dr. Shazia Ramzan designed the initial study, searched related literature, collected data and conducted the study. Prof. Dr. Arif Malik designed the initial draft of manuscript, reviewed and made corrections. Dr. Faheem Hadi worked on literature search, reviewed and finalized results and discussion. Dr. Maria Anwar reviewed the literature, and contributed to the discussion. Dr. Manzoor Ahmad and Dr. Maryam Raza reviewed the study outcomes and conclusion. All authors contributed to the final manuscript.

Conflict of Interest: No conflict of interest associated with this work.

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EFFICACY OF AUTOLOGOUS PLATELET RICH PLASMA IN THE TREATMENT OF CHRONIC, NON-HEALING LEG ULCERS

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Abstract

Background: Chronic non-healing leg ulcers are a major therapeutic challenge. The prevalence varies from 0.18 to 1%. They are unresponsive to therapy and despite proper wound care, do not heal within three months. Due to long standing inflammation, there is destruction of growth factors in these lesions. Autologous platelet rich plasma (PRP) has a high concentration of growth factors. Application of PRP causes significant improvement in the treatment of chronic ulcers.

Objective: To evaluate the efficacy of PRP in the treatment of chronic, non-healing leg ulcers

Methods: This cross-sectional multicenter study was carried out in the Department of Dermatology, Jinnah Hospital and Sir Ganga Ram Hospital, Lahore, for a total period of one year, starting from September, 2018. A total of 9 patients suffering from chronic leg ulcers of either gender were enrolled in the study. The patients were examined clinically and treated with autologous PRP application. Treatment outcome was measured by percentage reduction in the area and volume of the ulcer at the end of six treatment sessions. The findings were recorded on a pre-designed proforma.

Results: Out of the total 9 patients included in the study, 6 were males and 3 were females. Mean age was 34 years. Total number of ulcers were 16. Mean reduction in the area and volume of the ulcers was 85.3% and 92.4% respectively.

Conclusion: PRP can be considered as an effective adjuvant therapy for the treatment of chronic cutaneous non-healing ulcers.

Key Words: Platelet rich plasma, chronic leg ulcer, growth factors.

Chronic leg ulcers are lesions showing no tendency to heal even after three months of proper treatment.¹ There is complete loss of the epidermis and parts of the dermis and subcutaneous fat.² The incidence increases with increasing population age. Almost 10% of the population in course of their lifetime will develop a chronic wound, with a wound-related mortality rate of 2.5%.³ 0.6–3% of people aged over 60 years and 5% of those aged over 80 years have been seen to be affected by chronic leg ulcers.⁴

These are of different types of chronic ulcers including venous, arterial, vasculitic, neurotropic,

pressure, traumatic, pyoderma gangrenosum, ulcers due to underlying systemic diseases like diabetes, hypertension, malignancy and hematological disorders.^{1,5} Venous ulcers constitute 70%, arterial ulcers 10% and ulcers of mixed etiology 15% of leg ulcer presentations. The remaining 5% result from less common causes.⁴ Venous ulcers are caused by venous hypertension leading to damage to walls of vessels whereas arterial ulcers are caused by impaired circulation.⁶ Diabetic patients are at high risk to develop foot ulcers attributed to their tendency to develop infection and diabetic neuropathy.⁶ About 15–25% of diabetic patients develop a foot

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ulcer, out of which about 12% result in lower extremity amputation.⁶

There are different treatment modalities for management of chronic leg ulcers like wound debridement, dressing, antiseptics, antibiotics, pressure relief in wound area, ischemia management, medical management of comorbidities, split skin grating and surgical management.¹⁵

The physiological process of wound healing has four phases: hemostasis, inflammation, proliferation and maturation.⁷ During physiological process of wound healing, platelets become activated at injury site and release growth factors and cytokines over time during retraction of clot.⁸ Platelets are enucleate fragments of megakaryocytes originating in bone marrow. They travel in blood stream for 7-10 days and contain wide protein content in their secretory granules.⁸ Growth factors also play an important role in the process of wound healing and tissue regeneration by triggering chemotaxis, angiogenesis, proliferation and differentiation of cells, stimulate cells to upregulate protein production and remodeling of extracellular matrix.⁹ These are secreted by alpha granules of platelets.¹⁰ They are the signaling proteins affecting metabolism of other cells and have more than one effect on wound healing process. They bind to specific receptors on cell membranes of target cells.⁹ Effective intervention must be made to halt this impeded healing by inducing reparative phase of healing and shortening the prior inflammatory phase.¹⁰

Many chronic leg ulcers fail to heal or recur after healing. These require additional advanced wound care therapies for adequate healing.¹⁰ One of these is autologous platelet rich plasma therapy (PRP) which has been a breakthrough in the treatment of chronic leg ulcers. It has gathered valuable attention in field of regenerative medicine having potential to stimulate and accelerate tissue healing.^{9,10} It is defined as an autologous biological product which has been derived from the blood of patient and in which a plasma fraction is obtained after a centrifugation process having 2-6 folds higher

platelet concentration as compared to circulating blood.^{9,10} As platelets are source of growth factors and cytokines having mitogenic, angiogenic and chemotactic properties; their higher concentration enhances tissue healing and regeneration.^{11,12} Objective was to study the efficacy of autologous PRP in the treatment of non-healing chronic leg ulcers.

METHODOLOGY

A multicenter, open label quasi-experimental study was conducted in the Dermatology Department of Jinnah Hospital and Sir Ganga Ram Hospital, Lahore from September 2018 till September 2019. Both male and female patients from outpatient and in-patient departments were enrolled. A written informed consent was obtained. Patients having ulcers of more than 6 weeks' duration and not responding to conventional therapies were included. Patients with coagulation disorders, hemodynamic instability, autoimmune connective disorders, liver disorders or renal disorders were not included. Patients having non-healing ulcers with superadded infections were also excluded. Informed consent was taken from all the patients. Demographic data, detail history and thorough clinical examination of the patients was undertaken. Ulcer size (length, width and depth) was measured. Wound area was calculated using the formula for an ellipse: Length \times width \times 0.7854 (an ellipse is closer to a wound shape than a square or rectangle) and volume was calculated using the formula (length \times width \times 0.7854) \times depth. All measurements were recorded on a pre-designed proforma. Baseline investigations, blood sugar and venous doppler was carried out in all the patients.

For PRP preparation around 20ml whole blood was withdrawn with an aseptic technique in acid citrate dextrose (ACD) tubes or sodium citrate. The tubes containing withdrawn blood was placed in a centrifuge machine and spun using a carefully determined protocol. Blood was centrifuged using the soft spin that is 1500 revolutions for 10 minutes to

separate the red blood cells from platelets and plasma. The supernatant plasma containing platelets was then transferred into another sterile tube (without anticoagulant). A hard spin at 4000 revolutions for 5 minutes was then undertaken to obtain a platelet concentrate. The lower 1/3rd is PRP which is collected and upper 2/3rd is platelet-poor plasma which is discarded.

After the wound was thoroughly cleansed with normal saline and dried, the PRP was sprinkled evenly onto the wound surface. Later the ulcer was covered with a gauze piece soaked in remaining PRP and loose crepe bandage was applied. The ulcer was covered with dressing for at least 48 hours, after which the wound was cleansed daily with normal saline till the next session. The session was repeated once weekly for 6 weeks. The ulcer size was noted every week and photographs were also taken before each session. The final outcome was measured as a percentage improvement in the area and volume of the ulcer, at baseline and at one week after the last session.

RESULTS

A total number of 9 patients with 16 chronic cutaneous leg ulcers were enrolled in the study. There were 6 (66.6%) males and 3 (33.3%) female patients, with a male to female ratio of 2:1. The age range was 20 to 70 years and mean age was 34 years. 3 (33.3%) patients were in the age group between 20–30 years, 4 (44.4%) between 30 years and 40 years, 1(11%) between 40-50 years and 1(11%) between 60-70 years. Out of 16 ulcers, 8 (50%) ulcers were due to venous insufficiency, 4 (25%) were due to pyoderma gangrenosum, 2 (12.5%) were due to diabetes and remaining 2 (12.5%) were due to trauma (see figure 1). The duration of ulcers ranged from 6 months to 1 year. The mean duration of the healing of the ulcers with autologous PRP application was 4.5 weeks. The baseline mean area of the ulcers was 15.50cm² and mean baseline volume of the ulcers was 10.23cm³. At one week after the last session the mean area and volume of the ulcers was

2.29cm² and 0.75cm³ respectively. The mean percentage improvement in the area and volume of the ulcers was 85.3% and 92.4% respectively (see figure 2). No side effect like pain, burning, pruritus or irritation were seen in any of the patients during the whole treatment period.

Figure 1: Causes of Leg Ulcers

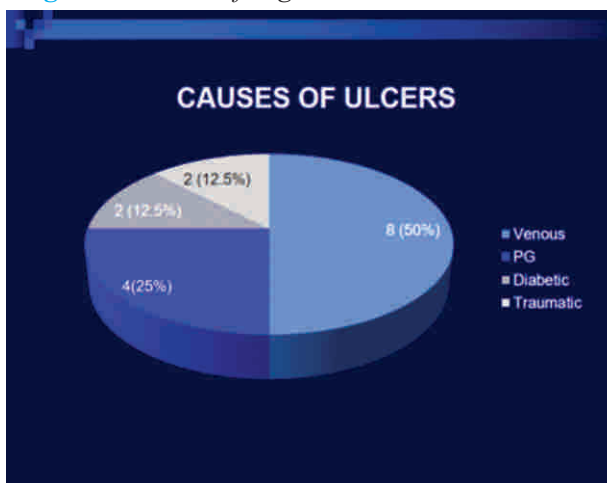


Figure 2: Patient with Chronic Leg Ulcer showing



Improvement after 6 Sessions

DISCUSSION

Chronic cutaneous leg ulcers are a major health issue all over the world and are mostly difficult to treat despite a multidisciplinary approach.⁷ Conventional wound care is unable to supply the growth factors needed for wound healing.⁷ Platelets have an important role in wound healing process because of their homeostatic function and by releasing growth factors and cytokines.⁸ Platelet rich plasma therapy not only provides various growth factors for wound healing but also up-regulates cell cycle proteins.⁷

Autologous PRP is safe as it is obtained from patient's own blood, easy and cost effective treatment with more long lasting effects.¹²

A study conducted by Sarvajnamurthy et al.¹³ on 12 patients with 17 venous ulcers, showed that the mean duration of the healing of the ulcers was in 5.1 weeks, and the mean percentage improvement in the area and volume of the ulcer was 94.7% and 95.6% respectively. The mean age of the patients was 33.5 years and there were 10 males and 2 females. In our study on 9 patients with 16 leg ulcers, the mean percentage of area and volume reduction was 85.3% and 92.4% respectively, with a mean of 4.5 weeks treatment. The mean age of patients in our study was 34 years and there were 6 males and 3 females. The results of our study were almost comparable to the above mentioned study.

Another study conducted by Suryanarayan et al.¹¹ on 24 patients with 33 non-healing ulcers of various etiologies, showed that the mean duration of healing of the ulcers was 5.6 weeks and the mean percentage of reduction in area and volume of the ulcers was 91.7% and 95% respectively. These results were also comparable to our study.

Another study carried by Frykberg et al.¹³ on 49 patients with 65 non healing leg ulcers, showed that 63 out of 65 ulcers responded in a mean of 2.8 weeks duration. The mean percentage reduction of volume and area of leg ulcers were 56.1% and 43.1%. The results of this study were not comparable to ours as in our research work the sample size was of 9 patients with 16 leg ulcers.

A study conducted by Steenvoorde et al.¹¹ on 12 patients with 13 ulcers, showed that seven out of 13 ulcers required more than one application, with a mean treatment period of 4.2 weeks, which was comparable to our study on 9 patients with 16 leg ulcers, with a mean treatment period of 4.5 weeks.

Besides these, a number of studies have been conducted so far with satisfactory results on autologous PRP dressings for non-healing difficult to treat ulcers of various etiologies. In our study all patients were satisfied with the treatment protocol and showed remarkable improvement at the end of sessions. On the other hand, it is absolute safe to carry out more sessions in patients in whom complete resolution of ulcers is not achieved, as no adverse effects were seen in any of our patients and also reduction in the intensity of pain was also noticed with this treatment.

CONCLUSION

Chronic and difficult to treat leg ulcers carry

high morbidity and cost for not only patients but their families also suffer. PRP is a safe, autologous, biocompatible and cost effective procedure in enhancing the wound healing in chronic non-healing leg ulcers without any adverse effects. Moreover, several randomized control trials are needed to make an internationally recognized standardized protocol for the preparation of PRP.

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FREQUENCY OF LESIONS IN CENTRAL NERVOUS SYSTEM IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction. There can be a wide variety of space-occupying lesions in central nervous system. These include benign and malignant neoplasms, inflammatory and infectious diseases.

Objective: The objective of this study was to see the frequency of different benign and malignant lesions in CNS and to evaluate the incidence of lesions in both sexes.

Methods: A prospective descriptive study was conducted in Pathology department, Lahore General Hospital, Lahore from Jan, 2019-Dec, 2019. Hundred cases of different lesions in the central nervous system were collected and hematoxylin & Eosin staining, was done. Data analysis was done by Statistical Package for the Social Sciences (SPSS) Version 20 and expressed as frequency and percentage.

Results: The ages of the patients for different lesions in central nervous system ranged from 4-71 years with a mean of 35.3 ±12.5 SD. Astrocytoma was the most frequent malignancy in adults followed by meningioma, whereas medulloblastoma was the most common tumor of children.

Conclusion: In this study of 100 cases of lesions in central nervous system, it was concluded that Astrocytoma was the most common malignant tumor. Medulloblastoma was the most common tumor found in children. Incidence of tumors was more in males.

Key words: Astrocytoma, medulloblastoma, meningioma.

The central nervous system (CNS) consists of cerebrum, cerebellum, brain stem, spinal cord, meninges, and cranial nerves. Different infections, inflammatory processes and tumors can occur in CNS. Frequency of CNS tumors is less than 2% of malignancies.^{1,2} These should be diagnosed timely as they are associated with cancer related morbidity and mortality because of confined space and presence of vital structures close to them.^{3,4}

The most common brain tumor are meningiomas.⁵ There is an increased prevalence in females due to sex hormones. Meningiomas can arise from dura lining intracranial or spinal surface or from ventricle.⁶ Most meningiomas are benign (WHO

Grade I), grow slowly and can be cured by surgery, whereas, high grade (WHO Grade II, III) meningiomas grow rapidly and have poor prognosis.⁷ Grading is based on number of mitosis per high power field, invasion of brain, high nucleocytoplasmic ratio, increased cellularity, necrosis and presence of sheets of cells. Tumors with chordoid morphology are a typical meningioma (WHO Grade II), whereas rhabdoid and papillary features favor anaplastic meningioma (WHO Grade III).⁸

Glial tumors are astrocytoma, oligodendroglioma and ependymoma. Astrocytoma is the most common glial tumor and is classified into four grades, WHO grades I-IV. As grade of the tumor

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increases, prognosis becomes poor. Grade I tumors grow slowly, are benign and have better prognosis.^{9,10} Anaplastic astrocytoma is characterized histologically by atypia, increased mitosis and cellularity.¹¹ Glioblastoma multiforme (WHO grade IV) is aggressive tumor and shows pleomorphism, increased cellularity, necrosis and endothelial proliferation.¹² Oligodendrogliomas are uncommon diffuse gliomas.¹³

Tumors commonly found in children are pilocytic astrocytoma, medulloblastoma and ependymoma.¹⁴

Abscess can be a complication of meningitis or head injury. Causative organisms can be bacteria or fungi.¹⁵ Tuberculosis can cause meningoencephalitis, or lead to formation of tuberculoma.¹⁶

The epidermoid cysts are non-neoplastic cysts filled with keratin and lined by keratinized stratified squamous epithelium.¹⁷ Objective of the study was to see the frequency of different benign and malignant lesions in central nervous system. To evaluate the incidence of lesions in both sexes.

METHODOLOGY

It was a prospective descriptive study in which hundred samples of different lesions in the brain were collected in 10% formalin solution from Neurosurgery Department, Lahore General Hospital, Lahore. The study was conducted in Pathology department Lahore General Hospital, Lahore from January, 2019 to December, 2019. The tissues were processed in automatic processor. The sections were taken on slides. Hematoxylin & Eosin staining was done. After taking patient's consent, data was written on proforma.

Inclusion criteria was all the non-neoplastic lesions and benign and malignant tumors of central nervous system and patients of any age and sex.

Exclusion criteria was patients having recurrent disease or on chemotherapy or radiotherapy.

The data was expressed as frequency and percentage and analyzed using SPSS (Statistical Package for the social sciences) Version 20.0 (SPSS

for Windows, SPSS Inc., Chicago, IL, USA).

RESULTS

This prospective descriptive study was conducted from Jan 2019- Dec 2019, in Pathology department, Lahore General Hospital, Lahore. The age of patients for different lesions was from 4-71 years with mean 35.3 ± 12.5 SD. There were 55 (55%) males and 45 (45%) females. Out of 100 cases of lesions in central nervous system, there were 9 (9%) non neoplastic lesions, 4 of abscess, 4 of chronic granulomatous inflammation and 1 of epidermoid cyst. There were 7 males and 2 females. The age for non-neoplastic lesions was from 30-48 years with mean 34.56 ± 6.06 SD (Table 1, 2).

There were 91 cases of primary tumors of CNS. Astrocytoma was the most common tumor followed by meningioma. There were 37% cases of astrocytoma, of which 6 were WHO grade I (pilocytic astrocytoma), 13 were WHO grade II (diffuse astrocytoma), 10 of WHO grade III (Anaplastic astrocytoma), and 8 of WHO grade IV (Glioblastoma multiforme). There were 22 males and 15 female patients. The age was from 11 to 67 with mean 37.81 ± 12.16 SD. The age for pilocytic astrocytoma was 12-26 years with mean 22.33 ± 5.20 SD. Grade II (diffuse astrocytoma) was found in patients with age 30-50 years with mean 39.69 ± 5.15 SD. Patients having Anaplastic astrocytoma, were of age group 11-45 years with mean 34.2 ± 11.34 SD. Patients with Glioblastoma multiforme were in age range of 35-67 years mean 50.87 ± 10.23 SD (Table 1,3, Figure: 1).

There were 25% cases of meningioma, of which 1 was WHO Grade III (Anaplastic meningioma), while rest were of WHO grade I. Meningioma was seen in 13 males and 14 females. The age was from 27-55 years with mean 39.96 ± 5.86 SD (Table: 1, Figure: 2).

There were 10% cases of schwannoma. It was seen in 3 males and 7 females. The age of patients was from 27-71 years with mean 37.6 ± 13.93 SD. There were 9% cases of Pituitary adenoma seen in 3

males and 6 females in ages from 25-60 years with mean 34.22 ± 11.51 SD. There were 4 cases of medulloblastoma seen in children of age 4-14 years with mean 9 ± 5.25 SD. There were 3 males and 1 female (Table: 1, Figure; 3).

There were 4 % cases of ependymoma, and 1 case each of Craniopharyngioma, and medulloepithelioma respectively (Table 1).

Table 1: Frequency, age and sex distribution of lesions in central nervous system

Sr.	Lesion	Age	Male	Female	No. Of Cases
1	Abscess	34-40	3	1	4(4%)
2	Chronic granulomatous inflammation	30	3	1	4 (4%)
3	Schwannoma	27-71	3	7	10 (10%)
4	Pituitary adenoma	25-60	3	6	9 (9%)
5	Meningioma	27-55	13	12	25 (25%)
6	Craniopharyngioma	17	1	--	1(1%)
7	Medulloblastoma	4-14	3	1	4 (4%)
8	Medulloepithelioma	20	1	--	1 (1%)
9	Epidermoid cyst	48	1	--	1 (1%)
10	Ependymoma	10-25	2	2	4(4%)
11	Astrocytoma	11-67	22	15	37 (37%)

Table 2: Gender distribution of lesions in central nervous system

Gender	No. of cases
Male	55
Female	45

Table 3: Frequency, age and sex distribution in different grades of astrocytoma

S No	WHO Grade	Age	Male	Female	Total number of patients (percentage)
1	I (Pilocytic astrocytoma)	12-23	2	4	6 (16.2%)
2	II	30-50	8	5	13 (35.1%)
3	III	11-45	6	4	10 (27.02%)
4	IV (Glioblastoma multiforme)	35-67	6	2	8 (21.62%)

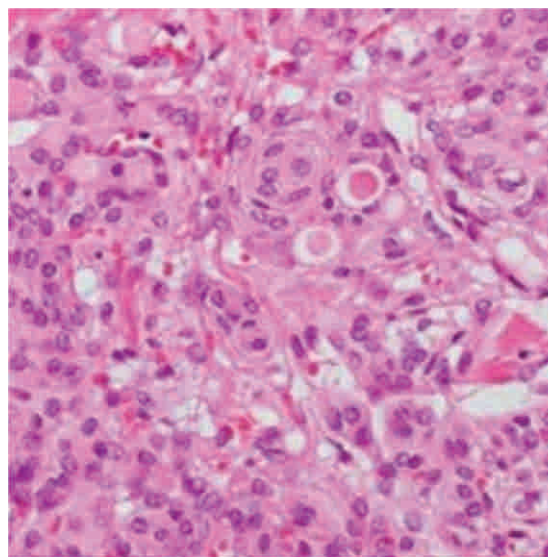


Figure 1: Photomicrograph Showing Meningioma WHO Grade I (Hematoxylin and Eosin Stain, 200x)

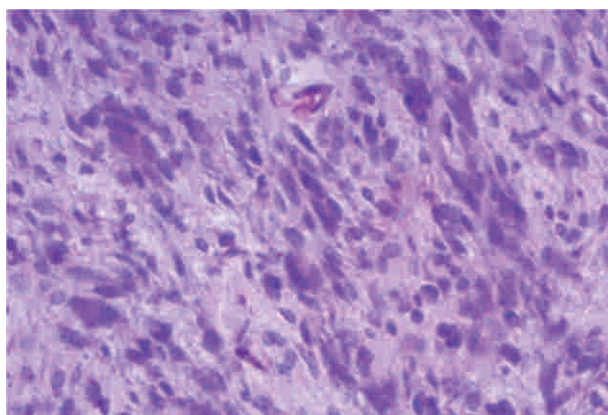


Figure 2: Photomicrograph Showing Astrocytoma WHO Grade II (Hematoxylin and Eosin Stain, 200x)

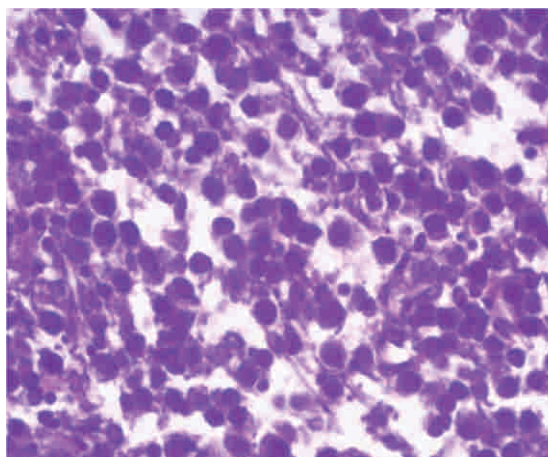


Figure 3: Photomicrograph showing Medulloblastoma (Hematoxylin and Eosin Stain, 200x)

DISCUSSION

The study was conducted from Jan 2019- Dec 2019, in Pathology department, Lahore General Hospital, Lahore. The age of patients for different lesions was from 4-71 years with mean 35.3 ± 12.5 SD. Fifty five percent were males and 45% were females. Out of 100 cases of lesions in central nervous system, there were 9 (9%) non neoplastic lesions, including abscess (4%), chronic granulomatous inflammation (4%) and epidermoid cyst (1%). These were seen more in males. The age for non-neoplastic lesions was from 30-48 years with mean 34.56 ± 6.06 SD (Table 1, 3). Kumarguru (2019) showed 15.6 % lesions in CNS were non neoplastic with a slight male predominance (Table:1,2).¹⁸

Out of 91 tumors of CNS, most common tumor found was Astrocytoma. Our results are in concordance with Adnan HA (2017).⁴ There were 37% cases of astrocytoma, of which 16.2% were WHO grade I, 35.1% were WHO grade II, 27.02% were WHO grade III, and 21.62% were of WHO grade IV. In our study grade II Astrocytoma was prevalent whereas, study done by Dong X(2010) showed increased number of Grade IV Astrocytoma.⁹ There were 22 males and 15 females. Mondal S (2016) found that the incidence of brain tumors was more in males.¹⁹ The age was from 11 to 67 with mean 37.81 ± 12.16 SD. The age for pilocytic astrocytoma was 12-26 years with mean 22.33 ± 5.20 SD. Grade II (diffuse astrocytoma) was found in patients with age 30-50 years with mean 39.69 ± 5.15 SD. Patients having Anaplastic astrocytoma, were of age group 11-45 years with mean 34.2 ± 11.34 SD. Patients with Glioblastoma multiforme were in age range of 35-67 years with mean 50.87 ± 10.23 SD (Table 1,2,3). Anvari K (2016) also found median age 33 and 50 for low- and high-grade astrocytoma respectively (Table: 1,3, Figure: 1).²⁰

There were 25% cases of meningioma, of which WHO grade I was most common. Meningioma was seen in 13 males and 14 females. Mubeen B (2019) also found that grade I meningioma was most common. However, in our study the incidence of

meningioma was slightly more in males which is not in accordance with work done by Mubeen B.²¹ The age was from 27-55 years with mean 39.96 ± 5.86 SD (Table: 1, Figure: 2).

There were 10% cases of schwannoma. The age of patients was from 27-71 years with mean 37.6 ± 13.93 SD. Schwannoma was seen more in females. However, Propp JM (2006) found equal incidence in both sexes.²² There were 9% cases of Pituitary adenoma seen in ages from 25-60 years with mean 34.22 ± 11.51 SD. Females were in younger age group. This is concordant with study done by McDowel (2011) who showed higher rates in young females, whereas males had higher incidence in older age.²³

There were 4% cases of medulloblastoma seen in children of age 4-14 years with mean 9 ± 5.25 SD. There were 3 males and 1 female. Study done by Kumar LP (2015) showed 34 males and 19 females and the age for classic medulloblastoma was less than 14 years (Table: 1, Figure: 3).²⁴

There was 1% case each of Craniopharyngioma, and medulloepithelioma and 4% cases of ependymoma (Table 1). Ependymoma are rare tumors of CNS in children and adults.²⁵

CONCLUSION

In this study of lesions in central nervous system, it is concluded that Astrocytoma is the most common malignant tumor followed by meningioma. Medulloblastoma is the most common tumor found in children. Incidence of tumors is more in males. Histopathological diagnosis is necessary for the management of patients. Further study with molecular genetics is also required for better treatment and management of the patients.

Acknowledgements

We are extremely thankful to the administration of Lahore General Hospital, Lahore for helping us to conduct this study.

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INTRAUTERINE INSEMINATION SUCCESS RATE AMONG COUPLES WITH UNEXPLAINED INFERTILITY: A PUBLIC SECTOR TERTIARY CARE HOSPITAL LAHORE EXPERIENCE

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Abstract

Background: Intrauterine insemination (IUI) process involves assisted contraception by depositing processed semen in the upper uterine cavity thus bypassing all the natural barriers that inhibit sperm ascension in reproductive tract. IUI can be a first choice offered to selected patients with unexplained infertility and functionally normal tubes. The procedure is non-invasive very cost-effective, noninvasive.

Objectives: To evaluate the outcome of IUI among couples with unexplained infertility in a public tertiary care hospital of Lahore.

Methods: A case series study was done at the Department of Obstetrics and Gynecology Unit I, Lady Willington Hospital Lahore, Data was retrospectively collected from IUI done from February 2015 to February 2020. In 23 couples detailed history, examination, previous treatment and investigations were noted on infertility cards of Lady Willington Hospital. Sample is collected, prepared and inseminated in about one and half hour. After half an hour the patient is allowed to go home. Patients are advised to present in OPD after her urine pregnancy test is positive, which she does after being one week over due. Data was entered in Excel sheet and presented as frequency and percentages.

Results: Total 23 couples were selected for IUI. The age range of females was between 20 – 32 years, mean 24.321 + 3.58 Husband's age was between 24 – 35 years. In these couples duration of marriage was between 2 to 5 years mean 2.52 + 1.54 year. IUI was successful in 6 (26.0%) patients, 26 %.

Conclusion: IUI carried out in carefully selected patients with proper technique results in high pregnancy rate.

Key Words: Conception, Intrauterine insemination (IUI), unexplained infertility

Intrauterine insemination (IUI) process involves assisted contraception by depositing processed semen in the upper uterine cavity thus bypassing all the natural barriers that inhibit sperm ascension in reproductive tract. IUI can be a first choice offered to selected patients with unexplained infertility and functionally normal tubes. The procedure is non-invasive very cost-effective, noninvasive. The causes of infertility may be due to male factor like ejaculatory disorders of female etiology anovulation, cervical factor, moderate unexplained factors, and immunological factor. The success of clinical pregnancy rates is around 10- 20% but there is limited IUI such as advanced maternal age ≥ 35 years, endometriosis, tubal factor infertility and severe

male factor infertility.¹

Intrauterine insemination (IUI) is still first line therapy and remains effective noninvasive and treatment for selected patients with male factor like ejaculatory disorders of female etiology anovulation, cervical factor, moderate unexplained factors, and immunological factor and recently its being evaluated tubal factor, an ovarian dysfunction and even for endometriosis.²

Using a low dose of gonadotropins for controlled ovarian hyper stimulation (COH) especially can be beneficial in terms of pregnancy outcomes as compared with natural cycle or timed intercourse and at the same time reducing COH complications such as multiple pregnancies or ovarian hyper stimulation

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syndrome. In IUI the good prognostic factors are early age, duration and etiology of infertility, total number of cycles, total number of pre-ovulatory follicles at time of hCG, timing of insemination, insemination count greater than 1×10^6 , motile sperm count of > 10 million, with more than 4% normal spermatozoa.³ Alternative techniques for insemination like intra-tubal insemination, intra-cervical insemination or fallopian tube sperm perfusion, offers no additional advantage in comparison to IUI.

IUI need a complete workup of couple that includes a detail clinical history, a thorough clinical examination and investigation that is obligatory to rationalize IUI and guide the patient for best management, treatment protocol should be tailored according to each couple characteristics and a stern policy of cancellation to limit a multi-follicular development that may help improve pregnancy outcomes in IUI.⁴

Steureset al in their study documented a high pregnancy rates (PRs) in couples performed IUI versus expectant management (51.0% vs. 33.0%) among couples having cervical factor who are diagnosed by a non-progressive, a well-timed post-coital test with a normal semen parameters with pregnancy rates (9.7%) that are acceptable and even without COH and increased risk for multiple pregnancy (12.7%) as compared to COH⁵. Several studies have reported cumulative pregnancy rates for a maximum of three IUI cycles of 19.7%, 36.8%, and 36.8% have been in patients with a cervical factor without superovulation⁶. Among couples having a male factor without superovulation, documented pregnancy rates of 12.8%, 29.3, and 38.3% have been reported for a maximum of three cycles, Aboulgharet al in ESHRE Capri group workshop following COH and IUI with clomiphene citrate (CC) reported a 7.0% / cycle and 12.0 % / cycle with follicle-stimulating hormone (FSH) and multiple birth rates around 13.0%.^{6,7}

In spite of the popular notion that IVF is a cost-effective approach as compared to IUI due to low

success rates with IUI and the subsequent IVF in case of failure⁸, as these are findings of randomized controlled trials (RCTs) that use live birth rates instead of pregnancy rates and considering patient compliance, and cost-efficiency and complications, especially multiple pregnancy rates, it is suggested that the first line of treatment for idiopathic infertility IUI should be procedure of choice.^{9,10}

The aim of this case series was to evaluate the outcomes of IUI in improving the probability of conception and success rate of intrauterine insemination among couples with unexplained infertility in a public sector tertiary care hospital serving the largest district of Punjab.

METHODOLOGY

A case series study was done in the Department of Obstetrics and Gynecology of Unit I, Lady Willington Hospital Lahore, Data was retrospectively collected from IUI done from February 2015 to February 2020. Infertility outpatient department services are carried out twice a week. The number of patients attending an infertility OPD clinic is approximately 35. So approximately 16750 patients attended infertility clinic in 5 years. Out of these 55 couples were advised IUI after taking detailed history, thorough examination, analyzing previous treatment and getting all relevant investigations done. Data was maintained on infertility cards of Lady Willington Hospital. These were the couples with unexplained infertility. After detailed evaluation if no cause is found in the couple then it is labeled as unexplained infertility. They were given detailed information about the procedure. Out of these 55, the procedure was carried out in only 23 couples. The willing couples were called for follicular tracking. Once dominant follicle was achieved, Patients were given injection hCG and called the next day. Only one procedure was performed in a day to avoid any inconvenience and litigation. They were to bring their original marriage certificate and identity cards. Copies are submitted at the lab. Their data is maintained at IUI lab. The lab staff were informed

a day before so lab and equipment were fully prepared. Sample was collected, immediately prepared and inseminated in about one and half hour. After half an hour of insemination the couple was allowed to go home. Patients were advised to present in OPD after her urine pregnancy test is positive, Which she was advised to do after her periods were overdue by one week. Data was entered in Excel sheet and presented as frequency and percentages.

RESULTS

Total 23 couples were selected for IUI .The age range of females was between 20 – 32 years, mean 24.321 + 3.58 Husband's age was between 24 – 35 years. In these couples duration of marriage was between 2 to 5 years mean 2.52 + 1.54 year. IUI was successful in 6 (26.0%) patients, 26 %. In all these 23 couples IUI was performed only once. In these couples, ovulation induction with 2.5mg BID of Letrizole was given to all females twice daily from second day of cycle for 5 days. In the couples who conceived, all had successful pregnancy outcome. In 17 couples in whom IUI was unsuccessful, 7 females were obese with BMI above 25. None of couples experienced any major side effects. 2 females complained of pain while speculum was inserted, who were given analgesic injection. In the remaining procedure was done without any analgesia .

DISCUSSION

In majority of public and private institutions, assisted reproductive techniques are not available. They are expensive, need specialized equipment, trained dedicated staff and also have associated medico legal issues. Lady Willington Hospital, being one the largest public sector obstetric care hospitals, caters a large population of patients from all over Punjab. Majority of patients are non-affording for their fertility issues. This rate is higher than in other setups. This is because of dedicated setup and staff. Also because of time between sample collection and insemination is very less as compared to commercial set ups.

Pittrof et al. in their study documented a significantly high pregnancy ($p < 0.038$) and pre-ovulatory follicles rates (43.6%, 59.9%, 12.6%, $P < 0.0001$) in couples given Clomifine, tamoxifen and gonadotropin stimulated cycles as compared to natural cycles¹¹. However, Chen & Liu¹² in their research stated that though IUI with stimulation is far more superior to natural cycle among couples less than 35 years and for patient's ≥ 35 years a natural cycle should be preferred. No significant difference was noted for delivery rates and abortion between the ovulation induction (OI) and the natural cycle insemination ($p > 0.05$).¹³

Health risks inherent to IUI with spontaneous cycle as compared to IUI with mild hormonal stimulation and can be offered as treatment of first-choice to eligible couple¹⁴. In unexplained infertility endometriosis, ovulatory dysfunction, or subfertility in males IUI with ovarian stimulation by clomiphene citrate remains the treatment of first-choice with average pregnancy rates of 7.0% per cycle.¹⁵

Drugs used for ovarian hyper stimulation there is no agreement for the drug of first choice in no statistically significant differences is found between use of Clomiphene or rFSH for live birth rates (28.2% vs. 26.9%) and clinical pregnancy rates (38.0% vs. 34.3%) but in amulticenter RCT it was concluded that Clomiphene citrate due to less cost can be used as drug of first choice especially in developing countries.¹⁶

Çok et al compared rates of clinical pregnancy rates for preserved sperm samples room temperature or at 37°C or at time of intrauterine insemination (IUI) and found similar pregnancy rates as in IUI cycles in which preserved sperm samples at room temperature or at 37 °C (8.9% vs9.3%). Also a high clinical pregnancy rates that were statistically significant for IUI cycles with two follicles were found as compared to one follicle IUI cycles (10.8 vs. 7.6%, $p < 0.002$). Furthermore for sperm samples preserved at 37°C or at room temperature no statistical difference were found in clinical pregnancy rates with one-follicle (7.6 vs. 7.6%) and two-follicle cycles

(11.5 vs. 10.1%) in IUI cycles and study concluded that clinical pregnancy rates are not affected whether prepared sperm samples preserved at room temperature or at 37 °C during cycles.¹⁷

CONCLUSION

We concluded that IUI can be performed as is a first-line therapy for moderate male factor infertility, cervical factor, an ovulatory infertility, unexplained infertility and immunological infertility as it is simple, cost-effective and noninvasive with clinical pregnancy rates ranging from 10 to 20%. In our setup the success rate was higher as compared to private setups because patients were carefully evaluated for procedure suitability, contrary to private setups where commercial factors are involved. IUI and other assisted reproductive facilities should be established in public hospitals to facilitate non-affording patients as well as to train medical staff in this most important and globally advanced subspecialty.

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2% UNDECYLENOYL PHENYLALANINE CREAM VERSUS 2% HYDROQUINONE (HQ) CREAM FOR TREATMENT OF MELASMA USING MODIFIED MASI SCORE

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Abstract

Objectives: - To compare the use of 2% undecylenoyl phenylalanine and 2% hydroquinone (HQ) cream for treatment of melasma

Study design: A double blind randomized controlled trial

Place and Duration of study: Outpatient Dermatology Department of DHQ teaching hospital, Sargodha Medical College, Sargodha during month of 1st January 2019 to 30th June 2019.

Method: There were total 60 patients (both male and female) having 30 patients in each group. Patients with melasma were at random allocated either 2% hydroquinone or 2% undecylenoyl phenylalanine at night for 12 weeks. 2% hydroquinone and 2% undecylenoyl phenylalanine were packed in indistinguishable similar tubes A and B respectively. Neither the investigators who calculated MASI score nor the patients was aware which tube carry 2% hydroquinone or 2% undecylenoyl phenylalanine. The patients were advised to revisit after every 4 weeks for follow-up for a total period of three months.

Results: There were total 60 patients (30 in each group) who were selected for this study. On comparison of 2% hydroquinone and 2% undecylenoyl phenylalanine patient showed same improvement of modified MASI, so there was no significant difference in effectiveness of both regimens in melasma. 2% undecylenoyl phenylalanine cream showed no side effects in 17 (56.67%) patients out of 30 as compared to 5 (16.67%) patients out of 30 using 2% hydroquinone cream.

Conclusion: 2% undecylenoyl phenylalanine improved modified MASI score with same effectiveness as 2% hydroquinone in melasma. In contrast, 2% undecylenoyl phenylalanine has fewer cutaneous side effects than 2% hydroquinone. Therefore, 2% undecylenoyl phenylalanine represents safer treatment option for melasma.

Key words: 2% undecylenoyl phenylalanine, 2% hydroquinone, modified MASI score, melasma

Melanin is pigment which is manufactured inside special cells called melanocytes. This pigment is stored inside an organelle, the melanosomes within the keratinocytes. Keratinocytes constitute 90% of the cells of the epidermis. Therefore, the colour of an individual skin is determined

by the count of melanocytes along with their melanin content at a given site of skin. Melanosomes enclose a copper-containing enzyme named tyrosinase which assists the transformation of L-tyrosine to L-dopa, while this L-dopa is converted to L-dopa-quinone to assist melanin synthesis. This frequent

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skin pigmentary disorder of adults results in irregular chocolate or dark chocolate facial hypermelanosis and blotching of skin. Although it affects both gender and any skin type, prevalence is seen in women and especially those with dusker complexions. Fitzpatrick's skin types IV to VI individuals who reside in areas of intense UV radiation such as Asians, Latinos, African, Hispanics and Americans are usually affected.¹ Melasma usually progresses gradually and symmetrically. Melasma is sometimes termed as "chloasma faciei" and 'pregnancy mask' caused during pregnancy due to fluctuations in ovarian and uterine hormones. The familiar precipitating factors include pregnancy, consumption of oral contraceptives, genetic disposition, endocrine disorders or hormonal medication and contact to UV light.² Some investigators blame stress because melanocyte-stimulating hormone release can be influenced by emotional distress.³

The typical area of presentation is face although they may appear on other parts uncovered parts of the body including face, neck and forearms. The dark patches may vary in number from single to multiple which are generally symmetrical. According to the distribution of melasma patches, three clinical patterns of melasma are described. The centrofacial type is the most universal pattern which involves the nose, cheeks, upper lip, forehead and chin. The malar pattern affects the nose as well as cheeks. The mandibular type affects mostly the ramus of the mandible.⁴

Melasma can be categorized into four major histological types when examined under the wood's light examination, according to the extent of pigment deposition in skin. Epidermal type is the most frequent in which melanin is intensified in all epidermal layers of skin. The pigmentation is not intensified in the dermal type as there are many melanophages along the entire dermis. In the mixed type in some areas there is no change in the pigmentation while becomes more obvious in other areas. Indeterminate type is present in skin type VI individuals where the pigment is apparent in the Wood's

light.⁵

Melasma has noticeable impact on patient's emotional health and social existence⁽⁶⁾. The main aim of melasma therapy is protection from sunlight and to reduce pigmentation. Pigment decay is achieved by applying chemicals that impede various stages of the melanogenesis. So, these agents cause either retardation of multiplication of melanocytes or they impede melanosome formation resulting in regressed melanin synthesis. Regardless of deployment of these strategies, melasma is often obstinate to treat. Its extended treatment and reoccurrence is troubling for both the patient and the dermatologist.⁷

Recent research indicated that and 2% undecylenoyl phenylalanine is quite effective to treat melasma with minimal side effects. We compared it with traditional skin lightening agent 2% hydroquinone (HQ) which is a structurally similar to of melanin antecedents. It inhibits tyrosinase, an enzyme required for the conversion of L-DOPA to melanin. The most marked problem with 2% hydroquinone are the adverse cutaneous reactions which include irritation, allergic contact dermatitis, and rarely ochronosis.⁸ These side effects of 2% hydroquinone are quite frustrating for the patient as well as the dermatologist. Some studies suggest that 2% hydroquinone has carcinogenic potential after long term treatment.⁹

In order to compare novel therapy with 2% undecylenoyl phenylalanine with traditional topical depigmenting agent like 2% hydroquinone (HQ) a sound and reliable outcome index was vital. The modified Melasma Area and Severity Index (MASI) is the most appropriate outcome index in this scenario which is precise and reliable indicator of degree of melasma and improvement of melasma during treatment. So, Modified MASI is used to evaluate our patients with melasma.

METHODOLOGY

This double blind study of the qualified efficacy was conducted at the Outpatient Department of Dermatology, DHQ teaching Hospital, Sargodha

Medical College Sargodha over a period of six months. Before initiation of the study institutional review board permission was obtained. The participants were ensured of privacy and secrecy and verbal informed consent was taken from each participant. The patients with melasma who volunteered in this study were categorized by using non-probability sampling technique. Total 60 patients aged between 20 and 50 years having Fitzpatrick skin group III, IV and V with clinical presentation of melasma and with no previous treatment history for at least 6 months were selected. Patients who were pregnant, had a recent miscarriage or delivery, using oral contraceptive pills over the past 12 months or who were on hormonal treatment in the last six months or applying any topical formulation for the last 2 months were excluded. Informed written consent was taken. Patients name, age, gender, address and mobile number were noted in a pre-designed proforma.

Modified MASI scoring was performed to establish the severity of Melasma.¹⁰ Melasma area severity index (MASI) was designed by Kimbrough-Green for the evaluation of melasma. The severity of the melasma is computed in areas of face including forehead, right malar region, left malar region and chin. These areas are evaluated according to three features which are percentage of the total area involved (A), darkness (D) and homogeneity (H). A numerical value allocated for the correlating percentage area involved is 0 for no area involved, 1 for <10% area involved, 2 for 10-29% area involved, 3 for 30-49% area involved, 4 for 50-69% area involved, 5 for 70-89% area involved, 6 for 90-100% area involved. The darkness of the melasma (D) is equated to the normal skin and classified on a scale of 0 to 4 as 0 for normal skin color without sign of melasma, 1 for barely noticeable melasma, 2 for mild melasma, 3 for moderate melasma, 4 for severe melasma. Homogeneity of the melasma (H) is also classified on a scale of 0 to 4 as 0 for normal skin color without sign of melasma, 1 for tiny spots of area involved, 2 for small patchy areas involved <1.5 cm

diameter, 3 for patches of area involved >2 cm diameter, 4 for uniform skin area involved without any clear areas.

To calculate the modified MASI score, the sum of the severity grade for darkness (D) and homogeneity (H) is multiplied by the numerical value of the areas (A) involved and by the percentages of the four facial areas (10-30%).

Total Modified MASI Score:

Forehead 0.3 (D+H)A + left malar 0.3 (D+H)A + right malar 0.3 (D+H)A + chin 0.1 (D+H)A, 2% hydroquinone and 2% undecylenoyl phenylalanine was dispensed from local pharmacy. Both preparations 2% hydroquinone and 2% undecylenoyl phenylalanine were packed in indistinguishable similar tubes. 2% hydroquinone containing tube was labelled as A and 2% undecylenoyl phenylalanine containing tube was labelled as B respectively. It was dispensed by the department nurse. Using simple randomization, patients were allocated either tube A or B and asked to apply it at twice daily for 12 weeks. The patients were also directed to apply sunblock cream SPF-60 regularly to the hyper-pigmented area during the daytime.

Patients were advised to re-visit after every 4 weeks for follow-up for a period of 12 weeks to evaluate efficacy of each agent. The MASI score investigator asked the tube label used by the patient and then calculated the MASI score on prescribed proforma. Side effects in terms of skin redness, burning, or stinging, skin dryness, cracking, or bleeding, blisters or oozing or blue or black discoloration of the skin were also noted and treatment stopped immediately in case of severe side effects. All this information was recorded through proforma. The modified MASI score was assessed by a single investigator who had no idea what was in tube A or tube B. Even the nurse who distributed the tubes to patients had no idea about composition of tubes labeled A or B. Only the dispenser knew the composition of tube A and tube B. So, neither the investigators nor the patients was aware of the composition of the tube. Clinical efficacy of the two

agents was established by improvement of modified MASI index.

The data were entered and analyzed in SPSS version 20. Mean & standard deviation was calculated for baseline modified MASI score and after treatment modified MASI score. Frequency and percentage was calculated for gender, age and side effects (yes/no). Efficacy of 2% hydroquinone and 2% undecylenoyl phenylalanine is shown in in tables and figures. One way ANOVA was used to test significance of difference between MASI index by use of 2% hydroquinone and 2% undecylenoyl phenylalanine at 4, 8, and 12 week , followed by Post hoc Tukey’s test to compare efficacy of 2% hydroquinone and 2% undecylenoyl phenylalanine. A p value of ≤ 0.05 was considered significant.

RESULTS

There were total 60 patients (both male and female) who were selected for this study. Group A received 2% hydroquinone and group B received 2% undecylenoyl phenylalanine.

In group A, there were 27 (90%) females and in group B there were 25 (83.33%) females(table 1).

Stratification of age is shown in table 2, in which majority 24 (40%) out of total 60 patients of melasma presented at age between 21-30 years.

Table 3 shows maximum , minimum value as well as mean value and Standard deviation of modified MASI score at 0, 4, 8 and 12 weeks of treatment. Mean of Modified MASI score was reduced from 16.53 to 3.99 by use of 2% hydroquinone. Improvement of modified MASI score at 0, 4, 8 and 12 weeks by applying 2% hydroquinone was compared by using one way ANOVA which was quite significant with a p-value of < 0.001 (Table 3). Mean of Modified MASI score with treatment with

17.37 to 3.6. Improvement of modified MASI score at 0, 4, 8 and 12 weeks by applying 2% undecylenoyl phenylalanine was compared by using one way

Table 2: Distribution of Patients According to Age

Age (years)	Total number of patients with melasma	Percentage (%) of patients with melasma
21-30	24	40
31-40	20	33.33
41-50	16	26.67

ANOVA which was quite significant with a p-value of < 0.001 . (Table 3).

On comparison of 2% hydroquinone and 2% undecylenoyl phenylalanine using post hoc Tukey's test showed that there was no significant difference in modified MASI by 2% hydroquinone and 2% undecylenoyl phenylalanine.

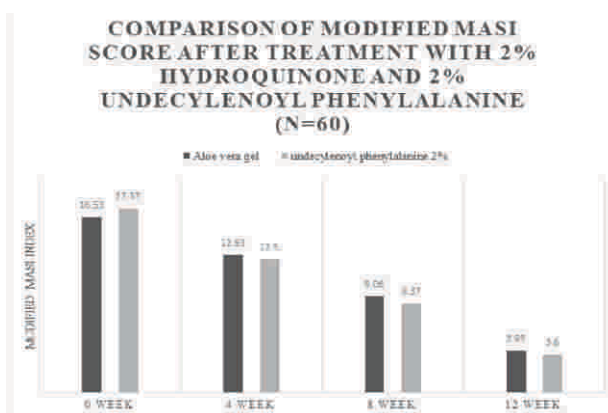


Figure 1: Comparison of Modified MASI Score after Treatment with 2% Hydroquinone and 2% Undecylenoyl Phenylalanine. (n=60)

Table 4 showed that there were more side effects with 2% hydroquinone as compared to 2% undecylenoyl phenylalanine. 17 (56.67%) patients using 2% undecylenoyl phenylalanine showed no side effects as compared to patients using 2% hydroquinone 5(16.67%).

Table 1: Distribution of Patients According to Gender

Gender	Group A		Group B	
	Number	Percentage %	Number	Percentage %
Female	27	90	25	83.33
Male	3	10	5	16.67

2% undecylenoyl phenylalanine was reduced from

DISCUSSION

Melasma is a delineated, blemished hyperpigmentation of sun-exposed areas of skin. The disease influences all racial groups but is most prevailing in darker skin tone individuals of Fitzpatrick skin type

Table 1: Frequency of Allergies in a Sample of 300 Medical Students in Lahore, Pakistan, in 2014

	Weeks	Modified MASI score				
		Maximum value	Minimum value	Mean value	Standard deviation	p- value by One way ANOVA
2% hydroquinone	0 week	19	14	16.53	1.14	<0.001
	4 week	14	12	12.93	1.01	
	8 week	10	8	9.067	0.91	
	12 week	5	3	3.933	1.01	
2% undecylenoyl phenylalanine	0 week	20	16	17.37	1.71	<0.001
	4 week	14	11	12.5	1.22	
	8 week	10	7	8.367	1.1	
	12 week	5	3	3.6	0.93	

Table 4: Shows Frequency Table of Side Effects with 2% Hydroquinone and 2% Undecylenoyl Phenylalanine. (n=60)

Side Effects		2% hydroquinone		2% undecylenoyl phenylalanine	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Side Effects	No side effects	5	16.67	17	56.67
	mild itching	7	23.33	5	16.67
	skin redness burning or stinging	5	16.67	3	10
	skin dryness, cracking	8	26.67	5	16.67
	blisters or oozing	1	3.333	0	0
	blue or black discoloration of the skin	4	13.33	0	0

III, IV and V. Incidence variability of melasma among regions from 4 to 40 % of the population. Melasma has substantial impact on the patient's emotional health and social survival⁶. Different quality of life trials have been exercised to demonstrate the way that melasma impacted patient's day to day life in recent years. These include the Melasma Quality of Life (MELASQoL) scale and Dermatology Life Quality Index (DLQI) and Skindex survey.¹¹ Results from various studies were concordant in the fact that melasma is associated with disturbed quality of life. UV light, inflammation, infection and excess female hormones are impairing factors along with genetic predisposition. Different kinds of topical melanin inhibitors, laser and light-based devices enhance melanin elimination. A multifocal treatment strategy aiming at both declining melanin production and its rapid removal is imperative to prevent disease reoccurrence. Melasma is clinically frustrating disease as the dilemma with

this disease is that is recurrent and resistant to treatment. One strategy is to reduce sun exposure to skin and other is use of hypo-pigmenting agents. The most commonly used hypopigmentation methods by dermatologist include hydroquinone and azelaic acid.¹²

Hydroquinone is an old traditional and but commonly prescribed first-line agent, either alone or in combination with other agents. It is a hydroxyphenolic chemical that hinders an enzyme tyrosinase that converts L-tyrosine to L-DOPA. This is a rate-limiting stage in the pathway of melanin synthesis. There are apprehensions regarding adverse effects with long-term deployment of this agent which range from mild skin irritation, erythema, inflammation, stinging, allergic contact dermatitis, xeroderma and rarely ochronosis.¹³

In an attempt to search for a new treatment for melasma, Katoulis et al studied administration of undecylenoyl phenylalanine is a novel skin- lighten-

ing agent in a double blind trial. A statistically significant difference ($p < 0.001$) in efficacy was recorded between the active preparation and the vehicle and the side effects of this agent were minimal.¹⁴ In another study 2% undecylenoyl phenylalanine achieved a significant lightening of melasma lesions in 20 patients on their first follow-up visit at 4 weeks with statistical significance of $p < 0.001$.¹⁵

On light of previous available researches, we compared 2% hydroquinone and 2% undecylenoyl phenylalanine by using modified MASI score. On comparison of 2% hydroquinone and 2% undecylenoyl phenylalanine there was no significant difference in effectiveness of 2% hydroquinone and 2% undecylenoyl phenylalanine but the side effects were reported more with 2% hydroquinone. This in turn concluded that the novel agent 2% undecylenoyl phenylalanine is a better choice for melasma owing to its minimal side effects.

CONCLUSION

2% undecylenoyl phenylalanine has same effectiveness as 2% hydroquinone to improve modified MASI score in melasma. In contrast, 2% undecylenoyl phenylalanine has fewer cutaneous side effects than 2% hydroquinone. Therefore, 2% undecylenoyl phenylalanine represents safer treatment option for melasma.

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COMPARISON OF GINGER VERSUS PLACEBO FOR THE TREATMENT OF NAUSEA AND VOMITING IN FIRST AND EARLY SECOND TRIMESTERS OF PREGNANCY

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Abstract

Background: Nausea and vomiting in pregnancy (NVP) are common complaints experienced by majority of women in first and early second trimester. Although many drugs have been proven safe in pregnancy but they carry their own hazards. Many studies quoting the anti-emetic nature of ginger for use in pregnancy have been published, but with mixed results.

Objective: The objective of this study was to compare the mean change in nausea score and number of vomiting episodes in ginger versus placebo group, presenting for management of NVP before 17 weeks of gestation.

Study Design: Randomized controlled trial.

Place and duration of study: Department of Obstetrics and Gynecology, Unit IV, Sir Ganga Ram Hospital, Lahore. The study period extended from March 2019 to March 2020.

Methodology: This trial involved 100 patients with NVP who were randomized into two treatment groups. Group-A (50 patients) received ginger and Group-B (50 patients) received placebo. The duration of treatment was four days. The response to treatment was noted in terms of mean nausea score during first four days of treatment, post treatment nausea score, mean change in nausea score and mean vomiting episodes. Written informed consent was taken from every patient. After approval from hospital ethical committee, 100 females fulfilling the inclusion criteria were included in study and randomly divided into 2 groups using lottery method. In group A, females were given ginger capsules 250mg four times a day for 4 days and in group B placebo was given with the same prescription form. Participants were asked to complete form with demographic questions and grade the severity of their nausea on visual analogue scale. All the information was collected by using a pre designed preforma. The data was analyzed using SPSS version 22. Numerical variables were presented by mean \pm SD. t-test was used to compare mean nausea scores and number of vomiting episodes between the two groups. Average of nausea scores and number of vomiting episodes post-treatment was obtained and the difference between pre and average post treatment nausea score and number of vomiting episodes was labeled as mean change. Independent sample t-test has been used to compare mean change in nausea score and number of vomiting episodes between the two groups.

Results: After four days of treatment it was observed that Ginger significantly reduces nausea and vomiting episodes as compared to placebo. Mean nausea score after day 1, 2, 3 (2.30 ± 0.91 vs. 4.50 ± 0.68 ; $p=0.000$) and day 4 (1.40 ± 0.50 vs. 4.20 ± 0.76 ; $p=0.00$) was lower in Group-A as compared to Group-B. The mean of 4 days post-treatment nausea score was also significantly lower in Group-A (2.95 ± 0.40 vs. 4.60 ± 0.68 ; $p=0.00$) as compared to Group-B. The mean change in nausea score was significantly higher in Group-A (1.95 ± 0.82 vs. 0.50 ± 0.47 ; $p=0.000$) as compared to Group-B. Ginger was thus found to significantly decrease the mean nausea score (2.95 ± 0.40 vs 4.60 ± 0.68 ; $p=0.000$) and mean number of vomiting episodes (1.95 ± 0.32 vs 2.95 ± 0.39 ; $p=0.000$) in pregnant women less than 17 weeks of gestation presenting with NVP.

Conclusion: Ginger was found to significantly reduce the mean nausea score and mean number of vomiting episodes in women presenting with NVP at less than 17 weeks of gestation.

Key Words: Pregnancy, Hyperemesis Gravidarum, Ginger, Placebo.

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Nausea and vomiting in pregnancy (NVP) are very common complaints seen in 80% being the most common condition for hospital stay. Typical hospital stays are of 3 to 4 days.¹ NVP is defined as the symptom of nausea and/or vomiting during early pregnancy where there are no other causes. It has been seen that 50% of women experience relief by 14 weeks' gestation and 90% of those affected get relieved by 22 weeks of gestation. According to a study, about 25% of women had nausea alone, and 50% experienced both nausea and vomiting.² Although NVP is generally considered as a part of healthy pregnancy but the potential effect on the pregnant women's quality of life are significant.³ There are both pharmacological and non-pharmacological treatment options available for NVP. Possible harmful side-effects of conventional treatment to the mother and fetus have given rise to the need for alternative options to relieve NVP.³ Many of the patients are reluctant to have any medication in 1st trimester of pregnancy due to fear of adverse effects that medicines may pose to their unborn fetus.⁴

There is a lack of high quality evidence to support any particular non-pharmacological intervention. Ginger is an underground stem and part of our routine diet. The Rhizomes of *Zingiber Officinale* (Ginger) have been used since times immemorial as a traditional remedy for GIT complaints.⁶ Gingerol and other compounds of ginger have also been shown to have anti-hydroxytryptamine activity in isolated guinea pig ileum.⁵ Galanolactone, another constituent of ginger, is a competitive antagonist at ileal 5-HT₃ receptors. Thus antiemesis could be brought about by effects on the gastric system through 5-HT₃ antagonism. Ginger is not also associated with fetal malformations⁶.

Various preparations have been described including biscuits, powder, capsules, syrup. Many studies of the antiemetic nature of ginger for various conditions have been published but with mixed results, even in chemotherapy associated nausea^{7,8}.

In trial conducted by Basirat et al, ginger was

found to be effective for relieving the severity of nausea and to, some an extent of vomiting in pregnancy⁹. Several medications are currently available for treatment of NVP. The impact of use of Ginger as an antiemetic has been investigated since 30 years¹⁰.

In two meta-analyses, it was inferred that ginger is an effective non-pharmacological treatment for NVP. The goal of treatment in hyperemesis is to improve symptoms while minimizing risk to mother and fetus. Treatment modalities range from simple dietary modifications to drug therapy.¹¹

The PUQE score and hyperemesis impact of Symptoms Questionnaire [HISQ] can be considered to assess the severity of symptoms. The updated PUQE score evaluates symptoms over 24 hours while the HISQ takes into account psychosocial factors in addition to physical symptoms.¹²

The rationale of my study is to evaluate a safe, effective and non-pharmacological treatment option for NVP. This study will help to introduce an easily available treatment option which will be beneficial in a low resource setting like ours. The objective of this study was to compare the mean change in nausea score and number of vomiting episodes in ginger versus placebo group, presenting for management of NVP before 17 weeks of gestation.

OPERATIONAL DEFINITIONS:

1. Mean change of Nausea score: Baseline Visual Analogue System (VAS) scores of nausea minus average post therapy VAS nausea scores of Day 1 - 4, where VAS score ranges from 0 - 10, and '0' means no nausea and '10' means severe.
2. Mean Change of Vomiting Episodes: Baseline number of vomiting episodes minus average post therapy number of vomiting episodes of day 1-40.
3. Nausea and Vomiting: Feeling of sickness that restricts patient $\geq 25\%$ of daily routine activities and ≥ 2 episodes of vomiting in last 24 hours of treatment.

The hypothesis established at the start of the

study was “There is a difference between the mean change of nausea scores and number of vomiting episodes of ginger versus placebo for management of NVP.”

METHODOLOGY

Study Design: Randomized controlled trial.

Setting: Department of Obstetrics and Gynecology, Unit IV, Sir Ganga Ram Hospital, Lahore

Duration: This study was conducted over a period of one year from March 2019 to March 2020.

Sample size: The sample size of 100 cases (50 each) was estimated using 95% confidence interval, 80% power of test with a mean decrease in nausea score as 20.57 ± 10.77 in ginger group and 10.39 ± 10.62 in placebo group.

Sampling Technique: Patients were selected by non-probability, consecutive sampling.

Inclusion criteria: Primigravidas between 18-35 years, with gestational age of less than 17 weeks of gestation according to ultrasound and having bothering symptoms of nausea and vomiting (as per operational definition) were included in the study.

Exclusion Criteria: Patients having Multiple pregnancy (on ultrasound), Molar pregnancy (on ultrasound), chronic or gestational hypertension (BP > 140/90 mmHg), gestational or chronic diabetes (BSR > 186 mg/dl.), Deranged liver and renal function tests i.e. AST > 401 U, ALT > 401 U, creatinine > 10.2 mg/dl, or having deranged thyroid function tests were excluded from the study. After approval from hospital ethical committee, 100 females fulfilling the inclusion criteria were included in study from the Out Patient Department of Obstetrics and Gynecology, Sir Ganga Ram Hospital, Lahore. After giving written consent, females were randomly divided into 2 groups using lottery method. In group A, females were given ginger capsules 250mg four times a day for 4 days and in group B placebo was given with the same prescription form¹². Both ginger and placebo capsules were similarly packed. Participants were asked to complete form with demographic questions and grade the severity of their nausea on visual

analogue scale on the first visit by marking an “X” corresponding to their perceived states on a 10cm horizontal line, ranging from 0=no nausea to 10=severe nausea as bad as it could be and record the number of vomiting episodes in the last 24 hours before treatment and again during 4 consecutive days at bed time while taking capsules. The mean change in the scores of nausea and number of vomiting episodes in the two groups were compared. All the information was collected by using a pre designed proforma. All the collected data was entered into SPSS Version 22.

1. Numerical variables: age, gestational age, nausea score at baseline and at 1st, 2nd, 3rd and 4th day, number of vomiting episodes at baseline and at 1st, 2nd, 3rd and 4th day post treatment were presented by mean \pm SD. t-test was used to compare mean nausea scores and number of vomiting episodes between the 2 groups taking $p \leq 0.05$ as significant.
2. Average of nausea scores and number of vomiting episodes post-treatment was obtained and the difference between pre and average post treatment nausea score and number of vomiting episodes was labeled as mean change. Independent sample t-test has been used to compare mean change in nausea score and number of vomiting episodes between the two groups taking $p \leq 0.05$ as significant.

RESULTS

This randomized controlled trial involved 100 patients with Hyperemesis Gravidarum. The age of patients ranged from 18 to 29 years with a mean of 23.5 ± 30.42 years (Table No. 1). The gestational age of the patients ranged from 6 weeks to 16 weeks with mean of 10.74 ± 20.89 weeks. (Table No.2)

There was no significant difference between the two groups in terms of mean age (23.40 ± 30.59 vs. 23.60 ± 30.26 years; $p=0.771$), mean gestational age (10.60 ± 30.07 vs. 10.88 ± 20.72 weeks; $p=0.631$), baseline mean nausea score (5.06 ± 0.79 vs 5.10 ± 0.95 ; $p = 0.820$) and baseline mean number of

COMPARISON OF GINGER VERSUS PLACEBO FOR THE TREATMENT OF NAUSEA AND VOMITING

vomiting episodes (3.30 ± 0.79 vs. 3.40 ± 0.67 ; $p=0.496$). (Table No. 3 & 5)

Mean nausea score after day 1 (4.74 ± 0.83 vs. 5.02 ± 0.92 ; $p=0.112$), day 2 (3.44 ± 0.54 vs. 4.70 ± 0.79 ; $p=0.000$), day 3 (2.30 ± 0.91 vs. 4.50 ± 0.68 ; $p=0.000$) and day 4 (10.40 ± 0.50 vs. 40.20 ± 0.76 ; $p=0.000$) was lower in Group-A as compared to Group-B. The mean of 4 days post-treatment nausea score was also significantly lower in Group-A (2.95 ± 0.40 vs. 4.60 ± 0.68 ; $p=0.000$) as compared to Group-B (Table No 4).

The mean change in nausea score was significantly higher in Group-A (1.95 ± 0.82 vs. 0.50 ± 0.47 ; $p=0.000$) as compared to Group-B. Ginger was thus found to significantly decrease the mean nausea score (2.95 ± 0.40 vs. 4.60 ± 0.68 ; $p=0.000$) and mean number of vomiting episodes (1.95 ± 0.32 vs. 2.95 ± 0.39 ; $p=0.000$) in pregnant women less than 17 weeks of gestation presenting with NVP. (Table No .6)

DISCUSSION

Vomiting reflex is present in many species and from an evolutionary perspective prevents species from ingesting toxins. In humans, the motor-reflex response of vomiting is often preceded by the unpleasant sensation of nausea triggered by different input mechanism under various conditions. The

Table 1: Descriptive Statistics for Age

	n	Minimum	Maximum	Mean	Std0. deviation
Age (years)	100	18	29	23.50	.416

Table 2: Descriptive Statistics for Gestational Age

	n	Minimum	Maximum	Mean	Std0. deviation
Gestational Age (weeks)	100	6	16	10.74	2.891

Table 3: Comparison of Mean Nausea Score (Baseline) between the Two Study Groups

	Study Groups		P value
	Group-A	Group-B	
Mean nausea Score (Baseline)	5.06 ± 0.793	5.10 ± 0.953	0.820

Table 4: Comparison of Mean Nausea Score (Post-Treatment) between the Two Study Groups

	Study Groups		P value
	Group-A	Group-B	
Mean Nausea Score (Post-Treatment Day 1-4)	2.95 ± 0.404	4.60 ± 0.679	0.000

Table 5: Comparison of Mean number of Vomiting Episodes (Baseline) between the Two Study Groups

	Study Groups		P value
	Group-A	Group-B	
Mean No0. of Vomiting Episodes (Baseline)	3.30 ± 0.789	3.40 ± 0.670	0.496

Table 6: Comparison of Mean number of Vomiting Episodes (Post-Treatment) between the Two Study Groups

	Study Groups		P value
	Group-A	Group-B	
Mean No. of Vomiting Episodes (Post-Treatment Days 1-4)	1.95 ± 0.315	2.95 ± 0.387	0.000

central nervous system, plays a critical role in the physiology of nausea and vomiting, being the primary site that receives and processes the various emetic stimuli. Nausea and vomiting in pregnancy has previously been interpreted as a mechanism to protect against teratogenic, mutagenic and abortifacient chemicals.²

This randomized controlled trial involved 100 patients with Hyperemesis Gravidarum. The age of patients ranged from 18 to 29 years with a mean of 23.5 ± 30.42 years. The gestational age of the patients ranged from 6 weeks to 16 weeks with mean of 1.74 ± 20.89 weeks. Group A was given 250 mg four times a day for 4 days, and Group B was given placebo.

This randomized controlled trial involved 100 patients with hyperemesis Gravid arum which were randomized into two treatment groups, Group-A (50 Patients) received ginger and Group-B (50 Patients) received placebo. Written informed consent was taken from every patient.

There was no significant difference between the two groups in terms of mean age, mean gestational age, baseline mean nausea score and baseline mean

number of vomiting episodes.

Mean nausea score after day 1, day 2, day 3 and day 4 was lower in Group-A as compared to Group-B. The mean of 4 days post-treatment nausea score was also significantly lower in Group-A as compared to Group-B. The mean change in nausea score was significantly higher in Group A as compared to Group-B. Ginger was thus found to significantly decrease the mean nausea score and mean number of vomiting episodes in pregnant women less than 17 weeks of gestation presenting with NVP.

There is scant data on the actions of ginger. In two meta-analyses, six studies were conducted from 1991-2009 in which more than five hundred subjects were included, it was inferred that ginger is an effective non-pharmacological treatment for NVP. These results support the findings of our study.³

In a study done by Javadi and colleagues, efficacy of ginger vs. Vitamin B6 was compared. Ginger was found to be less efficacious in reducing vomiting, effect on nausea was not significant and no side effects were observed. Overall the impression gained from this study was that ginger might be better than placebo in reducing the severity of symptoms. This finding is again in agreement with our study where ginger was found to be more effective than placebo in reducing the episodes of nausea and vomiting in pregnancy.¹³

A systematic review and meta-analysis of the effect and safety of ginger was carried out. This study did not affect the episodes of vomiting significantly. It was not associated with any side effects either. These results are contradictory to that of our study where ginger was found to be effective in reducing the episodes of nausea and vomiting in pregnancy.¹¹

Ginger was found to significantly decrease the mean nausea score and mean number of vomiting episodes in pregnant women less than seventeen weeks of gestation presenting with NVP. The mean change in nausea score and vomiting episodes was significantly higher with ginger as compared to placebo. These results are consistent with earlier study by Ozgoli et al. and Vutyvanich et al. who

showed significant decrease in nausea and vomiting intensity after a similar study (250 mg ginger capsules four times daily for a total of one gm. daily for four days). Results of a study by Ozgoli et al demonstrated that nausea intensity improved significantly in 84% of the ginger vs. 56% of the women in placebo groups and the incidence of vomiting episodes showed 50% decrease in the ginger group vs. 9 % decrease in placebo group¹⁴. Results of study by Vutyvanich et al showed median change in nausea scores in ginger group was significantly greater than in the placebo group and the number of vomiting episodes in the ginger group was significantly less than in the placebo group.¹⁵

In trial conducted by Basirat et al testified that average visual analogue scale (VAS) score of day 1 to 4 of post therapy minus baseline nausea was decreased significantly in ginger (2.6 ± 10.77) compared with the placebo group. The number of vomiting episodes was also decreased in ginger (0.96 ± 0.21) and placebo (0.62 ± 0.19), the difference being insignificant. These results again to great extent support our findings.⁹

In a study done by Sharifzadeh and colleagues, Ginger is more effective than placebo in cases of moderate to severe NVP.¹⁶

In another study by Viljoen and colleagues, suggested potential benefits of ginger in reducing nausea symptoms in pregnancy. Ginger did not significantly alter the vomiting episodes nor pose a risk for side effects or adverse events during pregnancy. Ginger could be considered a potential and effective alternative option for women suffering from NVP.³

A recent meta-analysis concluded that ginger has a significant role in relieving NVP symptom compared with placebo but no significant effect on vomiting. This finding potentiates our claim for the role of ginger in reducing nausea, though the Meta analysis did not support its role in vomiting in pregnancy.¹⁷ We chose a study period of 4 days because a previous study showed that the effects of ginger was evident within a few days of treatment and too long a period would result only in a higher rate of subject non-compliance and, thus, fewer individuals left for follow-up. We used VAS to quantify nausea severity, because these scales give an objective measure, have construct validity and are reproducible.¹¹ The hypothesis established at the start of study is thus proved well and in pregnant women less than 17 weeks of gestation, ginger relieves

nausea and vomiting better than placebo.

Strengths of the Study: This study has been conducted keeping in view a very common problem of nausea and vomiting in pregnancy, and an effort has been made to introduce a non-pharmacological, low cost, easily available agent for its treatment. This topic has not been studied much in our country so ours is an effort to study the problem at national level.

Limitations of the study: This study had a small sample size and was conducted in a single centre only.

Future recommendations: Multicenter large randomized controlled trials are needed to verify the efficacy and safety of ginger supplementation for treating NVP.

CONCLUSION

Ginger is an effective alternative option for women suffering from symptoms of nausea and vomiting of pregnancy. It is cost effective as well as free from any adverse effects.

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FREQUENCY OF DEPRESSION AMONG CAREGIVERS OF HIV/AIDS PATIENTS UNDER TREATMENT IN A TERTIARY CARE HOSPITAL

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Abstract

The present study aimed to investigate the frequency of depression among caregivers of HIV/AIDS patients under treatment in a tertiary care hospital. The study employed cross-sectional research design and convenient sampling strategy for data collection. A sample of 120 HIV/AIDS patients (N= 120) within an age range of 18-60 years was taken from HIV clinic of a public hospital. Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was used to estimate level of depression among caregivers of HIV/AIDS patients. Results of descriptive statistics indicated that an average age of caregivers (M= 39.44; SD= 9.50), months of caregiving (M= 16.35; SD= 10.97) and frequency/ percentage of males (f= 42; %= 35) and females (f= 78; %= 65). Depression was diagnosed among (n=44; %= 36.70) caregivers. Moreover, Chi-square test indicated a statistically significant association between caregiver age and depression, and caregiver gender and depression. The study highlights the importance of identification of mental health issues resulting from caregiving burden of HIV patients in public hospitals. Subsequently, devising culturally appropriate therapeutic interventions, in order to, enable caregivers to cope with the stress associated with caregiving burden and hence provision of improved quality of care provided by them.

Key Words: HIV (Human Immunodeficiency Virus,) AIDS (Acquired Immune Deficiency Syndrome,) Depression, Caregivers

Among the developing countries Pakistan bear the highest burden of mortality due to AIDS/HIV. According to a survey conducted in 2015, it is estimated that 100,000 people suffer from HIV in Pakistan with 3600 annual deaths (UNAIDS, 2015). HIV/AIDS is a chronic medical condition that imparts significant physical and psychological distress in patients. A recent survey in India indicated the presence of depression among 40% of HIV infected patients (Chandra, Ravi & Desai, 1998). The psychiatric morbidity of HIV patients is well documented, however, little is known about physical and mental health problems experienced by HIV caregivers (Wattradul & Sriyaporn, 2014). Care-giver burden is a multi-dimensional phenomenon described as the disruption of emotional, physical, social, psychological and spiritual; functioning of an individual (Chandran, et.al., 2016; Pirraglia et. al.,

2005). A survey estimating various demographic characteristics revealed 60% of caregivers were women, 40% reported high perceived burden, 17% exhibited health issues and 38% reported emotional/psychological stress (NAC & AARP, 2015). Compared to other chronic illnesses caregiving experience of HIV/AIDS is unique and complex with numerous medical, financial and psycho-social challenges, aggravated by limited access to quality health care, inadequate financial sources and predominant social stigmatization/discrimination in Asian culture (Lentoor, 2017). Depression and anxiety were observed to be prevalent psychological disorders among informal HIV caregivers with frequency of 46% and 27% respectively (Khan, Pai, Kulkarni & Ramapuram, 2017). Other indigenous literature has indicated the prevalence of depression and anxiety ranging from 7.2% to 71.9% and 4.5% to 82.3%, respectively

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(Chaudhury, Bakhla & Saini, 2015). Most of HIV caregivers were female spouses with an average age of 40 years, an education level of high school or below and unemployed. Most caregivers lived with the patient and were caregivers of PLHIV diagnosed for less than five years and about half were HIV-negative (Khan, Pai, Kulkarni & Ramapuram, 2017). The various predictors of depression among HIV caregivers included caregiver's physical health which was influenced by duration of caregiving and severity of illness but not the caregiving tasks and perceived HIV Stigma which was high among caregivers who were employed and HIV negative (Khan, Pai, Kulkarni, & Ramapuram, 2017; Prachakul & Grant, 2003). Therefore, the present study aimed to investigate the frequency of depression and an association of various demographic variables with depression among HIV/ AIDS caregivers in a tertiary care hospital.

METHODOLOGY

Following are the objectives of the study.

- i. To determine the frequency of depression among HIV/AIDS caregivers.
- ii. To assess the association of demographic variables (age, gender, months of caregiving) and depression among HIV/AIDS caregivers.
- iii. To compare demographic variables (age, gender, months of caregiving) across level of depression among HIV/AIDS caregivers.

Research Design

Cross- sectional research design was used in the present study.

Sampling Technique

Convenient Sampling Strategy was employed in the present study.

Sample

Sample comprised of 120 HIV/ AIDS caregivers (N= 120) consisting of males (n= 42) and females (n= 78) from a HIV Clinic of a Public Hospital in Lahore.

Inclusion Criteria

Caregivers with an age range of 18 to 60 years and providing care for the duration of at least 6 months of HIV positive patient confirmed on ELISA and currently under treatment at HIV Clinic of a Public Hospital in Lahore.

Exclusion Criteria

Caregivers with an overt medical illness (i.e., cancer, tuberculosis, lymphomas etc.) or a history of diagnosed or treated psychiatric illness or undergoing cortico-steroid treatment.

Data Collection Procedure

Authorization from concerned hospital authority was taken to collect data within their premises. Afterwards, participants were approached and briefed about the purpose of study in a comprehensible language. Informed consent was taken from participants and they were familiarized with their entitled rights. Thereafter, Demographic Information Sheet and Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was completed by the 120 participants.

SPSS 21.0 version was used to analyse the data. Descriptive Statistics were used to compute level of depression and demographic characteristics (i.e., age, gender, duration). Caregivers with a minimum score of ≥ 11 were assigned Major Depressive Disorder (MDD). Continuous variables (i.e., age, duration of caregiving) were represented by Mean and Standard Deviation, whereas, Categorical variables (i.e., depression, gender) were represented by Frequency and Percentages. Chi- Square Test was employed to assess the association of demographic variables and depression.

RESULTS

The results of the present study have been demonstrated for frequency of depression among the caregivers of HIV/AIDS patients of a Public Hospital.

As indicated in table 1, average age of caregiver was observed to be (M= 39.44; SD= 9.51) years with corresponding actual range (Min= 22; Max=60) years. Referring to gender, there were (f= 42; %= 35.00) males and (f= 78; %= 65.00) females. More-

over, average duration of caregiving was observed to be (M= 16.35; SD=10.97) months with corresponding actual range (Min= 6; Max= 60) months. In addition, average HADS score was observed (M= 9.04; SD= 3.91) with respective range (Min= 1; Max =18). Also, diagnosed depression cases were observed (f = 44; %= 36.67) among them (f = 9; %=20.50) caregivers fell in the age range of 21-30 years,(f=12; %= 27.30) were observed to be in corresponding age range in 31-40 years, (f= 5; %= 11.40) were within 41-50 years and (f= 18; %= 40.9) fell in corresponding age group of 51-60 years.

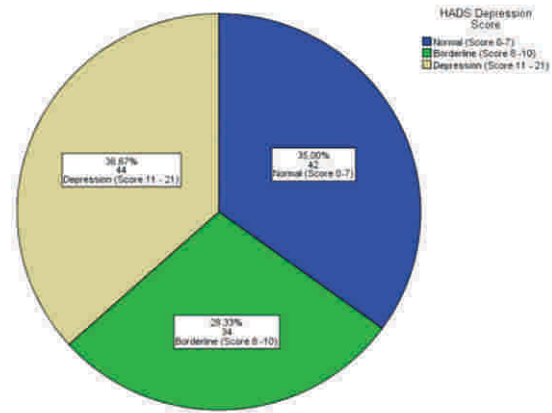


Figure 1: Showing Descriptive Statistics of HADS Scoring Categories/ Classification

The results revealed a significant relationship between age and level of depression and a statistically significant proportion of age in groups $\chi^2 (1, N= 120) = 26.17, p= .001$. Caregivers within age bracket of 51-60 years exhibited highest level of depression (f= 18; %= 40.90) followed by other age groups.

The results revealed a significant relationship between gender and level of depression and a statistically significant proportion of males/ females in HADS Depression Categories/ Groups $\chi^2 (1, N= 120) = 14.23, p= .001$. Males exhibited greater level of depression (f= 35; %= 79.50) as compared to females (f= 9; %= 20.50).

DISCUSSION

According to UNAIDS, 5.2 million people were estimated to be living with HIV in Asia and Pacific region. In 2017, 280,000 people become infected with HIV in Asia. In particular, Philippines

Table 1: Descriptive Statistics of Demographic Characteristics and Study Variable (N = 120).

Variables	f	%	M	SD
Age			39.44	9.51
22 - 44 years	81	67.50		
45 - 60 years	39	32.50		
Gender			-	-
Males	42	35.00		
Females	78	65.00		
Duration of Caregiving			16.35	10.97
< 1 years	63	52.50		
1 - 3 years	49	40.80		
3.1 - 5 years	8	6.70		
HADS Depression Score			9.04	3.92
Normal (Score < 7)	42	35.00		
Borderline (Score 8 -10)	34	28.30		
Depression (Score 11 - 21)	44	36.70		

Note. f= Frequency, %= Percentage, M= Mean, SD= Standard Deviation

Table 2: Chi- Square Comparing Age Groups across HADS Scoring Categories (N= 120).

Age (years)		HADS Depression Scores			Total	p
		Normal (Score 0-7)	Borderline (Score 8 -10)	Depression (Score 11 - 21)		
21 - 30	Count	10	6	9	25	.001
	% within HADS Depression Score	23.8%	17.6%	20.5%		
31 - 40	Count	19	17	12	48	
	% within HADS Depression Score	45.2%	50.0%	27.3%		
41-50	Count	13	5	5	23	
	% within HADS Depression Score	31.0%	14.7%	11.4%		
51-60	Count	0	6	18	24	
	% within HADS Depression Score	0%	17.6%	40.9%		

Note. $\chi^2 = 26.17, df = 1, **p < .001$

Table 3: Chi- Square Comparing Gender (Male/ Females) across HADS Scoring Categories (N= 120).

Gender		HADS Depression Score			Total	p
		Normal (Score 0-7)	Borderline (Score 8-10)	Depression (Score 11-21)		
Males	Count	18	25	35	78	.001
	% within HADS Depression Score	42.9%	73.5%	79.5%		
Females	Count	24	9	9	42	
	% within HADS Depression Score	57.1%	26.5%	20.5%		
Total	Count	42	34	44	120	
	% within HADS Depression Score	100%	100%	100%		

Note. $\chi^2 = 14.23$, $df = 1$, $**p < .001$

and Pakistan are facing rapidly expanding HIV epidemic (UNAIDS, 2017). Pakistan is experiencing a disproportionate rise with new infections up by 29% on 2010 levels (UNAIDS, 2017). A research review has indicated an inadequate and limited number of descriptive studies examining the impact of HIV/ AIDS caregiving on physical and psychosocial well-being of formal/informal caregivers (Lua & Mustapha, 2012). Therefore, the present study examined the frequency of depression and relationship of various demographics with depression among AIDS/HIV caregivers in a tertiary care hospital.

The results of the study indicated that average age of caregivers was 39 years with corresponding proportion of males and females to be 35% and 65% respectively. The results are consistent with the findings of previous studies indicating average age of caregivers to be 39 years, however, the proportion of males and females was found to be 64% and 36% respectively, the inconsistency of results is embedded in cultural and methodical explanation as the sample is drawn from homosexual population in majority of International Studies (Rosengard & Folkman, 1997; Wardlaw, 1994). Subsequently, depression was diagnosed among 37% of caregivers. Various studies have indicated the prevalence of depression to be ranging from 27% to 50%, with rate of prevalence influenced by duration of caregiving and severity of the illness (Ochigbo, Torty & Oparah, 2018; Pirraglia et. al., 2005). On the other hand, 41% of depressed caregivers fell in the age group of 51-60 years. Also, results of Chi-Square indicated signi-

ficant positive association between age of caregivers and depression. In this regard, various studies have demonstrated that increased age is associated with physical/medical conditions in caregivers therefore, further exacerbating the stress associated with caregiver burden (Prachakul & Grant, 2003). On a similar account, depression was more prevalent among women (79.5%) than men (20.5%). The finding is consistent with prior literature as employment status is associated with perceived health of female caregivers that is, employed female caregivers are less likely to experience chronic physical impairments and hence caregiver burden. However, in Pakistani Culture women are financially dependent on male counterparts therefore accounting for higher prevalence of depression among women caregivers (LeBlanc, London & Aneshensel, 1997). Lastly, depression was found to be more prevalent among individuals providing care for a long period of time that is, 52.3% among individuals providing care for 1-3 years and 45.5% among individuals with less than 1 year. It has been observed in various indigenous studies anxiety is associated with caregiving for a shorter period since the diagnosis of HIV whereas caregiving for longer duration of time is associated with depressive tendencies among caregivers (Khan, Pai, Kulkarni & Ramapuram, 2017; Prachakul & Grant, 2003). However, the present study has found no significant association of caregiving duration and depression ($p = .06$), the inconsistency can be explained by statistical explanation of outliers and various confounding variables preventing the finding to reach statistical significance.

However, various studies have documented for an absence of relationship between duration of caregiving and depression in Indian Culture owing to the collectivist cultural dynamics, that is inter-dependence of family members where responsibility is shared over a period of time and caretaking is considered as a moral obligation of a family. Also, stress was found to be expressed somatically in Eastern Culture therefore accounting for the inconsistency of the results of present study (Khan, Pai, Kulkarni & Ramapuram, 2017).

CONCLUSION

According to United Nations, Pakistan is facing expanding HIV/AIDS epidemic. A relatively adequate number of scientific studies exists accounting for psychological distress among HIV patients, however, little is known about mental health issues experienced by HIV/AIDS patients' caregivers, therefore, the present study aimed to investigate the frequency of depression and an association of various demographic variables with depression among HIV/AIDS caregivers in a tertiary care hospital. The results indicated that 36.67% caregivers suffered from depression, with depression more prevalent among women and individuals providing care for longer duration of time. Depression was prevalent among older individuals, with mean age and duration of caregiving was found to be 39 years and 16.35 ± 10.97 months, respectively.

The study provides the basis of conducting future research on identifying the various factors associated with caregiver's depression and subsequent devising of intervention strategies to increase caregiver's coping, and preventing caregiver's burn-out due to the role overload.

Future studies should recruit sample from a number of Tertiary Care Hospitals in Punjab for ensuring the generalizability of results. Moreover, co-morbidity of other psychological disorders and depression due to physiological factors should be eliminated.

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*Don't be ashamed
of your story*

It will inspire others.

EMERGING CHALLENGES FOR LABORATORY PROFESSIONALS DURING THE PANDEMIC OF COVID-19.

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Abstract

Objectives: The objective of the study was to assess the preparedness, perceptions and fears of the laboratory staff during the Coronavirus disease 2019 (COVID-19) pandemic.

Methods: The questionnaire was designed in Akhtar Saeed Medical & Dental College, Lahore and this cross-sectional study was conducted from 10th May 2020 to 30th May 2020 using google forms.

Results: The age of most participants ranged from 20-30 years. A large number of respondents 28(51%) were government employees and qualified more as postgraduate, holding the designation of Consultant Pathologist 24(44%). The majority of respondents were given training on Personnel Protective Equipment (PPE) usage 51(93%), sample collection and processing 48(87%). However, many centres lacked approval for COVID-19 testing 24(44%). Subjects were also not satisfied with the Biosafety level 41(74.5%) and manpower for testing 29(53%). A bulk of laboratories had the provision of handwashing areas 53(96%) and used validated COVID-19 kits 41(74.5%) from competent authorities. Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) 51 (93%) with nasopharyngeal sampling 53 (96%) was the preferred method. Psychological effects included fear of carrying the infection to home 49(89%) and dealing with sample and reporting 36(65%).

Conclusion: Our study concluded preparedness for an uncertain health crisis, provision of manpower, appropriate disinfectant use, collection, transport & handling of specimen and procedural equipment are the biggest workplace challenges faced by Pathology laboratories in our setup. Support and upgrading are needed so that the Pathology laboratories are strengthened to handle the diagnostic burden of any future outbreaks.

Key words: COVID-19, Pandemic, Pathologists

Coronaviruses are a sizeable family of viruses associated with diseases in humans and animals. The Coronavirus disease 2019 (COVID-19) is a unique strain as it is genetically distinct from the Severe Acute Respiratory Syndrome (SARS) and the Middle East respiratory syndrome (MERS) virus and

there is no preceding evidence available showing its presence in humans and animals.^{1,2} The first outbreak of novel COVID-19 came into sight in Wuhan city of China, in late December 2019. Soon this novel strain made headway to numerous countries emerging as a global pandemic. Later on, Pakistan was also inclu-

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ded in the affected list of countries, confirming the first diagnosed case of COVID-19 on 26th February 2020.³

The laboratory diagnostics is the cornerstone for diagnosis of COVID-19 where laboratory professionals are playing a crucial role all over the world.^{4,5} However, this unprecedented situation is especially burdening the developing countries, with the greatest issues faced by the laboratory professionals are related to laboratory capacity, equipment and biosafety.⁶

Pakistan is facing enormous challenges, the most important ones are its incapacitated infrastructure and financial resources and its penetrable borders, being geographically located in the midst of two epicentres of Corona outbreak with China on the south and Iran on the north west.⁷ It is not an uncommon situation for the laboratorians to acquire laboratory associated infections which sometimes go unnoticed. This inherent risk particularly increases with aerosol-generating procedures which can result in respiratory tract infection as in the case with COVID-19. Therefore, COVID-19 has increased the risk of biological hazard to the laboratory staff and there is a dire need for a mechanism in place for this virus risk assessment, evaluation and control. It is also necessary for the healthcare professionals to have general familiarization, awareness and training while working with this virus in the laboratory.^{8,9}

Another aspect is from mental health related point of view which cannot be ignored. There are several reasons for fear and anxiety among the laboratory workers; initially continuously changing recommendations and knowledge about the modes of transmission. Similarly, no existing appropriate treatment and vaccine, lack of availability of appropriate personnel protective equipment (PPE), the ability to be a source of infection for their family members and an increased number of colleagues being affected and dying from this disease have created a turmoil situation among the healthcare professionals.^{10,11}

Despite the aforementioned challenges, a

policy formulated by the government was a great step in preparedness against this outbreak in current times. Importing Polymerase Chain Reaction (PCR) kits for SARS-COV-2 diagnosis and upgrading the laboratories have strengthened testing and diagnostic capacity.⁷ Despite this, there is still a long way to design vigorous plans of action for surveillance mechanisms, extensive laboratory networks, trained human capacities, and expert case management system.¹²

The aim of our research was to find the challenges of laboratory professionals in the Pakistani community during testing times of pandemic. The objective of this study was to assess the preparedness, perceptions and fears of the laboratory staff during the COVID-19 pandemic.

METHODOLOGY

This cross-sectional web-based study was designed at Akhtar Saeed Medical and Dental College, Lahore carried out by using google forms from 10th May 2020 to 30th May 2020. Initially, a questionnaire was prepared and it was validated by three professors, two professors who were working as a medical educationist as well as senior consultants at Akhtar Saeed Medical and Dental College, Lahore. The survey consisted of a total 51 questions; 39 of which were close-ended and 12 were open-ended.

Consultant Pathologists, Medical technologists, laboratory technicians and attendants working in various healthcare institutes were included in the study. Laboratory attendants and laboratory technicians working in collection centres and stat laboratories were excluded from the study.

Participants were selected through convenient sampling after formal ethical approval and informed consent. They were contacted through E-mail and WhatsApp group and confidentiality was assured. Our study registered 55 participants and accumulated the data of health professionals working in Pathology laboratories during speculative and testing times of COVID-19 pandemic. Data was

saved in Excel sheets directly from the Google forms. Data was analysed using statistical package for social sciences (SPSS) 24. For close-ended and open-ended questions frequencies and percentages were calculated.

RESULTS

Our study was based on 55 laboratory professionals who were in a total age range from 20-60 years. The majority of participants were qualified as Post Graduate 49(89%) holding the designation of Consultant Pathologist 24(44%). A large number of respondents 28(51%) were government employees. The demographic details are compiled in table 1.

Section A. Preparedness/Readiness for COVID-19:

Upon analysis of data, it was evident that most of the respondents 52(94.5%) had knowledge about the transmissibility of COVID-19 and about 40 (73 %) had awareness about the transport medium of COVID-19 samples. Whereas, 41(74.5%) subjects were aware of instrument handling and usage in COVID-19 testing. Moreover, training for COVID-19 sample collection and handling was 48(87%). A low frequency was noted regarding training for pandemic preparedness/ readiness 31(56%) and training for waste management of COVID-19 samples 36 (65.5%) as shown in table 2.

Section B. Work-related challenges in laboratories:

Our study exhibited that most of the laboratories 31(56%) were not approved for COVID-19 testing. Instead, 34(62%) were contented with the laboratory manuals or code of practice of COVID-19 testing and sampling. It was also displayed that almost all the laboratories 53(96%) ensured the provision of handwashing areas in the laboratories. Most of the laboratories 52(94.5%) had centrifuge/vortex multi-spin on their workstations as shown in table 3.

Section C. Sampling

Our study revealed, most of the professionals 48 (87%) were aware of sample taking techniques of COVID-19 suspected patients. It was manifested that only 19(35%) were directly involved in sample

Table 1: Demographic Characteristics of the Participants

Characteristic	Response	Number of participants Frequency (Percentage)
Age (years)	20-30	25(45)
	31-40	18(33)
	41-50	7(13)
	51-60	5(9)
Gender	Female	35(64)
	Male	20(36)
Qualification	Diploma Holder	2(4)
	Graduate	4(7)
	Post Graduate	49(89)
Work Place	Academician	42(76)
	Pathologist in Lab	13(24)
Working setup	Government	28(51)
	Private	20(36)
	Semi-Private	7(13)
Designation	Consultant Pathologist	24(44)
	Laboratory technologist	21(38)
	Junior Pathologist	10(18)

Table 2: Response of Participants to Questions Related to Preparedness/Readiness for COVID-19

Questions	Frequency (Percentage)	
	Yes (%)	No (%)
Does your institution have proper manpower for testing and sampling of COVID-19?	26(47)	29(53)
Do you have SOPs for the risk assessment and control in your laboratory?	46(84)	9(16)
Are you aware of use of PPE?	53(96)	2(4)
Do your laboratory offer practice/drill for spillage and emergency procedure?	36(65.5)	19(34.5)
Are you aware about the transport medium for COVID-19 Samples?	40(73)	15(27)
Have you been trained for collection sampling and processing for COVID-19 sampling?	48(87)	7(13)
Have you been trained for the instruments used for COVID-Testing?	41(74.5)	14(25.5)
Have you been trained to deal with the waste management of COVID -19 samples?	36(65.5)	19(34.5)
Have you been trained for PPE usage?	51(93)	4(7)
Have you been trained while working during pandemic?	31(56)	24(44)
Have you been trained/ taught about mode of transmission of COVID-19?	52(94.5)	3(5.5)

collection. Data analysis showed that almost half of answerers 28(51%) agreed on having one page / red

flag SOPs to deal with problems arising during testing and sampling of COVID-19. Nasopharyngeal sampling 53(96%) was preferred over oropharyngeal 2(4%). Testing was done mostly by RT-PCR method 51(93%) as addressed in figure 1.

Section D. Psychological aspects of Professionals:

Table 3: Response of Participants to Questions addressing Work Related Challenges in Laboratories

Questions	Frequency (Percentage)	
	Yes(%)	No(%)
Has your centre been approved for COVID-19 testing?	24(44)	31(56)
Do you feel that your laboratory Bio-safety level is enough to deal with COVID-19 testing?	14(25.5)	41(74.5)
Does your laboratory contain manuals or code of practice of COVID-19 testing and sampling?	34(62)	21(38)
Does your laboratory restrict entry of community?	43(78)	12(22)
Are work surfaces of your laboratory impervious to Water?	36(65.5)	19(34.5)
Do you have hand washing areas in your laboratory?	53(96)	2(4)
Does your laboratory follow proper internal quality control measure?	45(82)	10(18)
Does your laboratory follow proper external quality control measure?	33(60)	22(40)
Is your workplace separated from any other activities in the same building	31(56)	24(44)
Does your laboratory have special code of conduct for HG3 containing material?	12(22)	43(78)
Does your laboratory have centrifuge/Vortex Multi-spin?	52(94.5)	3(5.5)
Are there any means of viewing occupants (glasses) from outside?	21(38)	34(62)
Does your institution provide PPEs for testing and sampling of COVID-19?	42(76)	13(24)
Are your kits validated from competent authorities?	41(74.5)	14(25.5)

When subjects were asked regarding their various fears when working in the laboratory, the overall majority seemed to be suffering from apprehensions. However, only 17(31%) had trouble concentrating on laboratory proceedings as in figure 2.

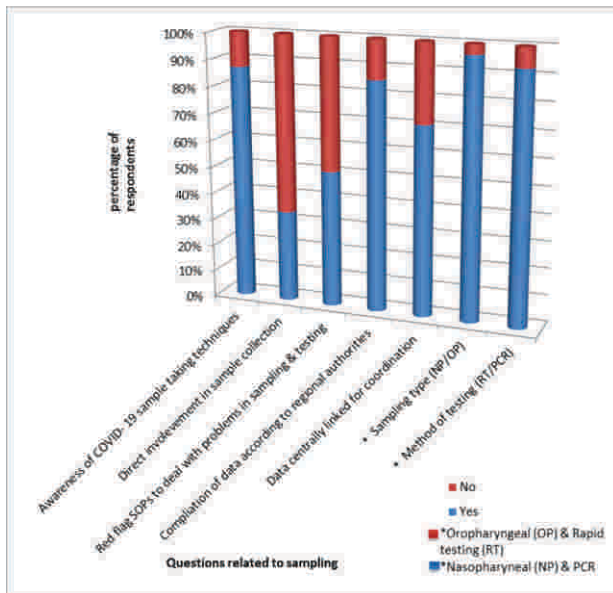


Figure 1. Response of Participants to Questions Associated with Sampling.

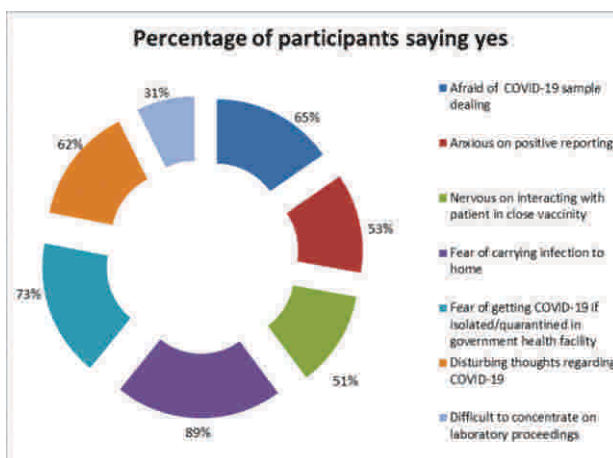


Figure 2. Response of Participants to Questions on Psychological Effects

Section E: Open-Ended Questions:

To get a wide range of views from the respondents several questions were asked. By and large, 62% of the laboratory professionals used viral transport medium (VTM) for suspected COVID-19 cases and maximum samples were received from the hospital (table 4).

DISCUSSION

The COVID-19 pandemic has resulted in an unpredicted universal crisis, which has rapidly puzzled the working capacity of the whole health care system. A limited local data is available to

address the unmet needs in our setup during this current pandemic. The majority of participants in our study were females (64%) which is similar to other local and international studies. The most frequent

age range was 20-30 years, comparable to the other local and international studies.^{13,14}

The participants in our study were inquired about pandemic preparedness in their laboratories such as awareness of PPE usage, specimen collection and handling, etc. Most of the Pathologists were prepared in terms of training about the usage of PPE (93%), the transmissibility of infection (94.5%), instrument handling and procedures for risk assessment and risk control (84%). Regarding PPE, variable level of protection was being used: around 1/3rd (34%) using safety goggles, mask, face shield, gloves, and kit, next frequent is the use of kit (24%) only with 14% only using gloves. However, all laboratory staff handling COVID-19 samples must wear PPE including double pairs of disposable latex gloves, water-resistant gown with grip cuff, and goggles while handling respiratory samples at Biosafety levels laboratory-2 (BSL-2) or above.¹⁵

There were also various ground issues faced by Pathologists while working in laboratories. These include less than half laboratories which were approved for COVID-19 testing, the majority of laboratories biosafety levels were not satisfactory. Similarly, non-conformance with external quality assurance in laboratories was 40% and only about half of the laboratories were separate from other activities in the same building. These all factors pose major safety concerns for the collection, handling, and testing of COVID-19 samples and safe waste disposal. Irrespective of these challenges, some productive and preemptory actions were done at Pathology laboratories including the provision of PPE (76%), maintain internal quality control (82%), kits validation from competent authorities (74.5%), according to more than half of the respondents. The major gaps were identified in the preparedness and work-related challenges in laboratories as expressed by the participants included lack of emergency drills and exercises including spillage (34.5%), more than half of the laboratories lacked manpower and code of practice for COVID-19. No code of conduct for group 3 biological hazard (HG3) in the majority of laborato-

Table 4: Response of Participants in Open-Ended Questions

Questions	Response	Frequency (Percentage)
Which of these PPE are you using during sample collection?	Gloves	8(14)
	Gloves,mask	1(2)
	Goggle;Mask;Face shield;Gloves;Kit	19(34)
	Goggle;Mask;Gloves;Kit	3(5.5)
	Kit	13(24)
	Kit	1(2)
	Mask;Face shield;Gloves	5(9)
	Mask;Gloves	2(4)
	Mask;Gloves;Kit	3(5.5)
Samples are being received from?	Door to door sampling	2(4)
	Hospital	24(44)
	Hospital;Quarantine centers	3(5)
	In house sampling	13(24)
	In house sampling;Hospital;Door to door sampling	1(2)
	In house sampling;Hospital;Quarantine centers	4(7)
	In house sampling;Hospital;Quarantine centers	5(9)
	In house sampling;Hospital;Quarantine centers;Door to door sampling	3(5)
Which disinfectant your laboratory is using?	Alcohol	18 (33)
	Bleach	27 (49)
	Hydrogen peroxide	1(2)
	Quaternary ammonium compounds and phenolic compounds	9(16)
Which of the following guidelines on collection, transport, and handling COVID-19 samples?	CDC	2(4)
	Local	11(20)
	WHO	42(76)
Mention which medium of transport you are using?	None	17(31)
	Universal transport media	4(7)
	VTM	28(51)
	VTM provided by govt., non labelled also no other information provided	2(4)
	VTM tubes with primary and secondary packing	4(7)

ries (78%), lack of pandemic readiness training (44%), and no COVID-19 waste management training. These can partly be related to gaps in the standardization of Pathology laboratories in Pakistan.¹⁶

According to our study variable disinfectants are being used in different laboratories. The commonly used is bleach (49%), followed by isopropyl alcohol (33%). A study conducted at Centre for Experimental and Clinical Infection Research, Hannover, found out that 70 % of Isopropyl alcohol was an efficient virucidal agent for inactivation of enveloped viruses responsible for recent outbreaks including Ebola virus, Zika Virus, SARS-CoV.¹⁷ A study by Chin et al showed that 1:50 bleach and 70% ethanol efficiently kill viruses along with other studied disinfectants.¹⁸ The Pathologists in Pakistan are mainly following WHO guidelines (76.4%) for collection, transport, and handling of COVID-19 sampling, followed by local guidelines (20%) with CDC guidelines (4%) being followed infrequently. Since the virus has high biosafety hazard, therefore, only a few laboratories are preserving them for research purposes. However, many laboratories (62%) are saving them for the retest.

Like any disaster, an unusual emergent health crisis of COVID-19 has triggered anxiety in everyone. Common people are facing the fear of uncertainty which is amplified manifold when it comes to healthcare professionals because of their awareness about contiguity and potential exposure to the cases. The majority of Pathology laboratory workers in our survey expressed some form of stress-related to COVID-19 including 89% feared carrying this disease to home followed by 73 % being worried about contracting an infection from government isolation centres. Besides, more than half of the respondents (62%) had disturbing thoughts regarding this virus. Similar psychological impacts are addressed in a study from Wuhan which was the origin of this pandemic. The study from China showed the frontline workers to be at more risk of mental stress than general doctors.¹⁹ An international

study also showed adverse psychological impact was more in health professionals working in high dependency unit (HDU), intensive care unit (ICU) and isolation facilities.²⁰

CONCLUSION

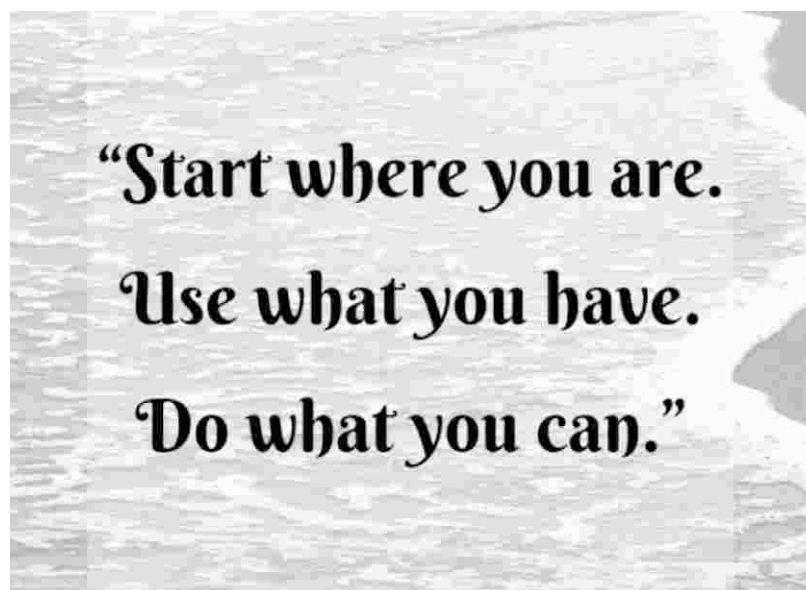
Preparedness for an uncertain health crisis, provision of manpower, safety gear, appropriate disinfectant use, collection, transport & handling of specimen and procedural equipment are the biggest workplace challenges faced by Pathology laboratories in Pakistan. The national healthcare regulatory authorities must make strategic plans for disaster readiness at all levels for any unforeseen events. Healthcare infrastructure must be provided to strengthen the Pathology laboratories to handle the diagnostic burden of any future outbreaks.

Conflict of Interest: None

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DIAGNOSTIC ACCURACY OF SALINE INFUSION HYSTEROSONOGRAPHY VS. HYSTEROSCOPY FOR DETERMINATION OF UTERINE PATHOLOGIES IN PATIENTS WITH ABNORMAL UTERINE BLEEDING (AUB)

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Abstract

Background: Abnormal uterine bleeding (AUB) refers to menstrual bleeding, is a common gynecologic complaint. Patients may have lost 2cyclic endometrial stimulation that arises from the ovulatory cycle. Saline infusion sonohysterography (SIS) is a test where a small volume of saline is inserted into the uterus. SIS is a modified technique of TVS and is non-invasive and does not require expertise and easy to handle as compared to hysteroscopy.

Objective: To determine the diagnostic accuracy of saline infusion hysterosonography and hysteroscopy in diagnosing intrauterine pathology in females presenting with abnormal uterine bleeding taking histopathology as gold standard.

Material & Methods: This cross sectional study was carried out at Unit 1, Department of Obstetrics and Gynaecology, Lahore General Hospital Lahore for 6 months (Date: from December, 2015 to May, 2016). The non-probability consecutive sampling technique was used. Patients informed that SIS and HS are usually safe procedures with very few risks including pain abdomen, vaginal spotting and discharge in SIS, and infection, bleeding, damage to cervix or perforation of uterus, complication of fluid or gas to expand the uterus in HS. Then patients underwent SIS. The endometrial cavity was examined for the presence of polyps, sub mucous fibroids, focal endometrial thickenings or other pathologic conditions, patients were followed closely and analgesics were given if she experiences any pain and other complications was also managed accordingly. After SIS, patients underwent HS. Directed biopsy of any abnormal area was performed through the 3-mm operating channel. All specimens sent to the Pathology Department of the hospital for histopathological evaluation. Reports of histopathology were compared with reports of SIS and HS. Data was entered into SPSS version 20. 2x2 table was generated to measure sensitivity, specificity, PPV, NPV and diagnostic accuracy for SIS and HS taking histopathology as gold standard.

Results: In our study the mean age of the patients was 44.596±14.69 years. In this study sensitivity of SIS was 93.7% with specificity of 88.4% and the diagnostic accuracy was 91.7%. The sensitivity of hysteroscopy was 94.6% with specificity of 97.1% and the diagnostic accuracy was 95.6%.

Conclusion: Our study results showed that both the SIS and Hysteroscopy are the useful tools for diagnosing intrauterine pathology in females presenting with abnormal uterine bleeding.

Keywords: Saline Infusion sonohysterography, Hysteroscopy, Abnormal Uterine Bleeding, Histopathology

Abnormal uterine bleeding (AUB) refers to menstrual bleeding of abnormal quantity, or duration, is a common gynecologic complaint, accounting for frequent patient's visits to gynecologists.¹ The prevalence of (AUB) is estimated to be 11–13% in the general population and increases with age, reaching 24% in those aged 36–40 years.² One local study reported the rate of abnormal

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pathologies was 40% among females having AUB.³ There are different investigations used to diagnose underlying pathology. Pelvic Ultrasound, TVS, Saline infusion Sonohysterography (SIS) and Diagnostic Hysteroscopy (DH) are among one of them, with different pros and cons related to each investigation. Hysteroscopy (HS), in combination with histological examination of an endometrial aspiration or biopsy, is considered the 'gold standard' in the diagnosis of intrauterine abnormalities and is recommended in women with AUB. However it is expensive and invasive and is available only in tertiary care hospitals.⁴ SIS although initially used to investigate tubal patency, now has evolved into an investigation of the uterine cavity. The advantage of SIS is that it is relatively noninvasive compared with hysteroscopy and it is performed during TVS.⁵ Mathew et al., found the sensitivity, specificity, positive and negative predictive values for SIS were 91.4%, 92.6%, 89.3% and 94.1%, respectively.⁶ Khan et al., conducted a study in Saudi Arabia and found that the sensitivity, specificity, positive and negative predictive values for SIS were 100%, 67%, 98% and 100%, respectively while the sensitivity, specificity, positive and negative predictive values for HS were 98%, 67%, 98% and 67%, respectively. This showed that SIS is more accurate as compared to hysteroscopy.⁷ However, Soguktas, et al., reported that HS results were sensitivity 91.1% and specificity 98.2%. While for SIS results were sensitivity 82.3% and specificity 96.3%. This showed that hysteroscopy is superior to SIS.⁸

This study was conducted to determine the diagnostic accuracy of SIS with HS in diagnosing intrauterine pathology in females presenting with AUB. In routine practice HS is more common tool for diagnosis of cause of AUB in females presenting in OPD of a tertiary care hospital. But HS requires expertise and is not available in all settings particularly in peripheries. SIS is a modified technique of TVS and is non-invasive and does not require expertise and easy to handle. It has been noticed in literature that SIS is more reliable than HS but

controversy is also observed. So to resolve the dispute, we want to conduct this study. So that more reliable tool can be evaluated and implemented in future. The objective of this study was to determine the diagnostic accuracy of saline infusion hysterosono-graphy and hysteroscopy in diagnosing intrauterine pathology in females presenting with abnormal uterine bleeding taking histopathology as gold standard.

METHODOLOGY

A Cross sectional study was conducted at Unit 1, Department of Obstetrics and Gynaecology, Lahore General Hospital Lahore from December, 2015 to May, 2016. Sample size of 180 cases was calculated with 95% confidence level, and 8% margin of error for sensitivity, 3% margin of error for specificity and taking expected percentage of intrauterine pathology i.e. 40% in females with AUB and sensitivity and specificity of SIS i.e. 82.3% and 96.3% respectively taking histopathology as gold standard through a non probability consecutive sampling technique. Females of age 18-70 years presenting with AUB menstrual bleeding of abnormal quantity like clots of size >1cm, just spotting, irregular bleeding or infrequent bleeding for >6 months and presence of pathologies like endometrial hyperplasia (>16mm), polyps (>5mm), Submucous fibroid (>30mm), Adenomyosis (presence of endometrial mucosa within the myometrium) on SIS. The presence of abnormal pathology will be confirmed through histopathology (gold standard) i.e. hyperplasia (>12mm), polyps (>4mm), Submucous fibroid (>25mm), Adenomyosis (presence of endometrial mucosa within myometrium) were included in the study. Pregnant females, patients with ovarian pathologies, patients with systemic bleeding disorders (PT>20 sec, APTT>10 sec), patients with IUCDs, patients taking hormonal contraception were excluded. After taking approval from ethical committee, 180 females meeting inclusion criteria were enrolled in the study. Patients were informed that SIS and HS are usually safe proce-

dures with very few risks including pain abdomen, vaginal spotting and discharge in SIS, and infection, bleeding, damage to cervix or perforation of uterus, complication of fluid or gas to expand the uterus in HS. Then patients underwent SIS. Saline contrast sonohysterography was performed by placing the patient in the dorsal Lithotomy position and placing a sterilized speculum into the vagina to expose the cervix. The external os was cleaned with povidone-iodine solution. A 6 F balloon catheter was inserted through the cervix and the balloon was inflated with 2-6 ml of the saline to seal the external os tightly to prevent any leakage into the vagina, The Ultrasound used was of toshiba eccocce having probe frequency of 3.5 Mega Hertz. TVS probe or Abdo-minal probe was inserted and Approximately 10ml of sterile saline solution was injected slowly through the catheter under direct sonographic visualization. Multiple sagittal and coronal images were then obtained. The endometrial cavity was examined for the presence of polyps, sub mucous fibroids, focal endometrial thickenings or other pathologic conditions, patients were followed closely and analgesics were given if she experiences any pain and other complications was also managed accordingly. After SIS, patients underwent HS. Hysteroscopy of karl stores was used, it was a 30 degree telescope with size 4mm having inner and outer sheaths, it was sterilized in 2% Chlorhexidine(Sidex) solution to lessen the risk of infection. The appearance of the endometrium (atrophic, proliferative, secretory, or hyperplastic) and the presence of polyps, fibroids, synechiae or carcinoma was recorded. Directed biopsy of any abnormal area was performed through the 3-mm operating channel. Endometrial sampling was done in rest of the cases using a small sterilized curette. Patient was monitored closely in post procedure period and any complication if occurs were managed vigilantly. All specimens sent to the Pathology Department of the hospital for histopathological evaluation. Reports of histopathology were compared with reports of SIS and HS. Data was entered into SPSS version 20. Quantitative data like

age and duration of AUB was presented as mean and standard deviation. Qualitative data like parity, uterine finding (normal / abnormal) and type of pathology on SIS, HS and histopathology was presented as frequency and percentage. 2×2 table was generated to measure sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy for SIS and HS taking histopathology as gold standard. Data was stratified for age and type of pathology, post stratification chi square test was applied with p-value \leq was considered significant.

RESULTS

In this study the mean age of the patients was 44.596 ± 14.69 years with minimum and maximum ages of 20 & 70 years respectively. The study results showed that 21(11.67%) patients were primiparous, 23(12.78%) patients had parity one, 44(24.44%) patients had parity two, 30(16.67%) patients had parity three, 30(16.67%) patients had parity four and 32(17.78%) patients had parity five. In this study the AUB was diagnosed positive by SIS in 112(62.2%) patients and it was diagnosed negative by 68(37.8%) patients. In our study the AUB was diagnosed positive by hysteroscopy in 107(59.4%) patients and it was diagnosed negative by 73(40.6%) patients. In our study the AUB was diagnosed positive by histopathology in 111(61.7%) patients and it was diagnosed negative by 69(38.3%) patients. (Table no:1)The study results showed that the endometrial pathology was found in 111(61.67%) patients, polyp was found in 29(16.11%) patients, fibroid was found in 18(10.0%) patients and hyperplasia was found in 22(12.22%) patients. The study results showed that the sensitivity of SIS was 93.7% with specificity of 88.4%. The PPV value was 92.9%, NPV value was 89.7% with diagnostic accuracy of 91.7% taking histopathology as gold standard. The study results showed that the sensitivity of hysteroscopy was 94.6% with specificity of 97.1%. The PPV value was 98.1%, NPV value was 91.8% with diagnostic accuracy of 95.6% taking

DIAGNOSTIC ACCURACY OF SALINE INFUSION HYSTEROSONOGRAPHY VS. HYSTEROSCOPY

histopathology as gold standard. In patients of age <50years, hysteroscopy has 91.3% sensitivity, 95.1% specificity, 96.9% PPV, 86.7% NPV and 92.7% overall accuracy. (Table no:3) While in patients of age ≥50years, the sensitivity, specificity, PPV, NPV and overall accuracy were 100%. In patients of age <50years, SIS has 88.3% sensitivity, 76.5% specificity, 86.9% PPV, 78.8% NPV and 84.0% overall accuracy. While in patients of age ≥ 50years, the sensitivity, specificity, PPV, NPV and overall accuracy were 100%. (Table no:4,5)

DISCUSSION

This present cross sectional study was conducted

Table 1: Frequency distribution of SIS Hysteroscopy Histopathology

Frequency distribution o		Frequency	Percent
SIS	Positive	112	62.2
	Negative	68	37.8
Hysteroscopy	Positive	107	59.4
	Negative	73	40.6
Histopathology	Positive	111	61.7
	Negative	69	38.3

Table 2: Comparison of SIS and Hysteroscopy with histopathology

		Histopathology		Total
		Positive	Negative	
SIS	Positive	104	8	112
	Negative	7	61	68
Hysteroscopy	Positive	105	2	107
	Negative	6	67	73

Table 3: Diagnostic accuracy of SIS Hysteroscopy with histopathology

Diagnostic accuracy	SIS	Hysteroscopy
Sensitivity	93.7%	94.6%
Specificity	88.4%	97.1%
PPV	92.9%	98.1%
NPV	89.7%	91.8%
Diagnostic Accuracy	91.7%	95.6%

at Unit 1, Department of Obstetrics and Gynaecology,

Table 4: Comparison of hysteroscopy SIS with histopathology stratified by age

	Age (years)		Histopathology		Total
			Positive	Negative	
Hystero-scopy	< 50	Positive	63	2	65
		Negative	6	39	45
	≥ 50	Positive	42	0	42
		Negative	0	28	28
SIS	< 50	Positive	53	8	61
		Negative	7	26	33
	≥ 50	Positive	34	0	34
		Negative	0	22	22

Table 5: Diagnostic accuracy of SIS Hysteroscopy with histopathology among age groups:

Diagnostic accuracy	SIS	hysteroscopy	SIS&hysteroscopy
	<50 years	<50 years	≥ 50 years
Sensitivity	88.3	91.3	100
Specificity	76.5	95.1	100
PPV	86.9	96.9	100
NPV	78.8	86.7	100
Accuracy	84.0	92.7	100

Lahore General Hospital Lahore to determine the diagnostic accuracy of saline infusion hysterosonography and hysteroscopy in diagnosing intrauterine pathology in females presenting with abnormal uterine bleeding taking histopathology as gold standard.

Abnormal uterine bleeding is a very common symptom in women of all ages. Its management is a significant financial burden on healthcare resources. For patients with AUB, 2D and 3D US is performed as an initial investigation. Hysteroscopy is widely available and is a reliable method for investigating women with AUB. It allows for direct visualization of the endometrial cavity, with accurate assessment of intracavitary lesions,⁹ and thus, accurate removal of lesions such as polyps and submucosal fibroids.^{9,10}

In this study endometrial pathology was found in 111(61.67%) patients, polyp was found in 29(16.11%) patients, fibroid was found in 18(10.0%) patients and hyperplasia was found in 22(12.22%) patients.

One study by Bingol B et al on comparison of

diagnostic accuracy of saline infusion sonohystero-graphy, transvaginalsonography and hysteroscopy in postmenopausal bleeding showed that the most common endometrial lesions were polypoid lesion (38.0%) and hyperplasia (28.4%).¹¹ In another study Polyps were seen in 60 patients (59%), submucosal fibroids in 17 patients (17%), a normal cavity in eight patients (8%), and a distorted cavity in three patients (3%) by SIS. By hysteroscopy the endometrial polyps was found in 40 patients (39%), submucous fibroids in 13 patients (13%), a distorted cavity in one (1%) patient, and thickened endometrium in one patient (1%).⁷

According to our study the sensitivity of SIS was 93.7% with specificity of 88.4% and the diagnostic accuracy was 91.7% taking histopathology as gold standard. Similarly the sensitivity of hysteroscopy was 94.6% with specificity of 97.1% and the diagnostic accuracy was 95.6% taking histopathology as gold standard for diagnosis of AUB. Some of the studies are discussed below showing their findings as.

A study by Bingol B et al¹¹ enrolled in their study 346 patients. Sensitivity, specificity, positive and negative predictive values (PPV, NPV) was calculated to compare the accuracy of TVS, SIS and hysteroscopy for uterine abnormalities. SIS showed a sensitivity of 87%, specificity of 100% and PPV of 100% for endometrial hyperplasia, and a sensitivity and NPV of 100% for polypoid lesions. As in this study polyp was found in 29(16.11%) patients, fibroid was found in 18(10.0%) patients and hyperplasia was found in 22(12.22%) patients. For submucosalmyoma SIS showed a sensitivity of 99% with PPV of 96%. Hysteroscopy had a sensitivity, specificity, PPV and NPV of 98%, 83%, 96% and 91%, respectively for overall uterine pathologies which in accordance with this study results.

A study by B Bingol, et al¹¹ presented that out of 137 patients, the overall sensitivity rates were 70.0% for TVS, 89.6% for SIS and 92.3% for HS, while the overall specificity rates were 50.0, 77.3 and 80.7%, respectively. HS had PPV of 96.2% and NPV of

65.3%, whereas PPV was determined to be 80.9 versus 95.3% and NPV was 35.4 versus 58.3% for TVS and SIS, respectively. Soguktas, et al., reported that HS results were sensitivity 91.1% and specificity 98.2%. While for SIS results were sensitivity 82.3% and specificity 96.3%. This showed that hysteroscopy is superior to SIS.⁸

In direct comparison to hysteroscopy and laparoscopy, SIS has slightly higher false positive rates. However, this is offset by the numerous other advantages of SIS. other independent studies have shown SIS to be better tolerated compared with office hysteroscopy ($P < 0.05$).¹²

Mathew et al., found the sensitivity, specificity, positive and negative predictive values for SIS were 91.4%, 92.6%, 89.3% and 94.1%, respectively⁶, that is in accordance with this study. In this study the sensitivity, specificity, PPV, NPV and diagnostic accuracy were 93.7%, 88.4%, 92.9%, 89.7% and 91.7% respectively.

CONCLUSION

Our study results showed that both the SIS and Hysteroscopy are the useful tools for diagnosing intrauterine pathology in females presenting with abnormal uterine bleeding. But hysteroscopy has found the higher values of sensitivity, specificity and accuracy as compared to SIS taking histopathology as gold standard.

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Having a mental disorder isn't easy, and it's even harder when people assume you can just "get over it".

MEAN PERCENTAGE INCREASE IN POSTPARTUM HAEMOGLOBIN LEVEL OF TWO INJECTABLE MODALITIES OF IRON THERAPY

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Abstract

Objectives: Iron deficiency anemia is the most common cause of anemia in pregnancy and during postpartum period effecting a significant amount of females leading to worse clinical outcomes, which include both physical and psychosocial aspects of the pregnant females.

The study was conducted to compare the outcome of two injectable modalities of iron therapy given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia and to compare which one is having more side effects between these two injectable modalities of iron therapy.

Methods: It is a randomized controlled trial of six months duration done in the post-operative and post-natal wards of Hayat memorial hospital, Lahore. Sample size of 200 cases with non-probability purposive sampling technique fulfilling the inclusion and exclusion criteria; 100 cases in each group is calculated with 80% power of test, 1% margin of error and taking mean percentage increase in haemoglobin (Hb) i.e. 57.5% in intravenous group and 13.8% in intramuscular group after 4 weeks of treatment. Data was entered and interpreted via SPSS 15.

Results: Majority of the patients were found between 21-30 years of age in both A & B groups, in Group-A 50%(n=50) and in Group-B 48%(n=48), the subjects with 15-20 years of age in Group-A were 18%(n=18) and in Group-B 22%(n=22) while 12%(n=12) of Group-A and 6%(n=6) in Group-B were found between 41-45 years of age. Mean and standard deviation was calculated, it was found 27.22±0.38 in Group-A and 26.34±0.47 in Group-B. In Group-A 20%(n=20) and in Group-B 24%(n=24) were found with primi parity, patients with 2-4 para were found 62%(n=62) in Group-A and 60%(n=60) in Group-B, while 18%(n=18) in Group-A and 16%(n=16) in Group-B were found with para >4. The comparison of investigations in both groups (on admission) shows that in Group-A Hb 7.2±0.1, MCVf 70, Hematocrit 26 and ferritin was found 11 while in Group-B, Hb 7.1±0.3, MCVf 71, Hematocrit 27.5 and ferritin was found 12.5 (the values are recorded in mean), at day 15 shows Hb 9.2±0.11, MCVf 80, Hematocrit 33 and ferritin 46 in Group-A while in Group-B Hb was found 7.9±0.42, MCVf 72, Hematocrit 29 and ferritin 12. Table No. 4. (P value was 0.05) and at day 40 after treatment shows that Hb 11.49±0.08, MCVf 86, Hematocrit 35 and ferritin 42.2 in Group-A while in Group-B Hb was found with 11.17±0.04, MCVf 75.5, Hematocrit 31.8 and ferritin 15. (P Value=<0.05). Adverse effects of both drugs shows 10% (n=10) in Group-A while 26% (n=26) in Group-B had side effects of the drugs and 90% (n=90) in Group-A and 74% (n=74) in Group-B had no complications. Statistically insignificant. (P Value=<0.05)

Conclusion: Intravenous iron therapy is more effective than intramuscular therapy in the management of anemia in pregnant ladies with less side effects leading to better clinical outcomes.

Keywords: Post partum anemia, Iron deficiency anemia, treatment, Intravenous venofer, intramuscular Jectofer

Anaemia is reduction in Hb concentration below the normal for age, sex, physiological condition and altitude from the sea level of a person.¹ It is an important public health problem worldwide and most vulnerable groups are pregnant, lactating

woman and children. Iron deficiency anemia is the most common cause of anemia in pregnancy and during postpartum period.² It affects 27 % of pregnant women worldwide and is an important risk factor in maternal morbidity leading to decreased

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work capacity and even death.³

Postpartum anemia (11 g/dl) is observed in up to 30% of women mainly because of pre-existing iron deficiency during pregnancy or due to blood loss during delivery, irrespective of mode of delivery.⁴

Postpartum iron deficiency anemia affects economic and social aspects of women's lives, including the ability to care children, household tasks. It also leads to depression, reduced exercise tolerance, reduced physical and mental work, infections, impaired wound healing and even death.⁵ Blood transfusion, oral iron and intravenous and intramuscular iron therapy have been used in treatment of iron deficiency anemia depending upon cause and severity.⁶ There are number of hazards of allogenic blood transfusion limiting its use in severe anemia.⁷ The most frequent indications for parental iron therapy are vulnerable gastrointestinal side effects of oral iron, sufficient intestinal absorption, refusal of blood transfusion.⁸ Parental iron therapy can mini-mize blood transfusion in pregnancy and postnatal women.⁹ There is increased evidence that iron sucrose complex (given as intravenous route) is safe and effective in anemic pregnant and postpartum patients, due to allogenic effect and slow release of elementary ferrous from the complex as compared to iron sorbitol citric acid complex (given as intramuscular route).¹⁰ There percentage increase inHb was 57.5% in patients when treated with intravenous route of iron while the increase inHb of only 13.8% was observed in patients receiving iron therapy in the form of intramuscular route.^{11,12}

We want to study the effectiveness of increasing the percentage in Hb after 4weeks of treatment and its safety.

METHODOLOGY

The study was done in Post-operative and postnatal wards of Hayat Memorial Hospital, Lahore over a period of 06 months. It is a randomized control trial with non-probability purposive sampling.

Inclusion Criteria:

Postpartum ladies with iron deficiency Anemia.

Exclusion Criteria:

History of transfusion during labor. Regular intake of iron supplements during pregnancy.

Advanced renal diseases.

Advanced hepatic diseases.

Advanced cardiac diseases.

All the patients of iron deficiency anemia fulfilling the inclusion criteria were selected after 24 hours of delivery. Patients were divided in two groups, group A and group B randomly by using random table number. Group-A was treated by intravenous and group B patients were treated with intramuscular iron. An informed consent was obtained for treating them for either method and using their data in the study. They were also informed that there was no health hazard involved.

Group-A patients were counseled about the disadvantages of intramuscular iron like: nausea, vomiting, pain, skin discoloration, abscess formation and anaphylaxis. They were treated by single dose of intravenous Venofer (iron sucrose) administered, calculated by the following formula: $\text{Weight} \times (\text{targetHb} - \text{actualHb} \times 0.24 + 500\text{mg})$. Iron sucrose was administered as a single dose infusion in 100ml 0.9% sodium chloride solution for 30 mins after test dose and no further supplementation was given. In Group-B patients was treated with Jectofer (iron sorbitol citrate) iron deficient was calculated as: $\text{Elemental iron needed (mg)} = (\text{normal Hb-patients Hb}) \times \text{weight (Kg)} \times 2.21 \times 1000$. Initially a treat dose of 50mg of Jectofer (iron sorbitol citrate) was given followed by 1000mg daily or alternate days by deep intramuscular injection. It was to be given on the outer quadrant of the buttocks using a, Z, technique to prevent dark staining of the skin. Inj epinephrine, hydrocortisone and oxygen were available in the event of anaphylactic reaction.

The investigations like Hb% and serum ferritin (mcg/L) were carried out on follow up on day 0, 15 & day 40 after treatment of both groups. On follow-up any side effect if observed was also recorded. The

response of patients in each group in terms of time taken by these injectable modalities to achieve target Hemoglobin of 11g/dl and ferritin level of 15 microgram/l and their maximum level achieved.

Similarly any side effect like nausea, vomiting, pain, skin discoloration, abscess formation and anaphylactic reaction if happens in both groups was taken care of and recorded.

On history findings like socio-economic status (low or middle), parity/duration of marriage, last menstrual period, on examination findings like pallor, dyspnea, palpitation, fatigue/lethargy & mode of delivery and on investigation red cell indices (MCV, MCH, MCHC) & peripheral blood smear were also recorded for both groups on initially and follow-ups.

This information was recorded through a specifically designed proforma.

Among the study variables, outcome variables were variables of interest. They were hemoglobin and serum ferritin. Both were quantitative variables. Other quantitative variable include red cells indices (MCV, MCH and MCHC). These were described by finding their means and standard deviation on admission and post therapy day 15 & day 40 of postpartum for both groups.

Qualitative variables like age range, parity/duration of marriage, socio-economic status (low or middle) were described in frequencies and proportions.

Outcome variables like increase in Hb and ferritin levels were recorded and compared between two treatment regimens, any difference found in two regimens was tested for statistically significance by applying student-t test. A P value of ≤ 0.05 was taken as significant. While background variables like socio-economic status (low or middle), parity/duration of marriage, findings like pallor, dyspnea, palpitation, fatigue/lethargy & mode of delivery were also be cross-tabulated for both groups.

RESULTS

In this study, a total of 200 patients were

recruited after fulfilling the inclusion/exclusion criteria to compare the outcome of two injectable modalities of iron therapy given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia.

In this research, majority of the patients were found between 21-30 years of age in both A & B groups, in Group-A 50%(n=50) and in Group-B 48%(n=48), the subjects with 15-20 years of age in Group-A were 18%(n=18) and in Group-B 22% (n=22) while 12%(n=12) of Group-A and 6%(n=6) in Group-B were found between 41-45 years of age. Mean and standard deviation was calculated it was found 27.22 ± 0.38 in Group-A and 26.34 ± 0.47 in Group-B. (Table No. 1)

Table No. 2 shows status of parity, where in Group-A 20%(n=20) and in Group-B 24%(n=24) were found with primi parity, patients with 2-4 para were found 62%(n=62) in Group-A and 60%(n=60) in Group-B, while 18%(n=18) in Group-A and 16%(n=16) in Group-B were found with para >4.

The comparison of investigations in both groups (on admission) was computed, in the table No. 3, in Group-A Hb 7.2 ± 0.1 mg/dl, MCV 70fl, Hematocrit 26% and ferritin was found 11ng/ml while in Group-B, Hb 7.1 ± 0.3 mg/dl, MCV 71fl, Hematocrit 27.5 % and ferritin was found 12.5 ng/ml (the values were recorded in mean).

The comparison of investigations in both groups at day 15 shows Hb 9.2 ± 0.11 mg/dl, MCV 80fl, Hematocrit 33% and ferritin 46ng/ml in Group-A while in Group-B Hb was found 7.9 ± 0.42 mg/dl, MCV 72fl, Hematocrit 29% and ferritin 12ng/ml. Table No. 4. (P Value mentioned against each in the table)

Table No. 5 shows comparison of investigations between the two groups after 50 days treatment, where Hb 11.49 ± 0.08 mg/dl, MCV 86fl, Hematocrit 35% and ferritin were 42.2ng/ml in Group-A while in Group-B Hb was found with 11.17 ± 0.04 mg/dl, MCV 75.5fl, Hematocrit 31.8% and ferritin was 15ng/dl. (P Value mentioned against

MEAN PERCENTAGE INCREASE IN POSTPARTUM HAEMOGLOBIN LEVEL OF TWO INJECTABLE MODALITIES

each in the table)

Regarding comparison of adverse effects of both drugs, table No. 7 shows 10%(n=10) in Group-A while 26%(n=26) in Group-B had side effects of the drugs and 90%(n=90) in Group-A and 74%(n=74) in Group-B had no complications. Statistically insignificant. (P Value mentioned against each in t

DISCUSSION

Iron deficiency during pregnancy and postpartum could be due to insufficient absorption and to increased needs resulting to chronic iron deficiency and anemia.¹³ It is the most common nutritional deficiency worldwide. It can cause reduced work

Table 1: Age Distribution of the Subjects

Age in years	Group-A (n=100)		Group-B (n=100)	
	No. of cases	Percentage	No. of cases	Percentage
15-20	18	18	22	22
21-30	50	50	48	48
31-40	20	20	24	24
41-45	12	12	06	06
Mean and S.D.	27.22±0.38		26.34±.0.47	
Total	100	100	100	100

Table 2: Status of Parity

Parity	Group-A (n=100)		Group-B (n=100)	
	Percentage	No. of cases	Percentage	Percentage
Primi	20	20	24	24
2-4	62	62	60	60
>4	18	18	16	16
Total	100	100	100	100

Table 3: Comparison of Investigations in Both Groups (on Admission)

Investigations	Group-A	Group-B
	Values in mean	Values in mean
Hb (mg/dl)	7.2±0.1	7.1±0.3
MCV (fl)	70	71
Hematocrit (%)	26	27.5
Ferritin (ng/ml)	11	12.5

Table 4: Comparison of Investigations in Both Groups (Day 15)

Investigations	Group-A	Group-B	P Value
	Values in mean	Values in mean	
Hb (mg/dl)	9.2±0.11	7.9±0.42	0.045
MCV (fl)	80.31± 1.59	71.93±1.20	0.001
Hematocrit (%)	33.41±1.33	29.11±1.47	0.367
Ferritin (ng/ml)	46.50±1.81	12.07±1.34	0.000

Table 5: Comparison of Investigations in Both Groups (Day 40)

Investigations	Group-A (n=100)	Group-B (n=100)	P Value
	Values in mean	Values in mean	
Hb (mg/dl)	11.49±0.08	11.17±0.04	0.049
MCV (fl)	86.63±3.23	75.5±2.35	0.023
Hematocrit %	35.72±1.52	31.01±3.21	0.08
Ferritin (ng/ml)	42.96±1.34	15.00±1.20	0.00

Table 6: Comparison of Side Effects in Both Groups

Side effects	Group-A (n=100)		Group-B (n=100)	
	No. of cases	Percentage	No. of cases	Percentage
Yes	10	10	26	26
No	90	90	74	74
Total	100	100	100	100

(P Value=<0.00)

capacity in adults¹³ and impact motor and mental development in adolescents.¹⁴ The human body does not have a mechanism of getting rid of extra iron amount and the mechanism of iron absorption plays a crucial role in iron homeostasis.² During pregnancy the needs for iron are increased due to the fetus, the placenta and the increased volume of maternal erythrocytes. Women in the reproductive age frequently have anemia and iron deficiency due to menstrual loss. Frequently these women are already anemic by the time they get pregnant.^{15,16}

Treatment of IDA has included oral iron, intramuscular iron, iron dextran, ISC, recombinant erythropoietin and blood transfusion.¹⁷ However, most of these have their disadvantages. Even patients who respond well to oral iron therapy require a long time (months) to reach target Hb compared with weeks required in case of treatment with

ISC. The compliance is always a problem and to improve this, even iron-rich natural mineral water has been tried to treat IDA in pregnant women.¹⁸ The use of intramuscular iron preparations in IDA is also discouraged because of pain, irregular absorption and staining.

In cases of iron deficiency anemia the combination of iron supplementations and erythropoietin is not preventing iron loss and is not increasing the endogenous erythropoiesis. On the contrary high iron levels in plasma circulation after simultaneous intravenous administration of iron and erythropoietin, is essential for stimulation of erythropoiesis.¹⁹

Intravenous iron treatment is indicated for patients with poor compliance in oral supplementations, in cases with poor iron absorption (bowel operations, or diseases), in patients with severe renal impairment, and in postpartum hemorrhage.^{20,21} Recent evidence suggest that iron sucrose can be detected in high levels in the liver circulation and marrow within 5 minutes after intravenous administration. The time interval is 5 to 6 hours and the renal metabolism is minimal, less than 5% of the total dose. These data lead to the conclusion that iron sucrose is metabolically available in only a few hours after administration. This way iron is engaged exclusively from the reticulate liver cells, transferrin and apoferritin in the marrow and spleen. Then it is quickly metabolized and it is available for erythropoiesis and inversion of anemia.²²

In our study after five weeks iron sucrose there was complete reversal of anemic status in all women of group A. In group B there was improvement of anemia which was not as significant as in group A, though. It is already known that intravenous administration of excessive dose of iron might cause liver necrosis, renal, suprarenal and pulmonary damage. The presence of iron sucrose in the plasma circulation is associated with absence of any undesirable effect to the patients. This absence of side effects is partly due to the lower allergenic effect of the sucrose complex because of the very slow release of elementary iron from the complex.^{22,23}

Also the accumulation of iron-sucrose in organic parenchyma is much lower compared to iron-dextrans and iron-gluconate.^{23,24} In addition, incorporation into the bone marrow for erythropoiesis is faster than other complexes,^{22,24} Rare anaphylactic reactions because of the use of iron sucrose have been reported in about 0.002% of cases.²⁴

Our study showed that iron sucrose complex can be used in the post partum anemia patients and effective in increasing Hb, MCVf, Hematocrit and ferritin level with significantly less complications as compare to intramuscular Jectofer (iron sorbitol citrate).

Our study is also confirmed by a local study conducted by Ahmed K, Sadiq I, Yousuf AW⁽²⁵⁾ who were intended to evaluate the efficacy, side effects and cost-effectiveness of venofer compared to the already in use intramuscular iron therapy (iron sorbitol) and concluded that Venofer therapy is expensive but has better compliance, on the other hand, intramuscular therapy is economical and effective but not more than intravenous therapy.

CONCLUSION

The results of the study reveal that comparison of outcome of two injectable modalities of iron therapy given during postpartum period (intravenous versus intramuscular) in improving postpartum anemia shows intravenous injectable as more effective and comparison of effects between these two injectable modalities of iron therapy shows intravenous injectable with less complications.

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MEAN PERCENTAGE INCREASE IN POSTPARTUM HAEMOGLOBIN LEVEL OF TWO INJECTABLE MODALITIES

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Health is a state of body.
Wellness is a state of being.

DEMOGRAPHIC ANALYSIS OF THE RUMORS REGARDING CORONAVIRUS PANDEMIC IN PAKISTAN

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Abstract

Background: In Dec 2019, China faced the COVID-19 outbreak. COVID-19 is a disease caused by the pathogen, SARS-CoV-2 which is a single stranded RNA virus that spreads person to person via direct contact or respiratory droplets. Ever since the outbreak, there has been a constant hearsay about different myths and conspiracy theories regarding the origin, spread and treatment of the virus, which has created a lot of misconceptions at a sociopolitical level.

Objectives: Our cross-sectional study is aimed at finding out the opinion of Pakistani Citizens, regarding widespread rumors of Corona Pandemic, according to their gender, age, and educational status.

Methods: An online questionnaire was conducted on sociodemographic aspects and opinions related to the pandemic. Absolute and relative frequencies were calculated, the association between variables was performed with Chi-square, and the level of significance was 5%. The final sample had 720 participants, and only those who met the inclusion criteria became the part of this research. All data analyses were performed using Statistical Package for the Social Sciences (SPSS) software, version 26.

Results: Most of the participants were male (58.6%), students (80.6%), aged 18-24 years (79.7%), with Matric/ O-Levels/ Equivalent education (92.5%). The majority of females believed coronavirus to be a bio-weapon, while the majority of males believed otherwise ($p=0.025$). Individuals above 60 years believed mainly that the virus was planned by the US military, while the majority of individuals below 18 years believed otherwise ($p=0.033$). Unemployed participants and students fear more that NSAIDS e.g. Ibuprofen might increase the risk of infection as compared to the Private and Government employees ($p=0.001$).

Conclusion: We can conclude that the approach to the COVID-19 pandemic varies by social aspects, such as gender, age and occupational status, as well as the belief system of the population of Pakistan.

Keywords: Pandemic; Coronavirus; Social behavior; Beliefs.

Due to the outbreak of COVID-19 in December, 2019, a lot of pneumonia cases appeared in Wuhan, China. The pathogen was named as SARS-CoV-2.¹ It is a virus that causes severe respiratory illness primarily, accompanied by other complications. According to the Classification of viruses, it is a single stranded RNA virus.² It is highly contagious and spreads via person to person transmission through direct contact with infected people or by respiratory droplets while sneezing, coughing or even talking.³ Human body presents host cells to

which it binds. The virus primarily attacks the respiratory epithelium.⁴ The common symptoms of COVID-19 illness are fever, cough, anosmia and myalgia, while minor symptoms include headache, diarrhea, dyspnea, and lymphopenia.⁵ However, these symptoms vary from being mild to severe; and people with comorbidities have been found to have a higher mortality rate.

Due to an exponential rise in cases of COVID-19, on January 31st WHO called for a Public Health Emergency of International concern. On March 11,

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2020, WHO characterized it as ‘pandemic’.⁶ As of June 25, 2020; a total of 9, 445, 875 confirmed cases and 482, 131 deaths were reported to WHO globally, with numbers still dangerously rising.⁷

In Pakistan, the situation has become quite alarming too. As of February 29, 2020, two patients of COVID-19 were confirmed in Sindh, Pakistan. It is believed that it all started when the Zaireens from Iran crossed the borders of the South of the country. The trajectory showed a typical exponential increase in positive cases- increasing gradually to such an alarming rate now that thousands of patients are being reported on a daily basis.⁸

Ever since the outbreak, there has been a constant hearsay about different myths and conspiracy theories regarding the origin, spread and treatment of the virus, which has created a lot of misconceptions at a socio-political level. Although, WHO has addressed the myths and tried to clear them, the majority of the people in Pakistan still believe in the prevalent disbeliefs regarding this pandemic.⁸

METHODOLOGY

Study Design

This is a cross-sectional study with no identification of the participants.

Setting

An online questionnaire was developed using google forms, with a consent form attached to it. The link of the questionnaire was disseminated through Facebook, Instagram, WhatsApp, Email, Twitter and by text messages. The participants were asked to roll out the survey to as many people as possible. The participants were able to answer all the questions by simply clicking on the link. Confidentiality and anonymity were thoroughly ensured and no names or email addresses were asked.

Duration of Study

The data collection was initiated on 10th June 2020 and was closed on 20th June 2020.

Sample Size

A total of 722 people answered the question-

naire. We excluded 2 responses because they were incomplete. So, the final sample had 720 participants.

Sampling Technique

The Snowball sampling technique was employed for conducting this research.

Sample Selection

The inclusion criteria included residents of Pakistan belonging to any age group who could understand English and have access to the internet. Partially answered questionnaires were excluded from the study.

Data Collection Procedure

The questionnaire was built from closed-ended questions containing sociodemographic aspects and 21 questions dealing with beliefs about the pandemic.

The following were investigated: gender (female, male, other), age group (below 18 years; 18-24 years; 24-30 years; 30-40 years; 40-50 years; 50-60 years; above 60 years), occupation status (student, government employee, private employee, self-employed, vendor, unemployed) and educational status [Matric/O-Levels/Equivalent].

The questions asked were as follows: P1- Do you believe that coronavirus is a bio-weapon? (yes, no, maybe) P2- Do you believe that China stole coronavirus from Canada and weaponized it in a military lab in Wuhan and then leaked it? (yes, no, maybe) P3- Do you believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the virus? (yes, no, maybe) P4- Do you believe that coronavirus is no worse than a flu? (yes, no, maybe) P5- Do you believe the claim of an official in China's Foreign Ministry that the U.S Army started coronavirus, pointing to its presence at the Military World Games in Wuhan in October? (yes, no, maybe) P6- Do you believe that Younger Population is less susceptible to coronavirus? (yes, no, maybe) P7- Do you believe that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a

weapon of bio-terrorism? (yes, no, maybe) P8- Do you believe that NSAIDs/ Ibuprofen might increase the risk of coronavirus infection? (yes, no, maybe) P9- Do you believe that coronavirus is as fearful as the Media is portraying it? (yes, no, maybe) P10- Do you believe that gargling dilute bleach protects you from coronavirus? (yes, no, maybe) P11- Do you believe that coronavirus is airborne? (yes, no, maybe) P12- Do you believe that coronavirus is man-made/ engineered? (yes, no, maybe) P13- Do you believe that coronavirus originated from bats? (yes, no, maybe) P14- Do you believe that once infected with coronavirus, you will have it for life? (yes, no, maybe) P15- Do you believe that if your time of holding breath decreases progressively over days, you are suffering from coronavirus? (yes, no, maybe) P16- Do you believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus? (yes, no, maybe) P17- Do you believe that Ultraviolet (UV) disinfection is effective in killing coronavirus? (yes, no, maybe) P18- Do you believe that thermal scanners are effective in detecting people infected with coronavirus? (yes, no, maybe) P19- Do you believe that regularly rinsing your nose with saline helps protect you from coronavirus? (yes, no, maybe) P20- Do you believe that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of coronavirus? (yes, no, maybe) P21- Do you believe that antibiotics are effective in treating patients with coronavirus? (yes, no, maybe).

Data Analysis Procedure

All data analyses were performed using Statistical Package for the Social Sciences (SPSS) software, version 26. Descriptive statistics has been used in the study to analyze the findings. Chi-squared test was applied to compare responses based on gender, age, and occupational status, to find possible statistical correlations. A value of $P < 0.05$ was considered statistically significant.

RESULTS

A total of 722 people answered the question-

naire. However, following the exclusion of the incomplete questionnaires, the final sample had 720 participants. All the participants were of Pakistani origin. Of these, most were male (58.6%), students (80.6%), aged 18-24 years (79.7%), with Matric/ O-Levels/ Equivalent education (92.5%).

Regarding the origin of COVID-19, 43.6% believed that it originated from bats; 42.2% did not consider it man-made/engineered; 64.2% negated that China stole the virus from Canada and weaponized it in a military lab in Wuhan and then leaked it; 46.9% denied the claim of an official in China's Foreign Ministry that U.S Army started Coronavirus, pointing to its presence at the Military World Games in Wuhan in October.

Regarding the spread of COVID-19, 52.5% did not consider it to be airborne; 58.8% did not believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the infection. Moreover, 53.9% were of the opinion that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a weapon of bio-terrorism.

Regarding the prevention and treatment of the virus, 57.9% negated the notion that antibiotics are effective in treating the infected patients; 68.6% did not think that gargling dilute bleach is effective against the virus; 45.1% did not believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus; 34.4% considered Ultraviolet (UV) disinfection to be effective against the virus. Furthermore, 40.1% did not believe that thermal scanners are effective in detecting people infected with coronavirus; 40.1% denies that regularly rinsing your nose with saline helps protect you from infection; 42.9% believed that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of COVID-19.

Regarding the risk of coronavirus infection, 42.9% believed that NSAIDs/Ibuprofen might increase the risk of infection. In addition to that, 55.8% were of the opinion that the younger population is less susceptible to coronavirus.

Table 1: Overall Response of Participants Towards Questions

Variables	Yes	No	Maybe
P1- Do you believe that coronavirus is a bioweapon?	262 (36.4%)	249 (34.6%)	209 (29%)
P2- Do you believe that China stole coronavirus from Canada and weaponized it in a military lab in Wuhan and then leaked it?	76 (10.6%)	462 (64.2%)	182 (25.3%)
P3- Do you believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the virus?	148 (20.6%)	423 (58.8%)	149 (20.7%)
P4- Do you believe that coronavirus is no worse than a flu?	119 (16.5%)	568 (78.9%)	33 (4.6%)
P5- Do you believe the claim of an official in China's Foreign Ministry that U.S Army started the coronavirus, pointing to its presence at the Military World Games in Wuhan in October?	171 (23.8%)	338 (46.9%)	211 (29.3%)
P6- Do you believe that Younger Population is less susceptible to coronavirus?	402 (55.8%)	249 (34.6%)	69 (9.6%)
P7- Do you believe that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a weapon of bio-terrorism?	181 (25.1%)	388 (53.9%)	151 (21%)
P8- Do you believe that NSAIDs/ Ibuprofen might increase the risk of coronavirus infection?	309 (42.9%)	231 (32.1%)	180 (25%)
P9- Do you believe that coronavirus is as fearful as the Media is portraying it?	412 (57.2%)	244 (33.9%)	64 (8.9%)
P10- Do you believe that gargling dilute bleach protects you from coronavirus?	83 (11.5%)	494 (68.6%)	143 (19.9%)
P11- Do you believe that coronavirus is airborne?	254 (35.3%)	378 (52.5%)	88 (12.2%)
P12- Do you believe that coronavirus is man-made/ engineered?	241 (33.5%)	304 (42.2%)	175 (24.3%)
P13- Do you believe that coronavirus originated from bats?	314 (43.6%)	190 (26.4%)	216 (30%)
P14- Do you believe that once infected with coronavirus, you will have it for life?	50 (6.9%)	600 (83.3%)	70 (9.7%)
P15- Do you believe that if your time of holding breath decreases progressively over days, you are suffering from coronavirus?	194 (26.9%)	349 (48.5%)	177 (24.6%)
P16- Do you believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus?	215 (29.9%)	325 (45.1%)	180 (25%)
P17- Do you believe that Ultraviolet (UV) disinfection is effective in killing coronavirus?	248 (34.4%)	231 (32.1%)	241 (33.5%)
P18- Do you believe that thermal scanners are effective in detecting people infected with coronavirus?	234 (32.5%)	289 (40.1%)	197 (27.4%)
P19- Do you believe that regularly rinsing your nose with saline helps protect you from coronavirus?	229 (31.8%)	289 (40.1%)	202 (28.1%)
P20- Do you believe that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of coronavirus?	309 (42.9%)	231 (32.1%)	180 (25%)
P21- Do you believe that antibiotics are effective in treating patients with coronavirus?	135 (18.8%)	417 (57.9%)	168 (23.3%)

Regarding the questions asked to the whole group, 83.3% did not believe that the virus will continue to infect for lifetime once an individual is tested positive. Furthermore, 48.5% negated that if your time of holding breath decreases progressively over days, you are suffering from coronavirus.

A total of 36.4% of respondents considered coronavirus a bioweapon. Regarding the gravity of the Pandemic, 78.9% believed that coronavirus was worse than a flu; 57.2% were of the opinion that the virus is as fearful as the Media is portraying it. [Table 1]

Study Results on the Basis of Gender

When the questions asked had their answers

compared between males and females, the majority of females believed coronavirus to be a bioweapon, while the majority of males believed otherwise (p= 0.025). Both the genders negated the possibility of 5G to be the source of spreading COVID-19 (p= 0.008). Approximately, 70% of both men and women denied the role of gargling dilute bleach to protect from the virus (p= 0.007). The significance of Ultraviolet (UV) radiations as disinfectant was acknowledged by the majority of women while men on the other hand remained indecisive (p=0.049). Moreover, most of the men did not believe in rinsing of the nose with saline to be effective against COVID-19 while women had a varied opinion (p=

Table 2: Association between the Responses to the Questionnaire and the Participants' Gender

Variables	Female		Male		P-value
	n	%	n	%	
P1- Do you believe that coronavirus is a bioweapon?					0.025
Yes	118	39.6	144	34.1	
No	86	28.9	163	38.6	
Maybe	94	31.5	115	27.3	
P2- Do you believe that China stole coronavirus from Canada and weaponized it in a military lab in Wuhan and then leaked it?					0.113
Yes	38	12.8	38	9.0	
No	194	65.1	268	63.5	
Maybe	66	22.1	116	27.5	
P3- Do you believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the virus?					0.008
Yes	73	24.5	75	17.8	
No	155	52.0	268	63.5	
Maybe	70	23.5	79	18.7	
P4- Do you believe that coronavirus is no worse than a flu?					0.081
Yes	39	13.1	80	19.0	
No	247	82.9	321	76.1	
Maybe	12	4.0	21	5.0	
P5- Do you believe the claim of an official in China's Foreign Ministry that U.S Army started the coronavirus, pointing to its presence at the Military World Games in Wuhan in October?					0.835
Yes	72	24.2	99	23.5	
No	136	45.6	202	47.9	
Maybe	90	30.2	121	28.7	
P6- Do you believe that Younger Population is less susceptible to coronavirus?					0.098
Yes	153	51.3	249	59.0	
No	111	37.2	138	32.7	
Maybe	34	11.4	35	8.3	
P7- Do you believe that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a weapon of bio-terrorism?					0.085
Yes	86	28.9	95	22.5	
No	147	49.3	241	57.1	
Maybe	65	21.8	86	20.4	
P8- Do you believe that NSAIDs/ Ibuprofen might increase the risk of coronavirus infection?					0.065
Yes	143	48.0	166	39.3	
No	89	29.9	142	33.6	
Maybe	66	22.1	114	27.0	
P9- Do you believe that coronavirus is as fearful as the Media is portraying it?					0.152
Yes	182	61.1	230	54.5	
No	89	29.9	155	36.7	
Maybe	27	9.1	37	8.8	
P10- Do you believe that gargling dilute bleach protects you from coronavirus?					0.007
Yes	45	15.1	38	9.0	
No	206	69.1	288	68.2	
Maybe	47	15.8	96	22.7	
P11- Do you believe that coronavirus is airborne?					0.341
Yes	114	38.3	140	33.2	
No	151	50.7	227	53.8	
Maybe	33	11.1	55	13.0	
P12- Do you believe that coronavirus is man-made/ engineered?					0.639
Yes	96	32.2	145	34.4	
No	132	44.3	172	40.8	
Maybe	70	23.5	105	24.9	
P13- Do you believe that coronavirus originated from bats?					0.241
Yes	141	47.3	173	41.0	
No	74	24.8	116	27.5	
Maybe	83	27.9	133	31.5	
P14- Do you believe that once infected with coronavirus, you will have it for life?					0.294
Yes	20	6.7	30	7.1	
No	255	85.6	345	81.8	
Maybe	23	7.7	47	11.1	
P15- Do you believe that if your time of holding breath decreases progressively over days, you are suffering from coronavirus?					0.386
Yes	80	26.8	114	27.0	
No	152	51.0	197	46.7	
Maybe	66	22.1	111	26.3	
P16- Do you believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus?					0.190
Yes	100	33.6	115	27.3	
No	127	42.6	198	46.9	
Maybe	71	23.8	109	25.8	
P17- Do you believe that Ultraviolet (UV) disinfection is effective in killing coronavirus?					0.049
Yes	118	39.6	130	30.8	
No	87	29.2	144	34.1	
Maybe	93	31.2	148	35.1	
P18- Do you believe that thermal scanners are effective in detecting people infected with coronavirus?					0.367
Yes	104	34.9	130	30.8	
No	111	37.2	178	42.2	
Maybe	83	27.9	114	27.0	

0.035). [Table 2]

DEMOGRAPHIC ANALYSIS OF THE RUMORS REGARDING CORONAVIRUS PANDEMIC IN PAKISTAN

P19- Do you believe that regularly rinsing your nose with saline helps protect you from coronavirus?					0.035
Yes	109	36.6	120	28.4	
No	105	35.2	184	43.6	
Maybe	84	28.2	118	28.0	
P20- Do you believe that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of coronavirus?					0.296
Yes	137	46.0	172	40.8	
No	87	29.2	144	34.1	
Maybe	74	24.8	106	25.1	
P21- Do you believe that antibiotics are effective in treating patients with coronavirus?					0.781
Yes	58	19.5	77	18.2	
No	168	56.4	249	59.0	
Maybe	72	24.2	96	22.7	

from all of the age-groups negated any role of 5G in contributing to COVID-19 (p= 0.019). Individuals above 60 years believed mainly that the virus was planned by the US military, while the majority of individuals below 18 years believed otherwise (p = 0.033). Moreover, gargling dilute bleach does not protect from the virus according to all age groups (p = 0.024). Younger individuals, between 18 and 30 years, consider bats to be the origin of the virus, while older people from 40 years onwards do not believe this (p= 0.008). We also observed that all the age groups negate the possibility of the patient to suffer for the rest of his life after being tested positive once (p= 0.040). Young individuals below 18 years and those above 50 years favoured that high temperatures would be effective in killing the virus, while middle- aged individuals between 18 and 50 years negated this (p=0.015). [Table 3]

Study Results on the basis of Age Groups

Concerning the answers and their relationship with the age-groups, we observed that participants

Table 3: Association between the Responses to the Questionnaire and the Age Range of the participants

Variables	Below 18 years		18-24 years		24-30 years		30-40 years		40-50 years		50-60 years		60 years and over		P-value
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
P1- Do you believe that coronavirus is a bioweapon?															0.825
Yes	9	33.3	215	37.5	13	27.7	10	29.4	8	50.0	4	36.4	3	27.3	
No	11	40.7	192	33.4	19	40.4	12	35.3	4	25.0	5	45.5	6	54.5	
Maybe	7	25.9	167	29.1	15	31.9	12	35.3	4	25.0	2	18.2	2	18.2	
P2- Do you believe that China stole coronavirus from Canada and weaponized it in a military lab in Wuhan and then leaked it?															0.442
Yes	3	11.1	60	10.5	4	8.5	4	11.8	1	6.3	3	27.3	1	9.1	
No	20	74.1	368	64.1	29	61.7	17	50.0	13	81.3	7	63.6	8	72.7	
Maybe	4	14.8	146	25.4	14	29.8	13	38.2	2	12.5	1	9.1	2	18.2	
P3- Do you believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the virus?															0.019
Yes	8	29.6	125	21.8	4	8.5	7	20.6	0	0.0	3	27.3	1	9.1	
No	15	55.6	343	59.8	29	61.7	16	47.1	8	50.0	6	54.5	6	54.5	
Maybe	4	14.8	106	18.5	14	29.8	11	32.4	8	50.0	2	18.2	4	36.4	
P4- Do you believe that coronavirus is no worse than a flu?															0.147
Yes	6	22.2	90	15.7	5	10.6	8	23.5	5	31.3	4	36.4	1	9.1	
No	21	77.8	458	79.8	41	87.2	24	70.5	10	62.5	6	54.5	8	72.7	
Maybe	0	0.0	26	4.5	1	2.1	2	5.9	1	6.3	1	9.1	2	18.2	
P5- Do you believe the claim of an official in China's Foreign Ministry that U.S Army started the coronavirus, pointing to its presence at the Military World Games in Wuhan in October?															0.033
Yes	5	18.5	145	25.3	7	14.9	7	20.6	1	6.3	1	9.1	5	45.5	
No	17	63.0	268	46.7	26	55.3	11	32.4	6	37.5	7	63.6	3	27.3	
Maybe	5	18.5	161	28.0	14	29.8	16	47.1	9	56.3	3	27.3	3	27.3	
P6- Do you believe that Younger Population is less susceptible to coronavirus?															0.168
Yes	19	70.4	325	56.6	22	46.8	14	41.2	7	43.8	6	54.5	9	81.8	
No	5	18.5	198	34.5	21	44.7	13	38.2	7	43.8	3	27.3	2	18.2	
Maybe	3	11.1	51	8.9	4	8.5	7	20.6	2	12.5	2	18.2	0	0.0	

P7- Do you believe that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a weapon of bio-terrorism?														0.164
Yes	11	40.7	142	24.7	11	23.4	9	26.5	2	12.5	5	45.5	1	9.1
No	10	37.0	311	54.2	27	57.4	17	50.0	8	50.0	5	45.5	10	90.9
Maybe	6	22.2	121	21.1	9	19.1	8	23.5	6	37.5	1	9.1	0	0.0
P8- Do you believe that NSAIDs/ Ibuprofen might increase the risk of coronavirus infection?														0.076
Yes	15	55.6	254	44.3	21	44.7	10	29.4	4	25.0	3	27.3	2	18.2
No	6	22.2	184	32.1	17	36.2	13	38.2	5	31.3	4	36.4	2	18.2
Maybe	6	22.2	136	23.7	9	19.1	11	32.4	7	43.8	4	36.4	7	63.6
P9- Do you believe that coronavirus is as fearful as the Media is portraying it?														0.150
Yes	19	70.4	327	57.0	25	53.2	20	58.8	7	43.8	6	54.5	8	72.7
No	7	25.9	200	34.8	18	38.3	10	29.4	4	25.0	4	36.4	1	9.1
Maybe	1	3.7	47	8.2	4	8.5	4	11.8	5	31.3	1	9.1	2	18.2
P10- Do you believe that gargling dilute bleach protects you from coronavirus?														0.024
Yes	5	18.5	60	10.5	4	8.5	9	26.5	2	12.5	2	18.2	1	9.1
No	17	63.0	411	71.6	28	59.6	14	41.2	11	68.8	7	63.6	6	54.5
Maybe	5	18.5	103	17.9	15	31.9	11	32.4	3	18.8	2	18.2	4	36.4
P11- Do you believe that coronavirus is airborne?														0.071
Yes	8	29.6	212	36.9	14	29.8	8	23.5	6	37.5	4	36.4	2	18.2
No	18	66.7	301	52.4	24	51.1	19	55.9	7	43.8	4	36.4	5	45.5
Maybe	1	3.7	61	10.6	9	19.1	7	20.6	3	18.8	3	27.3	4	36.4
P12- Do you believe that coronavirus is man-made/ engineered?														0.275
Yes	15	55.6	188	32.8	10	21.3	14	41.2	8	50.0	3	27.3	3	27.3
No	9	33.3	248	43.2	21	44.7	12	35.3	4	25.0	5	45.5	5	45.5
Maybe	3	11.1	138	24.0	16	34.0	8	23.5	4	25.0	3	27.3	3	27.3
P13- Do you believe that coronavirus originated from bats?														0.008
Yes	9	33.3	268	46.7	20	42.6	9	26.5	1	6.3	4	36.4	3	27.3
No	8	29.6	148	25.8	13	27.7	7	20.6	7	43.8	5	45.5	2	18.2
Maybe	10	37.0	158	27.5	14	29.8	18	52.9	8	50.0	2	18.2	6	54.5
P14- Do you believe that once infected with coronavirus, you will have it for life?														0.040
Yes	5	18.5	35	6.1	5	10.6	2	5.9	1	6.3	1	9.1	1	9.1
No	21	77.8	488	85.0	33	78.7	26	76.5	10	62.5	10	90.9	8	72.7
Maybe	1	3.7	51	8.9	5	10.6	6	17.6	5	31.3	0	0.0	2	18.2
P15- Do you believe that if your time of holding breath decreases progressively over days, you are suffering from coronavirus?														0.669
Yes	9	33.3	154	26.8	10	21.3	12	35.3	4	25.0	3	27.3	2	18.2
No	13	48.1	280	48.8	26	55.3	13	38.2	9	56.3	5	45.5	3	27.3
Maybe	5	18.5	140	24.4	11	23.4	9	26.5	3	18.8	3	27.3	6	54.5
P16- Do you believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus?														0.015
Yes	13	48.1	175	30.5	12	25.5	6	17.6	2	12.5	5	45.5	2	18.2
No	10	37.0	269	46.9	19	40.4	14	41.2	5	31.3	3	27.3	5	45.5
Maybe	4	14.8	130	22.6	16	34.0	14	41.2	9	56.3	3	27.3	4	36.4
P17- Do you believe that Ultraviolet (UV) disinfection is effective in killing coronavirus?														0.571
Yes	9	33.3	205	35.7	14	29.8	11	32.4	3	18.8	3	27.3	3	27.3
No	9	33.3	185	32.2	14	29.8	8	23.5	7	43.8	2	18.2	6	54.5
Maybe	9	33.3	184	32.1	19	40.4	15	44.1	6	37.5	6	54.5	2	18.2
P18- Do you believe that thermal scanners are effective in detecting people infected with coronavirus?														0.100
Yes	12	44.4	188	32.8	12	25.5	12	35.3	2	12.5	4	36.4	4	36.4
No	9	33.3	236	41.1	20	42.6	6	17.6	7	43.8	6	54.5	5	45.5
Maybe	6	22.2	150	26.1	15	31.9	16	47.1	7	43.8	1	9.1	2	18.2
P19- Do you believe that regularly rinsing your nose with saline helps protect you from coronavirus?														0.606
Yes	11	40.7	180	31.4	14	29.8	10	29.4	5	31.3	5	45.5	4	36.4
No	9	33.3	241	42.0	15	31.9	10	29.4	5	31.3	4	36.4	5	45.5
Maybe	7	25.9	153	26.7	18	38.3	14	41.2	6	37.5	2	18.2	2	18.2

DEMOGRAPHIC ANALYSIS OF THE RUMORS REGARDING CORONAVIRUS PANDEMIC IN PAKISTAN

P20- Do you believe that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of coronavirus?														0.061
Yes	16	59.3	239	41.6	19	40.4	18	52.9	6	37.5	8	72.7	3	27.3
No	7	25.9	196	34.1	13	27.7	4	11.8	4	25.0	1	9.1	6	54.5
Maybe	4	14.8	139	24.2	15	31.9	12	35.3	6	37.5	2	18.2	2	18.2
P21- Do you believe that antibiotics are effective in treating patients with coronavirus?														0.199
Yes	7	25.9	114	19.9	8	17.0	3	8.8	1	6.3	2	18.2	0	0.0
No	13	48.1	335	58.4	29	61.7	19	55.9	7	43.8	6	54.5	8	72.7
Maybe	7	25.9	125	21.8	10	21.3	12	35.3	8	50.0	3	27.3	3	27.3

Study Results on the basis of Occupation status

In association between the responses to the questionnaire and the occupation status, participants majorly denied the role of 5G in spreading the coronavirus (p= 0.001). Unemployed participants and students fear more that NSAIDS e.g. Ibuprofen might increase the risk of infection as compared to the Private and Government employees (p= 0.001). Most of them negated the effectiveness of gargling dilute bleach against the virus (p= 0.004). Except the

Government employees, all of the others majorly favour the virus to be air-borne (p= 0.022). There was a varied opinion on the origin of the virus to be bats (p= 0.006). Moreover, the idea of COVID-19 to be a disease of a lifetime was denied by the individuals of all occupations (p= 0.003). Students and self- employed participants did not show confidence in Thermal scanners to be effective in detecting the COVID patients (p= 0.017). [Table 4]

Table 4: Association between the Responses to the Questionnaire and the Participants' Occupational Status

Variables	Unemployed		Student		Self Employed		Private Employee		Government Employee		P-value
	N	%	n	%	n	%	n	%	n	%	
P1- Do you believe that coronavirus is a bioweapon?											0.154
Yes	12	44.4	210	36.2	13	27.1	22	51.2	5	22.7	
No	10	37.0	200	34.5	20	41.7	8	18.7	11	50.0	
Maybe	5	18.5	170	29.3	15	31.3	13	30.2	6	27.3	
P2- Do you believe that China stole coronavirus from Canada and weaponized it in a military lab in Wuhan and then leaked it?											0.846
Yes	3	11.1	58	10.0	5	10.4	7	16.3	3	13.6	
No	17	63.0	374	64.5	34	70.8	23	53.5	14	63.7	
Maybe	7	25.9	148	25.5	9	18.8	13	30.2	5	22.7	
P3- Do you believe that 5G is contributing to the COVID-19 problem either by weakening the immune system or by transmitting the virus?											0.001
Yes	5	18.5	123	21.2	7	14.6	11	25.6	2	9.1	
No	14	51.9	352	60.7	19	39.6	22	51.2	16	72.7	
Maybe	8	29.6	105	18.1	22	45.8	10	23.3	4	18.2	
P4- Do you believe that coronavirus is no worse than a flu?											0.104
Yes	6	22.2	89	15.3	13	27.1	10	23.3	1	4.5	
No	21	77.8	466	80.3	32	66.6	29	67.4	20	90.9	
Maybe	0	0.0	25	4.3	3	6.3	4	9.3	1	4.5	
P5- Do you believe the claim of an official in China's Foreign Ministry that U.S Army started the coronavirus, pointing to its presence at the Military World Games in Wuhan in October?											0.346
Yes	5	18.5	144	24.8	10	20.8	7	16.3	5	22.7	
No	14	51.9	274	47.2	18	37.5	19	44.2	13	59.1	
Maybe	8	29.6	162	27.9	20	41.7	17	39.5	4	18.2	
P6- Do you believe that Younger Population is less susceptible to coronavirus?											0.323
Yes	12	44.4	328	56.6	32	66.7	20	46.5	10	45.5	
No	13	48.1	200	34.5	11	22.9	16	37.2	9	40.9	
Maybe	2	7.4	52	9.0	5	10.4	7	16.3	3	13.6	

P7- Do you believe that receiving overseas health aid equipment might be a possible source of spreading coronavirus as a weapon of bio-terrorism?											0.951
Yes	7	25.9	147	25.3	14	29.2	9	20.9	4	18.2	
No	15	55.6	312	53.8	22	45.8	25	58.1	14	63.6	
Maybe	5	18.5	121	20.9	12	25.0	9	20.9	4	18.2	
P8- Do you believe that NSAIDs/ Ibuprofen might increase the risk of coronavirus infection?											0.001
Yes	10	37.0	268	46.2	8	16.7	16	37.2	7	31.8	
No	7	25.9	179	30.9	17	35.4	17	39.5	11	50.0	
Maybe	10	37.0	133	22.9	23	47.9	10	23.3	4	18.2	
P9- Do you believe that coronavirus is as fearful as the Media is portraying it?											0.335
Yes	17	63.0	335	57.8	21	43.8	27	62.8	12	54.5	
No	8	29.6	198	34.1	19	39.6	13	30.2	6	27.3	
Maybe	2	7.4	47	8.1	8	16.7	3	7.0	4	18.2	
P10- Do you believe that gargling dilute bleach protects you from coronavirus?											0.004
Yes	4	14.8	60	10.3	10	20.8	6	14.0	3	13.6	
No	17	63.0	418	72.1	23	47.9	21	48.8	15	68.2	
Maybe	6	22.2	102	17.6	15	31.3	16	37.2	4	18.2	
P11- Do you believe that coronavirus is airborne?											0.022
Yes	8	29.6	208	35.9	13	27.1	14	32.6	11	50.0	
No	17	63.0	310	53.4	24	50.7	22	51.2	5	22.7	
Maybe	2	7.4	62	10.7	11	29.9	7	16.3	6	27.7	
P12- Do you believe that coronavirus is man-made/ engineered?											0.113
Yes	7	25.9	188	32.	18	37.5	23	53.5	5	22.7	
No	12	44.4	253	43.6	16	33.3	14	32.6	9	40.9	
Maybe	8	29.6	139	24.0	14	29.2	6	14.0	8	36.4	
P13- Do you believe that coronavirus originated from bats?											0.006
Yes	8	29.6	271	46.7	8	16.7	16	37.2	11	50.0	
No	10	37.0	142	24.5	18	37.5	13	30.2	7	31.8	
Maybe	9	33.3	167	28.8	22	45.8	14	32.6	4	18.2	
P14- Do you believe that once infected with coronavirus, you will have it for life?											0.003
Yes	0	0.0	39	6.7	3	6.3	7	16.3	1	4.5	
No	24	88.9	492	84.8	34	70.8	34	79.1	16	72.7	
Maybe	3	11.1	49	8.4	11	22.9	2	4.7	5	22.7	
P15- Do you believe that if your time of holding breath decreases progressively over days, you are suffering from coronavirus?											0.704
Yes	5	18.5	157	27.1	15	31.3	9	20.9	8	36.4	
No	14	51.9	280	48.3	21	43.8	22	51.2	12	54.5	
Maybe	8	29.6	143	24.7	12	25.0	12	27.9	2	9.1	
P16- Do you believe that high temperatures (dryers, summers etc.) are effective in killing coronavirus?											0.226
Yes	7	25.9	178	30.7	13	27.1	14	32.6	3	13.6	
No	9	33.3	268	46.2	18	37.5	18	41.9	12	54.5	
Maybe	11	40.7	134	23.1	17	35.4	11	25.6	7	31.8	
P17- Do you believe that Ultraviolet (UV) disinfection is effective in killing coronavirus?											0.135
Yes	8	29.6	206	35.5	9	18.8	16	37.2	9	40.9	
No	9	33.3	186	32.1	13	27.1	15	34.9	8	36.4	
Maybe	10	37.0	188	32.4	26	54.2	12	27.9	5	22.7	
P18- Do you believe that thermal scanners are effective in detecting people infected with coronavirus?											0.017
Yes	11	40.7	187	32.2	7	14.6	21	48.8	8	36.4	
No	11	40.7	241	41.6	21	43.8	9	20.9	7	31.8	
Maybe	5	18.5	152	26.2	20	41.7	13	30.2	7	31.8	
P19- Do you believe that regularly rinsing your nose with saline helps protect you from coronavirus?											0.279
Yes	12	44.4	187	32.2	13	27.1	12	27.9	5	22.7	
No	10	37.0	239	41.2	16	33.3	14	32.6	10	45.5	
Maybe	5	18.5	154	26.6	19	39.6	17	39.5	7	31.8	

DEMOGRAPHIC ANALYSIS OF THE RUMORS REGARDING CORONAVIRUS PANDEMIC IN PAKISTAN

P20- Do you believe that alternative medicine (almonds, black seeds, olive oil, honey, garlic etc.) helps in prevention and treatment of coronavirus?											0.153
Yes	14	51.9	245	42.2	20	41.7	23	53.5	7	31.8	
No	9	33.3	193	33.3	9	18.8	11	25.6	9	40.9	
Maybe	4	14.8	142	24.5	19	39.6	9	20.9	6	27.3	
P21- Do you believe that antibiotics are effective in treating patients with coronavirus?											0.060
Yes	5	18.5	114	19.7	9	18.8	7	16.3	0	0.0	
No	14	51.9	340	58.6	20	41.7	26	60.5	17	77.3	
Maybe	8	29.6	126	21.7	19	39.6	10	23.3	5	22.7	

DISCUSSION

Started in the City of Wuhan, in the province of Hubei, China; the first patients of COVID-19 were diagnosed in November 2019, and spread quickly to the rest of the Country.⁹ Over the period of 6 months, 213 countries have reported over 10 million confirmed cases of the virus.⁷ Countries like New Zealand, Japan and South Korea showed an early flat curve due to early response, whereas the USA, Italy, Brazil and Iran etc delayed their response, which led to a drastic devastation. In 2009, the Influenza A Pandemic (H1N1) had already shown the existence of several gaps that delayed the global response capacity to Public Health emergencies.¹⁰

The first of the COVID cases in Pakistan appeared in February, 2020; however the necessary containment measures were delayed which led to a rapid increase in the number of affected people.⁸ In 2011, the lack of attention and caution towards the Dengue epidemic in Pakistan also led to a disaster.¹¹

The advent of this deadly virus not only instilled fear among the masses, but also opened a new pandora box of misbeliefs and myths about the pandemic.

Community behaviour towards a pandemic is the main deciding factor about the number of active cases. However, behavioural change depends on the context, and may vary due to social characteristics, socioeconomic, and behavioural differences among people.¹² The main responsibility of the community in barricading the progression of the pandemic was in the fact that many Health Systems could collapse, as they did in some countries. A study with 182 countries found that 33% had low capacity to respond to a public health event, and 24% had little

available functional capacity, even with the support of funds coming from elsewhere. These events include infectious diseases.¹³

In this study, 52.5% of all the participants did not consider the virus to be air-borne, despite it being proven to be transmitted by air droplets.¹⁴ This explains that a lot of people consider it false that the virus even exists, or if it does exist, then it to be transmitted via respiratory droplets.¹⁵ Secunder Kermani wrote in BBC news regarding the response of Pakistani people towards doctors, that they do not take their symptomatic children to the doctors as they believe that doctors take \$3 (500 PKR) to declare a patient suffering from COVID. 58.8% negated any role of 5G in viral transmission. This manifests the awareness that 5G is a mere conspiracy theory to create confusion among the people.¹⁶ Although an alarming 83.3% majority denied the potential of COVID-19 to cause recurrent infection, cases in China have appeared where the apparently recovered patients showed recurrence. Dabiao Chen et al. explained the case report regarding this recurrence.¹⁷ Only 44 % believed that the origin of COVID-19 is from Bats, although it has been scientifically traced by the researchers.¹⁸

53.3% of all the individuals were skeptical about the virus being a means of Bioterrorism from exchange of equipment to be the source of spread. Around 65% considered Ultraviolet light not to be effective as it may cause skin cancer.¹⁹ 55% of all the participants believed that high Temperatures e.g hair dryers or summers affected the transmission, whereas weather changes from Dec 2019 to June 2020 hasn't decreased numbers, showing the minimal role of temperature in inhibiting viral transmission.²⁰

Abishek Shankar et al. suggest that Thermal scanners only detect fever, and hence are not useful in the diagnosis of COVID-19. 60% of our responses believed so.²¹ NSAIDS used to manage COVID-19 has shown increased risk of CVDs, MIs and Nephrotoxicity- although 60% still believed in the effectiveness of NSAIDS.²² Alternative Medicine e.g. ginger, honey and black seeds, along with Vitamin C have been considered as ‘placebos’ with no evidence of its treatment role as explained by sitaram Khadka and colleagues in their commentary.²³ Ping-Ing Lee et al. suggest that infectious diseases are less severe in children and young individuals, which is also believed by most of the participants.²⁴

When studied on the basis of Gender, majority of the both were convinced that coronavirus is a bioweapon, which manifested their vulnerability towards believing in conspiracy theories.⁹ Nina Milani-Nejad tells that gargling dilute bleach has adverse effects on oral and pharyngeal mucosa.¹⁴ Males and Females in majority were convinced about this danger.

On the basis of Age, senior citizens above 60 believed that the virus was planted by the US military. The younger individuals below 18 considered otherwise. This shows that the elderly people are more vulnerable to misbeliefs and conspiracies. Data point to a higher vulnerability of elderly participants in Pakistan to infection by coronavirus due to social and behavioral aspects. The main limitation of this study is that it was carried out in a convenience sample, which restricts the external generalization of the findings. All the age groups denied the recurrence of this disease.¹⁷

As far as occupational status is concerned, data showed a very varied opinion on most of the questions asked. However, what is observed in the research is that the level of education and the severity of the disease may be associated with the individual’s social class, suggesting that habits, living conditions, and knowledge about the disease influence the prognosis.

Social Media has played a great role in creating

mental anxiety for the people under lockdown, which many of the individuals agreed to.^[25]

All these confusions have been addressed and clarified by WHO, that has elaborated all the ‘MythBusters’.^[26] However, varied behavior towards these false beliefs, which are mostly proven and no more a mystery, is an alarming situation for our country and its fight against the Pandemic.

CONCLUSION

We can conclude that the approach of the COVID-19 pandemic in Pakistan has generated significant differences of beliefs when comparing gender, age and occupational status. The system of local beliefs and behaviors showed that men, less educated people, older adults over 80 years are more vulnerable to infection and believe in conspiracy theories, considering the Pandemic just a myth. This makes them careless in their caution to protect from the virus so they end up becoming a trap of this deadly virus.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of the paper.

Acknowledgement

Authors acknowledge all the participants of this study, who filled the performa and helped us with data collection. Authors also thank Professor M. Anwar Sulehri (late) and Dr. Aalia Tayyba for their supervision.

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ELECTROCARDIOGRAM UNDERSTANDING AMONG THE EMERGENCY PHYSICIANS IN A TERTIARY HOSPITAL

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Abstract

Background: Electrocardiogram (ECG) remains the most important, readily available and the basic investigation in the evaluation of Acute Coronary Syndrome (ACS) as well as arrhythmic patients. Reading an ECG has always been a dilemma among non-cardiologists and even the level of interpretation among the cardiologists varies. In developing countries, the first contact is usually a medical physician so it is very important for the emergency physicians to correctly and in-timely diagnose the ECG leading to prompt management.

Objective: We did the study to evaluate the knowledge of emergency medical physicians in diagnosis of basic emergency ECGs for timely decision making.

Methods: We circulated 06 critical ECGs that usually warrant emergency treatment, to 200 medical department doctors who used to do emergency duties on rotation basis in emergency ward and were asked to interpret and give only one working diagnosis.

Results: There was a wide variation of ECG interpretation between the emergency physicians and key, and among the ECGs, Ventricular Tachycardia (VT) followed by Left Bundle Branch Block (LBBB) being the most commonly misinterpreted ECGs. There seems a continuous need of ECG courses and revisions for the emergency physicians for proper interpretation both in emergency as well as indoor departments.

Keywords: Electrocardiogram, Emergency

I schemic heart disease is considered to be the most lethal disease worldwide¹ with cardiac arrest being the common presentation in emergency room. Electrocardiogram (ECG) is usually the first step and most widely used² in the diagnostic evaluation of the ischemic heart disease. It is cheap, safe, readily available and also the most important tool for diagnosing acute arrhythmias and ischemic heart disease.³ It also carries good sensitivity as well as specificity.⁴

There are mainly six emergency cardiac conditions encountered in emergency room which require prompt and emergent diagnosis with treatment, including ST elevation infarction, ventricular tachycardia, atrial fibrillation/flutter, supraventricular tachycardia, atrio-ventricular blocks. The

sensitivity of the ECG in diagnosing VT was found to be >90% for both criteria and a specificity of 70% and 72% for RBBB-like and 87% each for LBBB-like WCTs by Grimm et al.⁵ using the classical criteria published by Wellens in 1978 and the Brugada algorithm analyzing 240 WCTs. Regarding supraventricular tachycardia, the ECG gives correct diagnosis to a reasonable extent.⁶ A study by Veronese G, Germini F. et al. showed that overall accuracy of diagnosing ST elevation MI in emergency is 64.5%, that is not bad.⁷ So ECG remains an important tool to diagnose these conditions in emergency.

Time is myocardium (08) and every possible effort should be made to preserve it with timely diagnosis and proper management but it is not

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always possible, especially in developing countries to get cardiologist as the primary physician to make timely diagnosis. Many western guidelines like American Heart Association/American College of Cardiology and Canadian Cardiovascular Society advise the use of prehospital ECG interpretation to evaluate suspected cardiac patients with chest pain. (09-10-11) But in developing countries like Pakistan, the current health system is lacking in complying with these guidelines. Here the presenting doctor in emergency room is mainly a medical physician which might lack in skill and knowledge of ECG interpretation. So it is imperative to devise appropriate systems of care, to ensure accurate interpretation of the ECG and optimal communication between emergency department and cardiac reperfusion facilities.¹²

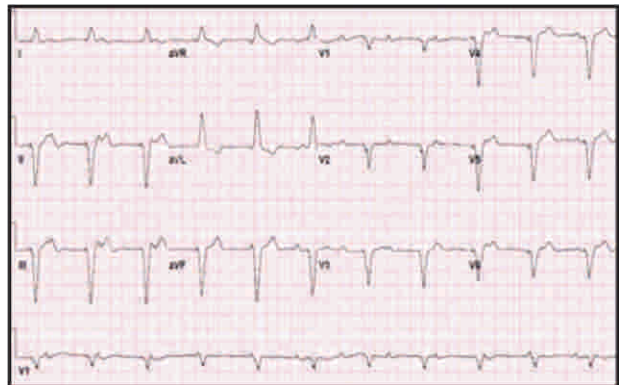
The studies done to interpret the knowledge and skills among GPs and family practice residents have shown a great difficulty to interpret the ECG.¹³

This study was conducted, in our emergency physicians belonging to medical departments, to evaluate the ability of interpreting the most common 06 critical emergency ECGs. No previous such type of study has been conducted in our tertiary setup to best of our knowledge.

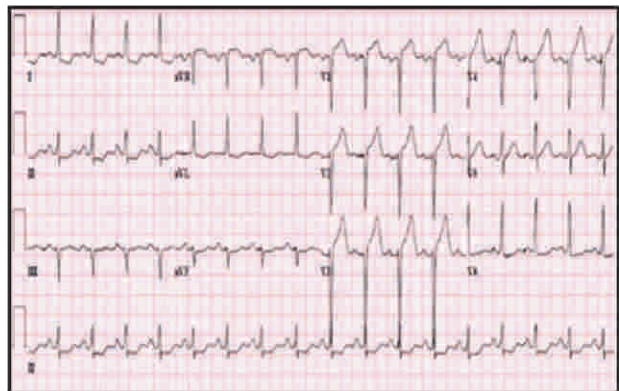
METHODOLOGY

This study was conducted in Jinnah hospital, Lahore with purposive sampling technique. A written informed consent was obtained prior to answering the questions. Total of 200 participants were included randomly. All 6 ECGs (shown in figure 1) were taken from internet (with clear and good print) which were considered as acute emergencies requiring prompt diagnosis and intervention. The diagnosis of these ECGs was confirmed after discussion with two expert electrophysiologists having unanimous decision. The participants were given the ECGs to interpret and given 3 minutes to give simply one best answer of the ECG which was filled on a pre-designed performa including the name, department of the answering participant. The

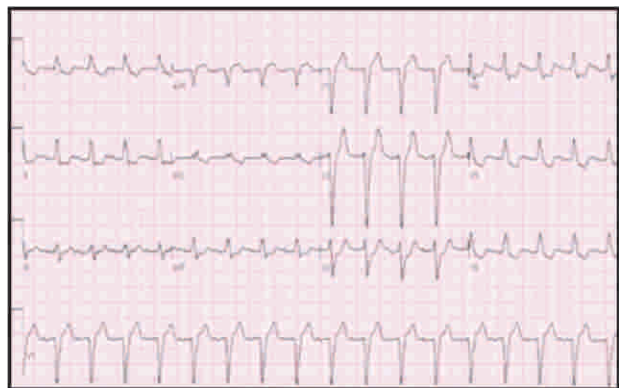
answers were then matched with the key and reported. No history and clinical examination was available to participants.



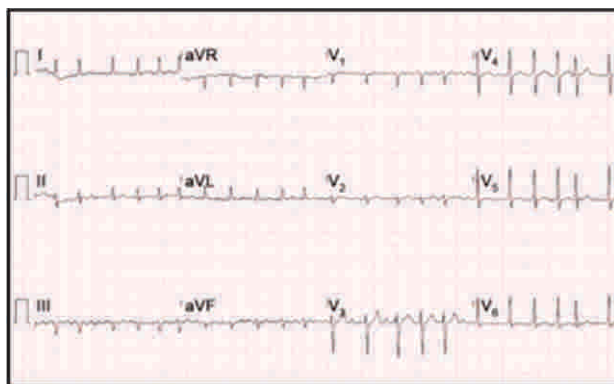
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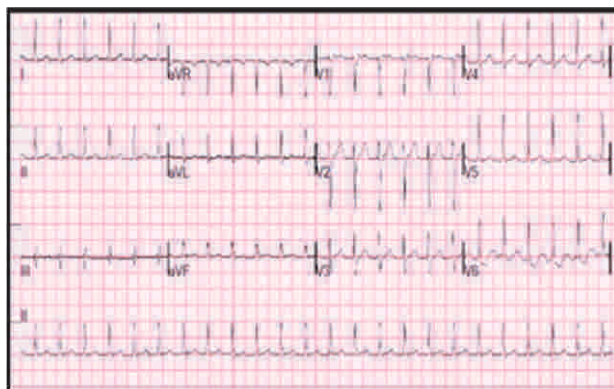
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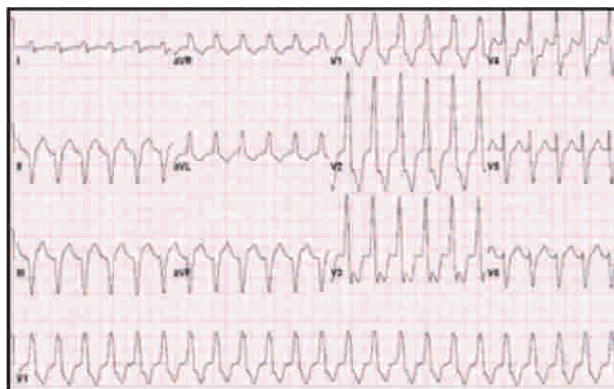
(c)



(d)



(e)



(f)

Fig 1: ECGs of the questionnaires.**The diagnosis of the ECGs shown in figure 1 are:**

- 1a: Complete AV block
- 1b: Acute Anterior wall ST Elevation Myocardial Infarction (STEMI)
- 1c: Left Bundle Branch Block (LBBB)
- 1d: Atrial fibrillation
- 1e: Supra-ventricular Tachycardia (SVT)
- 1f: Ventricular Tachycardia (VT)

ECG	Frequency & percentage of correct answers
Complete AV Block	114 (57%)
Acute Anterior Wall ST Elevation Myocardial Infarction	108 (54%)
LBBB	99 (49.5)
Atrial Fibrillation	134 (67%)
SVT	89 (45%)
VT	76 (38%)

RESULTS

There seem a wide variation in the interpretation of the ECG by the emergency physicians as compared to the cardiologists. The most correctly interpreted ECGs were of rhythm abnormality except for the Ventricular Tachycardia which showed only a positive percentage of about 38% indicating that this area needs to be focused. Complete AV block was accurately diagnosed by 114 participants (57%) while 134 (67%) candidates were able to pick SVT correctly. The diagnosis of AAMI was made by 54% (n=108) of the physicians while LBBB was picked up by 49.5% (n=108) people showing its significance as a pseudo-infarction pattern.

DISCUSSION

Vijayaraghavan et al. emphasizes through their investigation the importance of accurate ECG interpretation by the acute care physician.¹⁴ A high-quality ECG followed by correct interpretation is very important for the further proper management of acute cardiac patients, because a normal ECG tenders the patient at low risk, whereas certain ECG features require urgent treatment or even referral to specialized cardiac unit, so assessing the accuracy of interpretation of emergency physicians is vital in our setup where majority of these doctors are non-cardiologists having not a strong grip on ECG interpretation as a cardiologist.

Various studies have been done to investigate the ECG skills of emergency physicians.¹⁵

Many studies in the past have shown that there is a marked discordance in the interpretation of ECGs between emergency physicians and cardiologists and suggested that this inability to improper

ECG diagnosis was an important factor in patient management errors.¹⁶⁻¹⁷

6 critical ECGs were presented to all being highly educated physicians, but majority of the respondents were shy in responding to answer the questions, the reason could either be that either ECG remains a grey zone for even the non-cardiologist physicians or they were not comfortable in the interpretation. The current study showed that there are issues in the interpretation of the various critical ECG patterns among the attending emergency physicians which are mainly medical residents. The ECGs related to arrhythmias were the most effected. Regarding interpretation of ACS ECG, our study showed a poor result in alliance to a study done by Delorrate showing a disappointing result in the interpretation of clinically important ECGs by emergency staffs¹⁸ but in contrast to Schaffer and colleagues¹⁹ showing that the ECG interpretation of attending medical emergency physicians and cardiology, reporting a very good rate of consensus between the two reporting 96% of their interpretations were matching. Zappa et al.²⁰ also reported a low rate of disagreement about the interpretation of ECGs between senior emergency medicine residents and staff cardiologists.

Regarding interpretation of the arrhythmias, the results of a study suggest that there is wide variability in both ECG interpretation accuracy and arrhythmia management in primary care and even among clinical cardiologists.²¹ In our study the most common misinterpretation was also in assessing the arrhythmias ECG especially wide complex tachycardia.

A number of other studies, across a variety of specialties, have shown similar themes.²²⁻²³ The analysis of the SAFE study showed that general practitioners were unable to diagnose atrial fibrillation accurately on an electrocardiogram. Twenty per cent of cases of atrial fibrillation were missed, and the probability that a positive diagnosis was correct was only 41%.²⁴

Regarding VT, the ECG is the main diagnostic tool and a clinical study showed its significance in differentiating VT from SVT with only 22% result of misdiagnosis showing its efficacy.²⁵

Our participants were not provided with history because sometimes in emergency the decisions are to be taken so quickly that u didn `t get time for that. It is seen by research that clinical history do affect ECGs interpretation.^{26,27&28} The providers with less training are influenced by the history and physical examination to a greater extent than their counterpart experienced electrocardiographers leading even to reduced diagnostic accuracy to 5% for cardiologists but up to 25% for residents in one recent study.²⁶ Cardiologists performed better than other interpreters in all settings and were 90% accurate in their diagnoses, even without history. Another study also showed the same results.²⁹ This information suggests that non-cardiologist interpreters should be given history alongwith the ECGs for proper interpretation.

Left bundle branch block (LBBB) is the second most common pseudo-infarction pattern and widely seen in the daily as well as emergency patients. Our participants showed 49.5% accuracy in diagnosis of this rhythm while 66% accuracy was shown by a study done by DC macallan et al.⁽³⁰⁾

The emergency physician must also be an expert in the medical decision making that occurs in the context of clinical care. The ECG is but a portion of the data used in this decision making, and clinical correlation is the key to optimal management.

Competence in ECG reading is easy to test and should be built into the certification process.

CONCLUSION

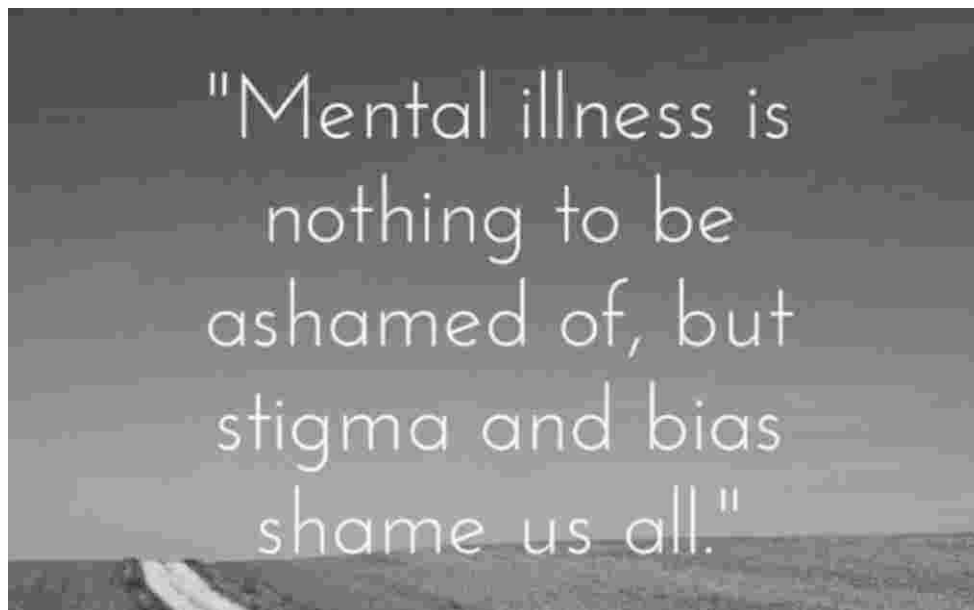
Emergency physicians are the first and mostly, in our setups, the only treating person in the emergency room so we conclude that expanding and improving emergency physician skills in ECG interpretation, with a continuous teaching, learning and review process ensuring to maintain their

competence in ECG interpretation, can improve not only patient care but also the financial burden on the government that results due to longer stay requiring extensive treatment.

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THYROID DYSFUNCTION AMONG PATIENTS OF TYPE 2 DIABETES MELLITUS PRESENTING TO THE DIABETIC CLINIC OF TERTIARY CARE HOSPITAL

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Abstract

Diabetes mellitus (DM) has evolved as an epidemic and a major public health issue throughout the world. The prevalence of diabetes is high in Pakistan ranging from 7.6% to 11% among adults. Thyroid dysfunction is not uncommon in patients with type 1 diabetes mellitus. However, the data regarding the frequency of thyroid dysfunction among patients of type 2 diabetes mellitus (T2DM) has shown variation. This cross-sectional study was performed in medical department of Jinnah Hospital Lahore between 22/05/2018 and 21/11/2018. The purpose of this research was to determine the frequency of thyroid dysfunction among patients of type 2 diabetes mellitus presenting to tertiary care hospital. About 250 patients with type 2 diabetes mellitus who fulfilled the inclusion criteria were enrolled in this study, blood samples of the patients were taken by using aseptic techniques and were sent to pathology laboratory for measurement of serum TSH levels. Males were 54.4% while females were 45.6%. Presence of Thyroid dysfunction were present 35.2% while it was absent in 64.8% patients. Hyperthyroidism of Thyroid dysfunction was present in 21.2% while Hypothyroidism was present in 14% and Thyroid dysfunction was not present in 64.8% patients. Significant association was not found between thyroid dysfunction and effect modifiers such as age, gender, BMI and duration of DM.

Key words: Thyroid Dysfunction, Hyperthyroidism, Hypothyroidism, Type 2 Diabetes Mellitus.

Thyroid dysfunction is common in adults and frequently has significant clinical consequences. Hypothyroidism and hyperthyroidism can be accurately diagnosed with laboratory tests and are readily treatable. Clinical manifestations of thyroid dysfunction vary considerably among patients in their character and severity.¹

Hypothyroidism: The diagnosis of hypothyroidism relies heavily upon laboratory tests because of the lack of specificity of the typical clinical manifestations. Primary hypothyroidism is characterized by a high serum thyrotropin (TSH) concentration and a low serum free thyroxine (T4) concentration, whereas subclinical hypothyroidism is defined biochemically as a normal free T4 concentration in the presence of an elevated TSH concentration.² Secondary (central) hypothyroidism is characterized by a low serum T4 concentration and a serum TSH.

Hyperthyroidism: All patients with primary hyper-

thyroidism have a low TSH. The serum TSH concentration alone cannot determine the degree of biochemical hyperthyroidism; serum free thyroxine (T4) and triiodothyronine (T3) are required to provide this information.³ However, in laboratories utilizing serum TSH assays with detection limits of 0.01 mU/L (third generation), most patients with overt hyperthyroidism have values <0.05 mU/L.⁴

Many patients with overt hyperthyroidism have high free T4 and T3 concentrations. In some patients, however, only the serum T3 or serum T4 is elevated. In patients with subclinical hyperthyroidism, TSH is below normal (but usually >0.05 mU/L) and serum free T4, T3, and free T3 are normal.⁵

Diabetes Mellitus Type 2:

Type 2 diabetes is closely linked to weight gain. Several classifications, based upon body mass index (BMI), are used to define overweight and obesity. BMI provides a guideline for weight in relation to

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height and is equal to the body weight in kilograms divided by the height in meters squared.

- Overweight — BMI 25-29.9
- Obesity — BMI ≥ 30

The following factors are associated with an increased risk for childhood onset type 2 diabetes:

- Obesity
- Positive family history
- Specific ethnic groups
- Female gender
- Conditions with insulin resistance⁶

Type 2 diabetes is one of many different types of diabetes mellitus. The initial step is to diagnose diabetes, and then differentiate type 2 diabetes from other causes of diabetes based upon the clinical presentation of the patient.⁷

A diagnosis of diabetes mellitus in a child or adolescent is made in one of four ways.⁸ The diagnostic criteria, based upon the guidelines of the American Diabetes Association (ADA), are the same as those used in adults. Unless unequivocal hyperglycemia is present, the diagnosis should be confirmed by repeat testing on a different day.

- Fasting plasma glucose ≥ 126 mg/dL (7 mmol/L). Fasting is defined as no caloric intake for at least eight hours.
- Symptoms of hyperglycemia and a random venous plasma glucose ≥ 200 mg/dL (11.1 mmol/L)
- Abnormal oral glucose tolerance test (OGTT) defined as a plasma glucose ≥ 200 mg/dL (11.1 mmol/L) measured two hours after a glucose load of 1.75 g/kg (maximum dose of 75 g)
- Hemoglobin A1C ≥ 6.5 percent. The test should be performed in a laboratory using a method that is certified by the National Glycohemoglobin Standardization Program (NGSP)

Because of improved assay standardization and validation against other diagnostic methods, diagnosis of diabetes based on the level of hemoglobin A1C (glycated hemoglobin) was recommended by an

international consensus statement and endorsed by the American Diabetes Association¹⁹.

Glycosuria is suggestive of diabetes, but not diagnostic. For example, patients with renal glucosuria or Fanconi syndrome will present with glycosuria but will be normoglycemic¹⁰.

Screening for diabetes can be done by measuring hemoglobin A1C (A1C), fasting plasma glucose (FPG), or performing an oral glucose tolerance test (OGTT). Among candidates for screening who have not fasted overnight, A1C is the preferred test. Abnormal results should be confirmed either by repeating the initial test on another day, or performing a different test.¹¹

METHODOLGY

The objective of this study is to determine the frequency of Thyroid dysfunction in patients of type 2 diabetes mellitus presenting to tertiary care hospital.

Diabetes Mellitus: Patients having fasting glucose >126 mg/dl along with higher than normal value of HbA1C for atleast 6 months was taken as type 2 diabetes mellitus:

Spectrum of thyroid dysfunction: Thyroid dysfunction was further classified into:

- Hyperthyroidism: Serum TSH concentration < 0.5 mU/L determined by radioimmunoassay of the serum of the patient was labeled as thyroid dysfunction.
- Hypothyroidism: Serum TSH concentration > 5.7 mU/L determined by radioimmunoassay of the serum of the patient was labeled as thyroid dysfunction.

It was a cross sectional study. The present study was conducted from 22-05-2018 to 21-11-2018.

Study was conducted in Medical Department of Jinnah Hospital Lahore

Inclusion Criteria:

- Age 35 to 60 years
- Both sexes

- Patients with type 2 diabetes mellitus (as per operational definition) for atleast 6 months presenting to tertiary care hospital.

Exclusion Criteria:

- Patients not willing to participate in the study.
- Patients with known Thyroid dysfunction determined on history and medical record before onset of diabetes melitus.
- Patients having thyroidectomy determined on history and medical record
- Patients with known cirrhosis of liver determined by coarse echotexture of liver on ultrasonography.
- Patients having CKD (eGFR < 60 ml/min/body weight)
- Patient taking Beta blockers, diuretics or interferon therapy in the last six months determined on history.

Sample Size:

Sample size of 250 cases is calculated with 95% confidence level, 6% margin of error and taking expected percentage of thyroid dysfunction among diabetics 30%. (least among all)

Sampling Technique:

Non probability consecutive sampling

Data Collection Procedure:

About 250 patients with type 2 diabetes mellitus presenting to the Medical Department of Jinnah Hospital Lahore and fulfilling the inclusion criteria were approached and an informed consent was taken before enrolling in the study. Information regarding their demographic data was noted in the proforma. Blood samples of the patients were taken by using aseptic techniques and were sent to pathology laboratory of Allama Iqbal Medical College Lahore for measurement of serum TSH levels. Results were collected by the researcher next day and presence of thyroid dysfunction (as per operational definition) was recorded in the proforma as well. Confidentiality of the data was ensured.

Data Analysis:

Data was entered and analyzed using SPSS

version 17.0. Numerical variable i.e. age was summarized as mean and standard deviation. Qualitative variables like sex and presence of Thyroid dysfunction and its types were presented in the form of frequency and percentages. Data was stratified for age, sex, duration of disease and body mass index of the patients to control any effect modifier and chi square test was applied post stratification. P value <0.05 was taken as statistically significant.

RESULTS

From 250 patients, it was observed that the minimum age was found 35 years and maximum age was 60 years with mean and standard deviation of the age was 41.95 ± 10.27 years. The minimum duration was 6 months and maximum were 24 months with mean and standard deviation 14.73 ± 5.57 .

Males were 136/250 (54.4%) while females were 114/250 (45.6%). Thyroid dysfunction was present in 88/250 (35.2%) patients while it was absent in 162/250 (64.8%) patients. Out of 88 patients of thyroid dysfunction, hyperthyroidism was present in 53/88 (60.23%) patients while Hypothyroidism was present in 35/88 (39.77%) patients.

Significant association was not found between gender and presence of Presence of Thyroid dysfunction with p-value 0.406. By using chi-square test it was observed that there was no significant association between duration and Presence of Thyroid dysfunction having p-value = 0.853. It was observed that there was no significant association between BMI and Presence of Thyroid dysfunction having p-value = 0.092. There was no significant association between age group and presence of Thyroid dysfunction having p-value = 0.243.

DISCUSSION

In a previous study in Dow University Hospital, Karachi by Khan et al. out of 288 patients, male to female ratio were 1:1.28 and mean age was 51.2 ± 6.18 years (range 30 to 70 years). 119(41.31%) patients suffered DM for 5 to 10 years, 99(34.37%)

THYROID DYSFUNCTION AMONG PATIENTS OF TYPE 2 DIABETES MELLITUS

patients for 5 years and 70(24.30%) had more than

Table 1: Descriptive Statistics (n=250)

	Minimum	Maximum	Mean	Std. Deviation
Age(years)	35	60	41.95	10.27
Duration (months)	6	24	14.73	5.57

Table 2: Distribution of Gender

Gender	Frequency	Percent
Male	136	54.4
Female	114	45.6
Total	250	100.0

Table 3: Distribution of Presence of Thyroid Dysfunction

Presence of Thyroid dysfunction	Frequency	Percent
Yes	88	35.2
No	162	64.8
Total	250	100.0

Table 4: Distribution of types of Thyroid Dysfunction

Types of Thyroid dysfunction	Frequency	Percent
Hyperthyroidism	53	21.2
Hypothyroidism	35	14
Normal	162	64.8
Total	250	100.0

Table 5: Stratification with respect to characteristic (n=250)

Gender	Presence of Thyroid dysfunction		Total	P-value
	Present	Absent		
Male	51	85	136	0.406
Female	37	77	114	
Total	88	162	250	
Duration				0.853
<12 months	32	57	89	
Total	88	160	250	
BMI				0.092
<28	32	57	89	
≥28	56	105	161	
Total	88	162	250	
Age				0.243
<40 YEARS	34	75	109	
≥ 40 YEARS	54	87	141	
TOTAL	88	162	250	

10 years duration. Mean TSH level was 2.280±1.42 mU/L, mean free T4 was 8.24±13.12 pmol/L and mean free T3 was 95.12±26.14 pmol/L. Hyperthy-

roidism was observed in 38(13.19%) patients and sub-clinical hypothyroidism in 19(6.59%) patients while rest of 231(80.20%) cases were within normal range. Patients with DM should be screened for thyroid function as unrecognized thyroid dysfunction can lead to metabolic disturbances and also an increased risk of fatal atherosclerotic events.¹¹

However, in this study, males were 54.4% while females were 45.6%. Thyroid dysfunction was found 35.2% while it was absent in 64.8% patients. Out of 88 patients of thyroid dysfunction, hyperthyroidism was present in 60.23% patients while Hypothyroidism was present in 39.77% patients.

A research conducted in Egypt about thyroid dysfunction in females showed that hypothyroidism was found in 45.2% of patients (5.49±3.37 µIU/mL) versus 11.1% of controls (1.79±1.21 µIU/mL) (P< 0.001). A significant positive correlation was found between TSH and antithyroid antibodies (anti-Tg, anti-TPO; P=0.002 and P=0.043, respectively) and between TSH and thyroid-gland volume (P=0.002) in diabetic patients. No correlation was found between any components of metabolic syndrome and thyroid antibodies in diabetic patients.¹²

In this study, significant association was not found between gender and presence of Presence of Thyroid dysfunction with p-value 0.406. By using chi-square test it was observed that there was no significant association between duration and Presence of Thyroid dysfunction having p-value = 0.853. It was observed that there was no significant association between BMI and Presence of Thyroid dysfunction having p-value = 0.092. There was no significant association between age group and presence of Thyroid dysfunction having p-value = 0.243.

Kulkarni et al. in previous study found out that the thyroid dysfunction was observed in 17.71% of case group. Out of 175 cases the frequency of hypothyroidism and hyperthyroidism is 16% and 1.71 % respectively and euthyroid state was 82.29 %¹¹³¹. In another study by Vikhe et al. from the 50 diabetic subjects studied, 30% showed abnormal

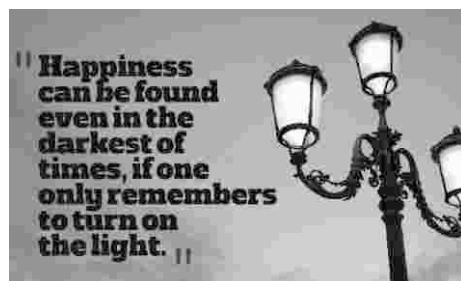
thyroid hormone levels (22 % had hypothyroidism and 8 % had hyperthyroidism). Significantly higher levels of FPG, HbA1c, serum cholesterol, serum triglyceride, LDL, VLDL, blood urea, creatinine, and significantly lower level of HDL was observed in diabetics as compared to non-diabetics subjects¹⁴.

CONCLUSION

The frequency of thyroid dysfunction was found in 35.2% among patients of type 2 diabetes mellitus out of which hyperthyroidism was present in 60.23% patients while hypothyroidism was present in 39.77% patients. Effect modifiers have no significant influence.

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PARITY RELATED EUGLYCEMIC STATE AND INSULIN SENSITIVITY IN NORMAL PREGNANT WOMEN

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Abstract

Background & Aims: Greater parity number of the pregnant females may act as a risk factor for more intensive insulin resistance and for the development of gestational diabetes and thus type 2 diabetes mellitus in later life. Greater parity number of subjects enhances metabolic alterations during a normal pregnancy that induces a pre-diabetic state. The present study is carried out to observe the effect of parity on the development of insulin resistance and impairment of insulin sensitivity during normal pregnancy and also its comparison with non-pregnant controls. We hypothesized that increasing parity creates more intensive insulin resistance in pregnant subjects.

Methods: A cross sectional comparative study. Normal healthy pregnant subjects as cases and healthy non pregnant controls, were further divided into two groups according to parity of subjects, Lower Parity Group (2 & less kids) & Higher Parity Group (3-5 kids) respectively. Insulin levels and glycemic status were checked and statistically analyzed. Significant P value was considered <0.05.

Results: There was no statistical significant difference in insulin levels of lower parity and higher parity group. We could not rule out any effects of increasing parity on insulin sensitivity in normal pregnant subjects. In comparison of both the groups of parity, the insulin levels were 48.56±8.162mIU/L and 42.84±1.533mIU/L in higher and lower parity respectively. There is hardly a noticeable difference between the both groups (p: 0.5486). So we are unable to confirm our hypothesis by the results of our study.

Conclusions: Parity is not directly responsible for impairment of insulin sensitivity in subsequent pregnancies. Progressive ageing and steady weight gain of multiparous mothers may act as causative factors for decreased insulin sensitivity and more marked insulin resistance in pregnant females.

Keywords: body weight, insulin sensitivity, parity, gestational diabetes mellitus (GDM), insulin resistance (IR).

Pregnancy is an altered state of metabolism and adaptations take place in almost all the body systems of the mother which are vital for sustaining the upcoming fetus. During a normal pregnancy, as the placental development occurs, multiple secretory factors and numerous hormones are produced by it which controls the altered metabolism in pregnancy. Maternal as well as placental factors cause temporary changes in the maternal glucose tolerance.¹ Some of these hormones cause

diminished peripheral insulin sensitivity. To counteract the decreased insulin action, there is much more proliferation and growth of the β cells of the endocrine pancreas, thus there is an increased insulin secretion from pancreas during pregnancy.^{2,3} The adaptations during pregnancy play key roles for the healthy outcome of pregnancy because of their role in facilitating proper energy supply for the developing fetus in uterus of mother⁽¹⁾. In the first few weeks of postpartum stage, most of these physio-

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logical alterations are reversed back to pre-pregnancy levels.^{4,5} Amongst physiological changes of pregnancy, enhanced insulin resistance and deposition as well redistribution of body fat are major one.⁶ It has demonstrated that recurrent episodes of GDM in previous pregnancies accelerate the occurrence of diabetes mellitus in postpartum stage.⁷ It is evident that the temporary state of insulin resistance of normal pregnancy; sometimes may persist in postpartum stage and enhance the risk of diabetes mellitus later on.

During the pregnancy, sensitivity to insulin of pregnant subjects diminishes and is reversed to pre-pregnancy levels after the child birth.^{8,9} Progressive enhancement in insulin resistance during repeated pregnancies may lead to impaired glucose tolerance, gestational diabetes (GDM) and Type 2 diabetes mellitus.^{10,11} It is suggested that occurrence of GDM even in a single pregnancy can enhance the risk of Type 2 diabetes thrice.¹²

The intolerance to glucose and occurrence of GDM are associated to parity although other factors such as pre-gestational BMI, family history of diabetes, or ageing can contribute in it.^{12,13} Multiparity enhances the deposition of intra-abdominal fat. There is much more fat accumulation and intra-abdominal adipose tissue in parous as compared to nulliparous women. Mutual relationship amongst parity and impairment of insulin sensitivity is not properly understood. Results from studies testing the relationship of these both parameters demonstrated the controversial results. Positive correlation detected in some studies could be due to body mass index (BMI) and ageing.¹⁴

It has been suggested that decreased insulin sensitivity and defective insulin secretion are the causative factors for the altered glucose metabolism in parous women, however it is not clear whether parity plays a role in deterioration of insulin sensitivity or β -cell function during the pregnancy, either it is a major factor or other associated factors also contribute in it.^{15,16} Some studies described that greater parity number can act as a risk of metabolic

diseases in their later life.¹⁷ Some studies suggested a positive co-relation between multi-parity and the higher incidence of insulin resistance and GDM^{14,18,19} while several other studies have shown no relationship.^{20,21} We hypothesize that with greater parity there may be more intensive insulin resistance which otherwise is a phenomenon of normal pregnancy, thus increasing the risk of diabetes in later life.

METHODOLOGY

Study Design: It was a comparative cross-sectional study.

Place of Study: This study was conducted at Jinnah Postgraduate Hospital Lahore which is second largest teaching hospital of Punjab. The study was carried out at the antenatal clinic of Gynae and Obstetrics OPD of the Jinnah Postgraduate Hospital Lahore.

Duration of Study: The duration of study for sampling at the hospital was one month and study was performed in March to May 2019.

Sample Size: The sample size of the study was 90 women, 65 pregnant subjects and 25 non-pregnant healthy controls which were further divided into two groups according to parity of subjects, Lower Parity Group (2 & less kids) & Higher Parity Group (3-5 kids) respectively. Parity was assessed by the no of full term births in previous life. The pregnant subjects were thus grouped as: Lower Parity pregnant Group (Group 1; n=37) and Higher Parity pregnant Group (Group 3; n=28). Same two groups of non-pregnant controls, Lower Parity non-pregnant Group (Group 2; n=17) and Higher Parity non-pregnant Group (Group 4; n=8).

Ethical Considerations and Consent Process: Study and research was approved by the ethical committee, Principal of Allama Iqbal Medical College and Head of Gynae Department. Informed verbal consent of all the subjects was taken.

Eligibility Criteria: Participants as subjects /cases were healthy pregnant women and attending antenatal clinic in their first and second trimester while the subjects as control were non-pregnant

women visiting as attendants of patients or for minor ailments to Gynae OPD clinic. Participants with adequate health were included. Women with doubtful pregnancy and with recent or chronic conditions that could affect or interfere with target markers were excluded. Pregnant women in their third trimester and unwilling women also excluded.

Sample Collection and Analysis

5ml blood was taken via the standard venipuncture technique into yellow top gel test tubes during the first and second trimester. Immediately after taking the blood, glucose level was checked by the use of Glucometer and entered in the corresponding column. These samples were allowed to freely clot, spun at 3000 rpm for 15 minutes and then serum was frozen at -80°C until analysis was done. The frozen serum samples were removed from the freezer and allowed to thaw at room temperature before being analyzed for insulin by ELIZA kit.

Statistical analysis: Results were expressed as mean+S.D. Statistical analysis was performed using SPSS version 20.0 and Graph Pad prism 5 for Windows. Frequencies and percentages were calculated and data was presented in tables and figures. Student t-test (unpaired t test) was used to compare the significance of the difference in the mean values of two groups. Significant P value was considered as less than 0.05 ($p < 0.05$).

RESULTS

In a random study, glycemia and insulinemia were studied in the pregnant females and also in non-pregnant females as controls.

INSULINE SENSITIVITY STATUS

In pregnant women of both lower and higher parity groups collectively, mean insulin level was $41.68 \pm 0.8658 \text{ mIU/L}$. In the controls the values were $24.86 \pm 1.426 \text{ mIU/L}$. In pregnant subjects insulinemia was about 67% greater as compare to the controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been comparatively hyperinsulinemia in the phases of the pregnancy studied.

Parity Related Comparisons (Table 1 and Fig 1)

Lower Parity Group (2 & less kids): In pregnant women with the parity < 2 insulin level was $48.56 \pm 8.162 \text{ mIU/L}$ and in non-pregnant controls with the parity < 2 insulin level was $24.86 \pm 1.764 \text{ mIU/L}$.

In the pregnancy insulinemia was about 96% greater as compare to the controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been comparatively hyperinsulinemia in studied phases of pregnancy.

Higher Parity Group (3-5 kids): In pregnant women with the parity 3-5 insulin level was $42.84 \pm 1.533 \text{ mIU/L}$ and in non-pregnant controls with the parity 3-5 insulin level was $24.88 \pm 2.580 \text{ mIU/L}$.

In early pregnancy insulinemia was about 73% greater as compare to the controls. The values had been highly significantly different in both the comparing groups ($p < 0.0001$). Thus there has been comparatively hyperinsulinemia in studied phases of pregnancy.

Comparison of pregnant subjects of lower and

Table 1: Average Insulinemia in Pregnant and Non-Pregnant Control Subjects in different Groups of Parity = < 2 and Parity 3-5.

Grp. No	Status	N	Mean \pm SEM mIU/L	P Value
	All pregnant Cases	65	41.68 ± 0.8658	$p < 0.001$
	All Non-Pregnant controls	25	24.86 ± 1.426	
1	Pregnant with lower parity	37	48.56 ± 8.162	0.0567 Comparison b/w group 1 and 2
2	Non-pregnant with lower parity	17	24.86 ± 1.76	$P > 0.001$ Comparison b/w group 2 and 4
3	Pregnant with higher parity	28	42.84 ± 1.533	0.5486 Comparison b/w group 1 and 3
4	Non-pregnant with higher parity	8	24.88 ± 2.580	< 0.0001 Comparison b/w group 3 and 4

higher parity groups: In comparison of both the groups of parity, the insulin levels were 48.56 ± 8.162 mIU/L and 42.84 ± 1.533 mIU/L in parity 2 and 3-5 respectively. There is hardly a noticeable difference between the both groups ($p: 0.5486$)

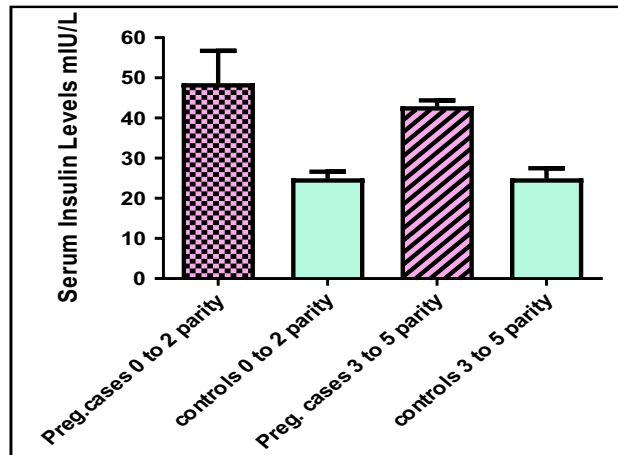


Fig. 1. Average Insulinemia Mean+SEM in Pregnant Women and Non-Pregnant Control Subjects in different Groups of Parity = <2 and Parity 3-5. Statistically Significant Difference $p < 0.05$.

Glycemic Status

In pregnant women both gestational groups of 4 to 8 and 9 to 14 weeks of gestation collectively, mean glucose level was 104.6 ± 2.082 mg/dl. In non-pregnant control the values were 110.5 ± 2.430 mg/dl. In early pregnancy glycemia was about 5.4% lesser as compare to the controls. The values had been not significantly different in both the comparing groups ($p: 0.1136$). Thus there has been comparatively lower glycemia in the phases of the pregnancy studied as compared to the non-pregnant state.

Parity Related Comparisons (Table 2 and Fig. 2)

Lower Parity Group (2 & less kids): In pregnant women with the parity <2 glucose level was 102.8 ± 2.357 mg/dl and in non-pregnant controls with the parity <2 glucose level was 112.7 ± 3.202 mg/dl. In early pregnancy glycemia was about 8.8% lesser as compare to the controls. The values had not been statistically significant in both the comparing groups ($p: 0.0194$). Thus there has been comparatively significant decreased glycemia in studied phase of

pregnancy.

Higher Parity Group (3-5 kids): In pregnant women with the parity 3-5 glucose level was 106.2 ± 4.318 mg/dl and in non-pregnant controls with the parity 3-5 glucose level was 94.88 ± 12.310 mg/dl.

In early pregnancy glycemia was about 12% greater as compare to the controls. The values had been statistically non-significant in both the comparing groups ($p: 0.2816$). Thus there has been comparatively greater glycemia in studied phase of pregnancy although not significant.

Comparison of pregnant subjects of lower and higher parity groups: Lower parity group showed significant lowering of glycemia compared to greater parity number while comparing to their respective control subjects. In comparison of both the pregnant groups of parity, the glucose levels were 102.8 ± 2.357 mg/dl and 106.2 ± 4.318 mg/dl in parity 2 and 3-5 respectively. There is hardly a noticeable difference between the both groups ($p: 0.4694$)

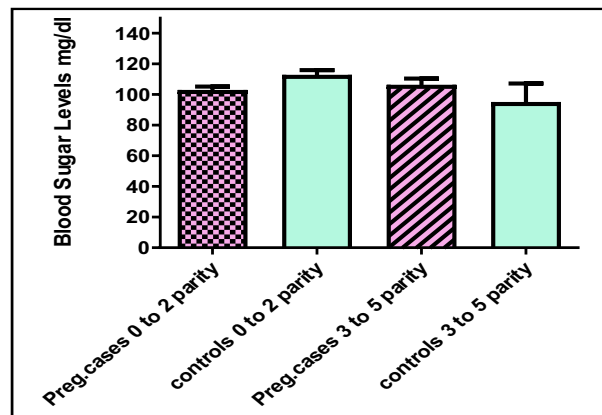


Fig. 2. Average Glycemia Mean + SEM in Pregnant Women and Non-Pregnant Control Subjects in different Groups of Parity = <2 and Parity 3-5. Statistically Non-Significant Difference.

DISCUSSION

It has been generally considered that mechanism of insulin resistance in gestational diabetes is similar to that of developing diabetes type 2. In Pregnancy insulin resistance becomes markedly high and sensitivity of insulin in target cells is decreased.²² After child birth then there is again normal insulin sensitivity. This contrast reflects the

Table 2: Average Glycemia in Pregnant and Non-Pregnant Control Subjects in different Groups of Parity = <2 and Parity 3-5. Significant

Grp No	Status	N	Mean \pm SEM mg/dl	P Value
	All pregnant Cases	65	104.6 \pm 2.082	P=0.1136
	All Non-Pregnant controls	25	110.5 \pm 2.430	
1	Pregnant with lower parity	37	102.8 \pm 2.357	0.0194 Comparison b/w Group 1 and 2
2	Non-pregnant with lower parity	17	112.7 \pm 3.202	
3	Pregnant with higher parity	28	106.2 \pm 4.318	0.4694 Comparison b/w group 1 and 3
4	Non-pregnant with higher parity	8	94.88 \pm 12.31	

difference in both the mechanisms of insulin resistance.²³ The risk of occurrence of GDM and higher incidence of impaired glucose tolerance or Type 2 diabetes mellitus accelerates with higher parity number of women during their later life.^{24,25} Women having 3 kids have a higher incidence of diabetes, which is further increased to those having 5 or more kids as compared with women with only 1 kid. Some studies suggested a positive co-relation between multi-parity and the higher incidence of insulin resistance and GDM^{14,18,19,26,27} while several other studies have shown no relationship.^{20,21}

In general in present study there had been elevated insulinemia in the pregnant subjects of both parity groups as compared to matched controls with age and parity, which demonstrate that pregnancy is a state of decreased insulin sensitivity as well as hyper secretion of insulin. However in comparison of both the groups based on parity, the insulin levels were 48.56 \pm 8.162mIU/L and 42.84 \pm 1.533mIU/L in lower parity group of 2 kids and greater parity group of 3-5 kids respectively. There is hardly a noticeable difference between the both groups (p: 0.5486). The influence of the parity in the pregnancy induced insulin resistance mechanism has not been observed in the present study. In comparison of glycemic status, lower parity group showed significant lowering of glycemia compared to greater parity number comparing to their respective control subjects. Lower parity group having lower glycemia as compare to greater parity group may be attributed to early challenges of the pregnancy adaptations when the insulin resistance set up is yet establishing whereas

in in the greater parity group the insulin resistance status has already been established.

We are unable to confirm our hypothesis by the results of our study as we could not observe an effect of greater parity on insulin levels of the subjects, and thus indirectly insulin sensitivity and β -cell function differences of both the groups. Consequently, the possible incidence of high insulin resistance and enhanced risk to type 2 diabetes mellitus in high parity women may relate to other factors such as high body mass index and greater body fat deposition. In our study, well-matched groups of women for almost equal age, body weight, fat composition and parity were compared. All women were in good healthy state. Participants had no obvious risk factors for development of diabetes mellitus. It was assured that women in the control groups were not using oral contraceptives. So our study demonstrates as some previous studies do, that parity has no direct impact on glucose intolerance, insulin sensitivity status and insulin secretions from the beta cells of the pancreas thus confirming the fact that gestational diabetes is characterized by β -cell dysfunction as well as impairment of insulin sensitivity in the peripheral receptors.^{3,28-30}

CONCLUSION

Our study provides no evidence of any direct and independent effect of parity on impairment of insulin sensitivity or enhanced insulin resistance during the normal pregnancy. Parity is not directly responsible for impairment of insulin sensitivity in subsequent pregnancies. There was hardly any

noticeable difference in insulin secretion in high parity women as compared to low parity group. Progressive ageing and steady weight gain of multiparous mothers may act as causative factors for decreased insulin sensitivity and more marked insulin resistance in pregnant females. On the basis of our results, we do not recommend informing multiparous women that they are at greater risk of developing type 2 diabetes in the subsequent life; however lifestyle modifications and physical activity along with the weight loss can be highly beneficial for the prevention of metabolic diseases including type 2 diabetes mellitus.

AUTHORS' CONTRIBUTIONS

Dr. Shazia Ramzan designed the initial study, searched related literature, collected data and conducted the study. Dr. Zoobiah Hafeez designed the initial draft of manuscript. Dr. Ayesha Ashraf worked on literature search, reviewed and finalized results and discussion. Dr. Shehwar Nadeem reviewed the literature, and contributed to the discussion. Dr Saira Aftab and Dr. Tahir Maqbool reviewed the study outcomes and conclusion and made corrections too. All authors contributed to the final manuscript.

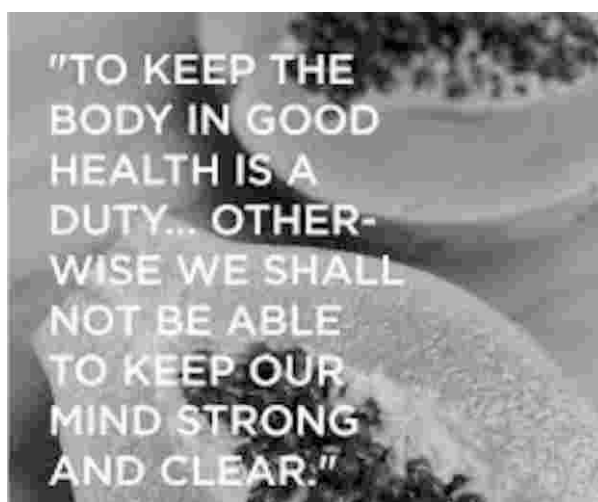
Conflict of Interest

No conflict of interest associated with this work.

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EXPLORING BARRIERS FACED BY SHNS (SCHOOL HEALTH AND NUTRITION SUPERVISORS) DURING SERVICE DELIVERY

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ABSTRACT

Objectives: Punjab being the most populous province of Pakistan not only requires awareness for a healthy life style in adults, but also amongst the younger section of its population. This can be accomplished by introducing healthy lifestyle practices in schools. With this motivation, School Health and Nutrition Supervisors (SHNSs) were hired across Punjab in 2007. However, the situation analysis revealed that this workforce was not utilized for what they were initially inducted. This paper looks into the current status of SHNS and analyze the barriers that limit the output of this workforce.

Design: The study follows a qualitative design and uses questionnaires and key interviews to probe and look into the issues faced by SHNS

Place and duration of study: The study was done at Lahore, with some FGDs conducted in Sheikhpur and Kasur.

Methods: The paper uses a pure qualitative study design, with four Focus Group Discussions (FDGs) along with five in-depth key interviews.

Results: The major barriers faced by SHNSs while providing services are training deficit, governance issues, lack of monitoring and evaluation mechanism, vague job description and non-existent service structure.

Conclusion: SHNSs are facing many challenges from suboptimal training, lack of proper job structure to facilitation of their services in their respective communities. Facilitating their work and efforts can help SHNSs overcome these challenges and result in an improved service delivery. A re-vamping of this workforce is therefore proposed.

Keywords: School Health, School Health Education, Health Educators, Barriers, Primary Health Care

Schools have always been considered as a valuable opportunity and an effective strategy in promoting health education since it's the most efficient way to reach out to a larger set of population i.e. students, school staff, families and community members (Carmen¹, 2001). Therefore schools are a prime setting for public health programming. As of 2016-17, 19 million students were enrolled in primary schools, out of which 11.89 million (61%) are in public sector (Dawood Shah², 2018).

Health and success in schools are inseparable, studies show that health-risk behavior negatively impacts educational outcomes such as graduation rates, class grades, educational behaviors that are not

limited to, but include attendance level, drop-out rates, involvement in school activities, extracurricular and student attitudes (Olsen³, 2019). Physical health has always been rated as the important issue that should be addressed for better educational outcomes.

To link health services with schools, SHNS were introduced under Punjab School Health Program in 2007-08, in order to bridge the gap between primary health and education. For this purpose 2,456 SHNS positions were sanctioned. However, analysis revealed concerning findings: SHNS were not being utilized for the purpose they were hired for. Later, revamping program for this

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work force was also formed, which unfortunately never got implemented.

This paper looks into the barriers that have been proving to be a great hindrance in the initial as well as later stages of program’s successful implementation. A number of FGDs (Focus Group Discussions) were conducted along with one-on-one interviews to get a deeper insight of issues at hand that are acting as operational barriers.

METHODOLOGY

Participants: The participants for this study were SHNS from various districts in Punjab

Instrumentation: A qualitative study method was used with semi-structured interviews for FGDs (focus group discussions) and some key one-on-one interviews were also conducted in person and along with some telephonic interviews too.

Procedure: A conceptual framework was devised to understand the characteristics and current practices of the SHNS, and to investigate the issues and barriers in the services provided by SHNS; for which semi-structured interviews were created. Purposive sampling was done to select SHNS from district of Lahore, Sheikhpura and Kasur. There was no eligibility criterion for choosing SHNS, since their minimum education level is a Masters’ degree and all of them receive training at the time of induction; hence all SHNS were eligible for inclusion in FGDs and all groups were homogenous in nature. Each FDG consisted of 8 to 10 SHNS from each district. Table 1 shows the break-up of participants of the study. 5 SHNS were also selected for key in-depth interviews. Interviews were conducted at District Lahore, Kasur and Sheikhpura and consent forms

were sought for the audio recordings. All FDGs and in-depth interviews were recorded and later transcribed verbatim. Some of the data was at random selected and re-transcribed to ensure quality of transcription. The semi-structured interviews were formed with the help of a topic guide.

Data Analysis:

The main sources for data collection were FGDs and key interviews. Topic guides and field guides were developed and reviewed. Thematic analysis was done to determine main barriers and issues faced by SHNS. Coding was done on the qualitative data to create “nodes” to capture the “main idea” from each interview. All the data collected was “collated” under each “node” or theme. An extensive discussion was conducted for alternative interpretations or conflicts and were in-cooperated. The final step was to map out any recurring major themes and determining the sub-themes. The validity and reliability was ensured by using a topic guide for interviews and a prior briefing session for RAs (research associates) for better understanding and to ensure all RAs were on the same page.

RESULTS

• **Governance:**

The government does realize the importance of this work force, since it will greatly aid achieving the health related Sustainable Development Goals. However lack of any national policy regarding school health and care shows that there is an absence of importance and sense of urgency about the issue at government level. Following was the response of one of the interviewee:

“With the introduction of Roadmap Initiatives, all the focus was shifted on dashboards mentioned in the report; school-health was nowhere listed and therefore sidelined. A similar level of importance would have been given to school health if it was also included in Roadmap initiatives too”

FGD 2

The SHNS lack support not only from government but also from teachers and adminis-

Table 1: Number of Focus Group Discussions and Key-Interviews

Name of District	Number of SHNS in FGDs	Number of Key Interviews with SHNS
Lahore	9	1
Lahore	8	2
Kasur	8	1
Sheikhpura	10	1

tration of schools. The community is in big support for such intervention in schools since SHNS provide solutions to health issues instead of just identifying and screening out. Support from government departments is very important, inclusion of this mandate in policies will reflect prioritization of the issue at larger scale and increase support at school and community level.

- **Monitoring and evaluation:**

One of the issues that needs utmost attention is M&E. This is not only required to evaluate the work progress of SHNS but is also needed to gauge the current services being provided. Some of the key interviews highlighted this issue particularly and show how the SHNS are concerned themselves about lack of such system in place.

“Those of us who are making effort never get recognized. There is no forum which can serve as projection of our work and efforts”

Key Interview: 1

The focus group discussion also indicate how there has been a gradual lack of interest at government level, and not enough feedback or support is being provided to this task force from relevant departments:

“In the beginning when we got inducted, there used to be monthly meetings at district level, where we used to discuss our issues and work progress, however since formation of new steering committee, they haven't had a single meeting as of now.”

FGD: 2

The services that SHNS are providing currently are not getting presented anywhere on district or provincial level. Moreover, it was also reported that the higher authorities that are in charge of SHNS were never clear about their role and used SHNS for other health related services which has affected the goal and aims of the program adversely. Therefore it gets hard to evaluate on what was done and what should have been done. The monthly reports compiled are not attended to properly either. One participant told that the reports are just filled up as a

formality, the findings are never analysed.

- **Job description:**

There is a lack of clear guidelines and job roles which is causing disarray in implementation and service provision. FGDs reveal that in the initial stages, there were no definite descriptions provided to this workforce, and their duties mainly consisted of providing information sessions and occasional screenings, for which they were provided with measuring tape, snellen chart, and weight machine among some other very basic tools. Even after re-launching of program and formulation of proper work manual, the changes were never implemented and the Department ended up using the work-force for other services in the districts; Polio campaigns, Dengue surveillance, wheat procurement etc. This resulted in encumbered tasks that are beyond the scope set forth by PHSRP (Punjab Health Sector Reforms Program) at time of induction of this workforce.

In addition to that, the basic services of screening and health advocacy sessions have not been structured properly either. No official topics for health to be taught were provided; therefore SHNS usually make a list themselves for the topics to be covered in health education sessions. This implies that the topics taught in grades across schools are not uniform. The lectures delivered have no structure/topic requirement either and are made by SHNS as they see fit. The discussions with SHNS and other health officials clearly show the divided opinion on whether SHNS should be in field, take sessions at Health Facility or should be limited to school related activities and facilities. The study also revealed that sometimes the tasks assigned go far beyond the boundary limits of Health Sector and they have to provide assistance in tasks such as “Bar-Dana” (A practice done in grain market for bagging and packaging of different kinds of grains).

- **Training of SHNS:**

After the induction, the SHNS are trained for one month, and then they are attached with existing SHNS for two months to get practical training. These

trainings are done only at induction level, and there is no mode of testing their learning levels as of now. This means SHNS are equipped with information that is provided at induction only, and there is no method to check for level of their acquired knowledge and skill set.

- **Motivation and Job Satisfaction:**

A person is eligible to apply as SHNS if they hold a Master degree in any subject from a recognized university. This high education bar was set for SHNS so that there is higher acceptability of this workforce by the community, since traditionally outreach workforce such as Lady Health Workers and Vaccinators have had very basic formal education. Also, SHNS were to deal with school administration and faculty, it made perfect sense for them to hold educational qualification at par with school teachers. However, the analysis showed that SHNS were not being used for the intended work that they were supposed to do. One SHNS reported:

“Rather than giving sessions in schools and colleges about dengue awareness, I was asked to take pictures of heaps of garbage in community for a report, which could have been done by anyone else.”

FGD: 1

Such minimal tasks that undermine the potential of SHNS therefore lowering the morale and increase job dissatisfaction. The FGDs also show that how most of the SHNS have shifted to other job roles while maintaining the title of SHNS in health sector, and some of them have even dropped out of the work force.

- **Other Program Related Issues:**

- **Transport:** Transport services should be facilitated by the department; however discussions with SHNS revealed that they have to pay on their own to visit the schools assigned, which takes approximately 20-30 minutes to reach. The issue is particularly persistent for SHNS, one of them reported:

“All of the vaccinators have been provided with bikes, but that’s not the case for us. We have to manage the transport on our own.”

FGD: 1

- **Gender:** SHNS workforce has a considerable proportion comprising of females. There exists gender based limitations which are not being addressed and therefore affecting their performance. Transport was identified as major issue for both male and female SHNSs, however particularly in females’ case, travelling long distances in rural area is fraught with hardships.

- **Activities in Schools:** One key factor identified is that there is no time slot allocated for sessions on health education in daily class schedules of schools. Furthermore, the teaching staff does not show any cooperation in this case because of the already limited time they have for their own classes. The FGDs show that there is no set time for SHNS to deliver health education sessions in schools, therefore they sometimes give sessions after exams due to lack of time.

- **Referral Barriers:** SHNS are not aware of referral procedures and are neither provided proper references at healthcare facilities. There needs to be a hospital in vicinity along with the availability of relevant doctor at a particular time. All this information needs to be provided to the SHNS so that the identified cases can be attended to in a timely manner. Unavailability of transport services is also one of the major challenges in referral system. There are no ambulances or any other mode of transportation to take students to hospitals and neither is SHNS provided with any financial budget for transport facilities.

- **Financial Challenges:** SHNS are required to travel to the schools but are not provided any assistance; either in form of financial package or transport. Mostly SHNS have to pay for transport services themselves. This additional burden doesn’t only create financial challenges for SHNS but can also result in de-motivation of the workforce, increased drop-outs or opting for to work in other

government departments.

○ **Nomenclature:** The name of the work-force is somewhat misleading. The current title assumes them as School Health and Nutrition Supervisors, whereas they are supposed to be educators of health in schools. The latest job description compiled as a part of re-launch of program addresses this issue and changed the job title to “In-charge Health and Nutrition Outreach Services (IHNOS)” however, it never got implemented.

○ **Expanding Evidence Base and Integrating Technology:** Earlier, the SHNS used to manually keep a log of student reports for themselves and the BHU. As a part of revamping of the work force, a mobile app was introduced to keep track and record data. The mobile app was supposed to make the system more efficient however ended up disrupting the earlier pace. The SHNSs report that the application lagged a lot, and was making the process longer. It usually took 10-15 minutes to record the information per student, which is now extended to 20-25 minutes because of the inefficiency of the application and it is practically making it impossible to screen and document all students of allocated schools. Though, SHNSs understand the importance of technology but only if it is efficient.

DISCUSSION:

The government realizes the importance of school-based health initiatives however; the concern needs to be expressed at all levels of governance to put more emphasis on the significance of school-based health initiatives. In current case, not only there is absence of any national policy for school health services, but there also exists a disconnection between task force and district health management system. The governance issues in our study are pretty similar to ones identified by Mohlabi’s study in South Africa. The participants in his study revealed that lack of commitment by government departments has led to a serious downfall in quality care standards and a total collapse of school health services in some of the districts (Mohlabi D.,

Aswegen, Van, Mokoena, & JD4, 2010).

There is no proper system of monitoring to supervise and evaluate the work of SHNS. New policies were placed after the change in government right one year after the program launch. The supervision of SH&NS shifted from Department of Health to Director General Health Services (DGHS). DGHS was already in a state of confusion vis a vis its overall role in managing healthcare providers in general. Hence, there was, and currently also no one to carryout supervisory checks to monitor the services of SHNSs. One of the basic component for any developmental action is the monitoring and evaluation (M&E) arm, which is a very common practice for any implementation plan. There are a lot of studies done by WHO and others that signify the importance of monitoring and evaluation (Freund & Kalumba⁵, 1985; WHO Africa⁶, 2008; Lukwago & Achiro⁷, 2013).

A proper monitoring system for the basic task of SHNS as school health educators is lacking. There exists no means to know what is being taught in school sessions, what facilities they are providing as school health and nutrition supervisors, and are the provided services up to the mark. The absence of proper supervision is not only affecting the monitoring process but also resulting as a barrier for projection of their current services.

Absence of a proper job description not only results in additional and in some cases irrelevant tasks to be covered, but also gives rise to conflicts about “what should be done by SHNS” at BHU level. Importance of clear information on roles and responsibilities, as rightly pointed out by Helena in her study of Factors influencing programs to promote health related behaviors; shows the emphasis needed on this theme for better implementation of such health policies and practices (Helena Bergström⁸, 2015). The absence of such information is not only affecting the current roles of SHNS as health educators, but also resulting in completing tasks that are out of scope of practice as stipulated by the PHSRB. These highly qualified SHNS are usually

taken up by other government departments, some of them identified in discussions were part of staff at secretariat or director general health offices, and sometimes they have to work along LHW in conducting polio and dengue duties.

Trainings are very important for any service provider in any sector. However, the trainings were only carried out at the time of induction were reported to be of suboptimal quality. Most of the time there was no correlation between their qualification and the services they were required to render. The pool of SNHS is a very diverse group of individuals who have done their Masters in Nutrition, Sociology, Social Work, Biology, Psychology, Political Science, Economics, Public Administration and Business Administration and even Law. It is necessary to bring them on the same page, for which the training at the time of induction is paramount. This is precisely, why in their case a one off training won't suffice. The study done by Antonio shows that one time trainings show improved performance in beginning after a period as small as 3 month, this performance level starts dropping and also suggests how continuous trainings as one of the recommendations (Lopes, Cabral, & Sousa⁹, 2014). Therefore, there is a need for regular refresher courses and in-service trainings so that the SHNS are equipped with latest know-how in health sector and it will also help them in retaining the information and skills they acquired from previous training. These trainings need not to be extensive in nature, since they act as "refresher" for existing skills. Victor in his Nigerian study on CHW shows how one week of trainings show improvement in knowledge along with attitude of the health service providers towards community (Makanjuola, Doku, & Gureje¹⁰, 2012).

They also need to be trained on the teaching methodologies, which seems to be a lacking component of training as for now. The trainings should ensure that what is being taught is not very general and abstract, but rather aimed at teaching focussed health practices since there is a common neglect of essential knowledge about healthy lifestyle (Lavin¹¹,

1993).

The refresher courses/training is necessary for the SHNS to keep up with latest research findings and methodologies. Educators received their training at a time when the problems and issues students were facing might have been different. Such trainings are source of continuous improvement in one's professional practice (Olsen³, 2019).

Also, there is no incentive system tied to good performance of SHNS, neither monetary nor non-monetary. Incentives are a vital tool to ensure motivation for good performance. The SHNS reported that there is a lack of any form of feedback. There is also absence of any career progress framework for this workforce. The services provided by current SHNS are not being recognized at any level and therefore lower the motivation this workforce. Satyana suggests in her study done in Orissa on Community Health Worker's performance that improvements in system of work recognition can help workers perform better and gain community trust, since social recognition and sense of social responsibility acts as a driving force for them (Gopalan, S., S., & Das¹², 2012). There are a lot of other factors that are affecting the motivation and therefore, service delivery of SHNS. Araban's paper lists a number of factors that affect self-efficacy. He lists official feedback, as one of the major factors affecting the enhancement of self-efficacy among health educators. Other factors include large number of clients, inadequate knowledge of audience are among some others (Fereshteh¹³, 2019). Lack of service structure also hinders in proper service delivery. The SHNS were introduced in 2007-08, however their jobs have not been regularization even after 12 years, which adversely affects the morale of this workforce.

The schools assigned to SHNS are usually at considerable distance from each other and they are not provided nor compensated for transport facilities. Poor roads in rural areas also add to the difficulty faced by SHNSs in carrying out their outreach activities, this has also been identified as an issue in a

similar study by Mohlabi and others (Mohlabi D., Aswegen, Van, Mokoena, & JD⁴, 2010). This situation gets even more challenging in case of females members of this workforce. Another highlighted issue is limited time allocated to them by school administration. The schools are not asked by the concerned authorities to include these advocacy sessions in their routine academic schedules. Time as a limitation to wellness activities has been supported by other mixed-methods and qualitative studies (Brittany R. Schuler¹⁴, 2018; Karen Cheung¹⁵, 2016). The importance of health education at schools needs to be realized and such sessions should be facilitated.

Similarly, another issue that needs to be addressed is the nomenclature of their job title. It might not seem much of an issue, but studies show that nomenclature of job titles significantly influence job performance (Smith, Hornsby, Benson, & Wesolowski¹⁶, 1989). Therefore it's necessary to have job titles that are reflective of the scope of work and give a unique identity to the worker.

CONCLUSION:

An organised SHNSs workforce with clearly defined scope of work and with proper incentive structure linked with a robust monitoring and evaluation mechanism will help school children become aware of healthy lifestyle practices. This will result in better health outcomes of children and are likely to assist in curtailing school dropout rates. Thus, barriers faced by SHNSs should be addressed to achieve optimum results from this highly educated outreach workforce.

Conflict Interest:

The authors declare that there is no conflict of interest.

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RANGE OF AXIAL LENGTH IN PATIENTS UNDERGOING CATARACT SURGERY.

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Abstract

Background: Prior to any cataract surgery every patient underwent biometric evaluation for calculation of accurate axial length which is essential ocular biometric parameters. Accurate preoperative ocular biometric assessments are the crucially significant issues for successful cataract surgery.

Objective: To assess the prevalence of various ranges of axial length in patients undergoing cataract surgery

Material & methods: This Cross-sectional study was done at Department of Ophthalmology, Services Hospital Lahore for 6 months. Data was also collected from Fauji Foundation Hospital Lahore and GTTH Lahore. 250 patients were registered through wards. The axial length of eye was measured pre-operatively using OcuScan (Alcoa) A Scan in sitting position, with same gain under topical anesthesia (proparacaine) by one operator on each eye and average of 3 readings was taken.

Results: Mean age of the patients was 51.99±15.86 years. Mean axial length among patients was 24.72±2.47mm. Among 66(26.4%) patients axial length lies in between 19-22mm, 88(35.2%) patients axial length lies in between 23-24.9 mm and 96(38.4%) patients axial length lies in between 25-29 mm respectively.

Conclusion: Mean axial length of patients was 24.67±2.38mm who were undergoing cataract surgery, which fall in the category of normal axial length.

Key Words: Axial length, Cataract, Surgery, Biometry, Intraocular lens power

Advances in field of Ophthalmology, globally, generated a larger requirement for ocular factors in several clinical and diagnostic areas. One of the important parameter in ophthalmology is the measurement of axial length. This is important, because of assessment of intraocular lens power estimation to attain the aim of the cataract surgery as the refractive procedure¹ while helps the ophthalmologists to diagnosis numerous different eye conditions including staphyloma² and hazard of retinal detachment, as risk of retinal detachment is usually high in young patients of myopia.³

According to a survey named as “Pakistan

National Blindness and Visual Impairment Survey”, the occurrence of cataract is observed in around 51.5% cases with blindness or having visual impairment in Pakistan.⁴ Removing cataract along with implantation of intraocular lens is the most common surgical procedure performed in ophthalmology practice.¹ Many previous studies showed a significant correlation of ocular biometrics, particularly between axial length and refractive errors. However, these parameters vary in different races, ethnicities and inheritances. Their variances in different populations can possibly clarify the differences in the refractive errors and it may be useful to conclude the

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distribution of the biometric indexes in each area.

In a local study, 44.6% patient had axial length of 19-23mm, 49.1% had 23-25mm and 5.9% had 25-29mm.⁵ In another local study 86% of the eyes had an axial length between 21.00-23.99mm so there is variation in axial length in our community.⁶ In a study result showed with each 1 mm increase in axial length, the incidence of complications raised 1.22-folds ($P=0.007$). So IOL, power calculation is a crucial step for good refractive outcome in preoperative examination in cataract surgery.⁷

A study, conducted in Iran, reported the ocular biometrics in carpet weavers, there was large number of cases who were myopic and their findings could not be generalized to population having normal eyes. Here we shall be evaluating the range of axial length in a general 18-80 year old Pakistani population undergoing cataract surgery as it will help in calculating the intraocular lens power for intraocular lens implant in cataract surgery.⁸ In Pakistan this study will improvise the results of the above mentioned studies as there is contradiction about the percentage of population having the range of axial length. This study will generate baseline data of our population which will help in the management of patients with cataract undergoing surgery. To assess the prevalence of various ranges of axial length in patients undergoing cataract surgery

METHODOLOGY

Study design: Cross-sectional study

Venue: Department of Ophthalmology, Services Hospital, Lahore

Study period: Six months i.e. 7-4-2016 to 7-10-2016

Sample size: 250 individuals was estimated by using 95% confidence level, 3% error margin and taking proportion of axial length 25-29mm i.e. 5.9% 6 in patients undergoing cataract surgery.

Sampling technique: Its non-Probability consecutive sampling

Selection criteria: Patients of cataract (opacification of the lens diagnosed on slit lamp biomicroscopy) between ages 18 years to 80 years of either

genders were included who are undergoing cataract surgery. Patients with corneal pathologies detected on slit lamp examination, retinal detachment assessed by indirect ophthalmoscopy or with history of ocular trauma were excluded from the study.

Data Collection Procedure: After approval from ethical research board, 250 patients fulfilling inclusion criteria were registered through wards. Consent form was taken. Sociodemographic information like name, age, gender was recorded. The axial length of eye was measured pre-operatively using OcuScan (Alcoa) A Scan in sitting position, with same gain under topical anesthesia (proparacaine) by one operator on each eye and average of 3 readings was taken. Axial length was measured as the distance between anterior surface of cornea and the fovea through Ocuscan (Alcon) A scan. The average of 3 readings were taken. The ranges were as follows:

- 19-22.9mm
- 23-24.9mm
- 25-29mm

Data Analysis: Data was analyzed by using software SPSS v. 21. Mean \pm SD was calculated for age and axial length. Frequency and percentages was calculated for gender and number of patients falling in different ranges of axial length.

RESULTS

Mean age of patients in this study was 51.99 ± 15.86 years. Among all 123(49.2%) were male and 127(50.8%) were females. Mean axial length among patients was 24.72 ± 2.47 mm. Table 1

There were 66(26.4%) patients of axial length 19-22 mm, 88(35.2%) patients axial length 23-24.9 mm and 96(38.4%) patients axial length 25-29 mm respectively. Fig 1

No significant impact of age and gender on axial length had been observed. Table 2

DISCUSSION

Axial length is an important parameter and commonly required to calculate intraocular lens

power before undergoing cataract & refractive surgery. It helps the ophthalmologists to detect

Table 1: Demographics of Patients

<i>n</i>	250
Age (years)	51.99±15.86
Gender	
Male	123(49.2%)
Female	127(50.8%)
Axial length (mm)	24.67±2.38

numerous problems of eyes. Additionally, axial length and its components in ocular biometry provides the ophthalmologists with very important and worthy information.^{9,10}

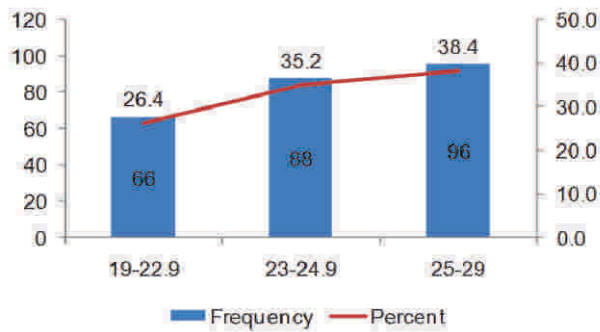


Figure-1: Axial Length Ranges (mm)

In this study mean axial length of patients who

Table 2: Axial Length in Relation to Effect Modifiers

		Axial Length (mm)			Total	P-value
		19-22.9 (n=66)	23-24.9 (n=88)	25-29 (n=96)		
Age (Years)	24-40	18(27.3%)	27(30.7%)	27(28.1%)	72	0.314
	41-56	23(34.8%)	20(22.7%)	29(30.2%)	72	
	57-72	15(22.7%)	34(38.6%)	29(30.2%)	78	
	>72	10(15.2%)	7(8%)	11(11.5%)	28	
Gender	Male	29(43.9%)	48(54.5%)	46(47.9%)	123	0.407
	Female	37(56.1%)	40(45.5%)	50(52.1%)	127	

underwent cataract surgery was 24.67±2.38 mm respectively. Minimum and maximum axial length among patients was 21.01 and 29.00 mm respectively. Naz et al.,¹¹ reported axial length range of 21.00 - 28.00 mm and Rashid et al.¹² reported between 18.00 - 29.31 mm while our range was 21.01- 29.00 mm. Yin et al., conducted a study in Beijing and reported that axial length ranged 18.96-30.88mm¹³. This was inconsistent as compared to

results reported in our study. Another local study reported the axial length range between 21.00 to 23.99 mm which is almost similar to this study.⁶

Ethnicity has been reported to affect the axial length of the eye due to difference in height, weight and other parameters. According to a previous data of different ethnicities, it was observed that the mean axial length of Asians was 23.89mm in East Asian and 23.60mm in South Asian, which was lengthier than axial length of Caucasians (23.24mm) and Middle Eastern (23.45mm) populations.¹⁴ In our study about 26.4% patients had axial length = 19-22.9mm, 35.2% patients had axial length = 23-24.9 mm and 38.4% patients had axial length = 25-29mm. According to the results of a local study 86% of the eyes had an axial length between 21.00 mm and 23.99 mm, while only 1% and 2% eyes were in ≥ 27.00 mm and ≤ 20.99 mm respectively.⁸ The classification for axial length range reported in this study is quite different as that of mentioned in the above mentioned local study.

In this study no significant association was seen between age of patients and range of axial length. One study¹⁵ suggested that there was no relation between axial length and age, while another¹⁶ concluded that axial length decreased with age. Jivrajka et al., found that a negative correlation present in axial length with age, as young individuals had longer mean axial length than older ones.¹⁷ In two studies conducted in 1980 & 1993, Hoffer et al.,^{18,19} found that the cataracts surgery done in younger age or in earlier age have long axial length. This result was also supported by Kubo et al.²⁰ Tsang et al., found that the eyes having cataract also have high axial myopia (>25.0 mm), and 46.6% cases were aged<65years.²¹

Jivrajka et al., found that the prevalence of females required cataract surgery are more than males (60% v. 40%, respectively). Also, females present for surgery were older (75years) than males (73years) and have a shorter mean axial length (23.27mm) than males (23.76mm).¹⁷ A local study also reported the higher number of female patients as that of male patients. i.e. Male: 48.6% & Female:

51.4%⁶. The same trend was seen in this study as that of reported by Jivrajka and local study.

In our study no statistically significant association was seen for axial length ranges and gender of patients. In another Epic Norfolk Study, conducted in British adults, partial coherence laser interferometry was used. The difference was insignificant for mean axial length between males & females (23.80mm v. 23.29mm, respectively).²² In contrast to that, Nizamani et al., found that females had shorter mean axial length than males (22.81mm v. 23.13 mm, respectively).⁶ Numerous studies reported that females usually have smaller eyes than males. Thus, have shorter axial length than males.^{23,24}

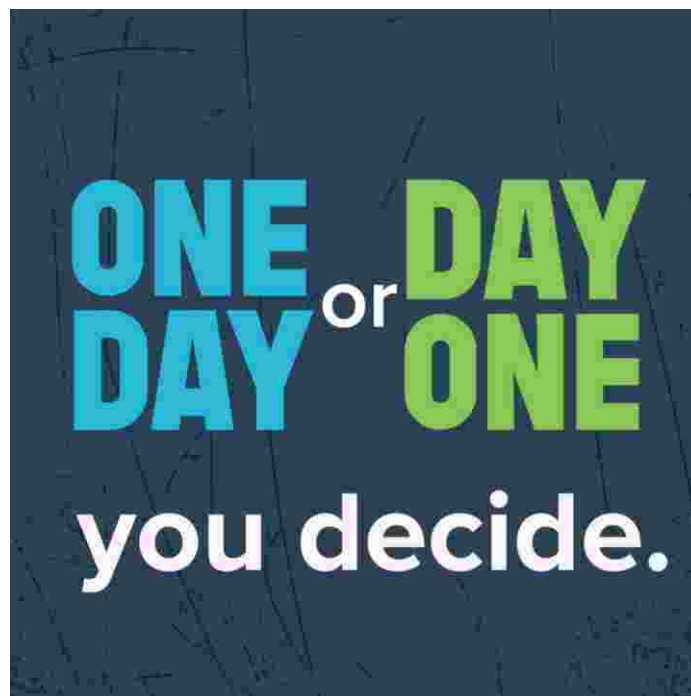
CONCLUSION

Results of this study showed that mean axial length of patients was 24.67±2.38 mm who were planned to undergo cataract surgery. Among 38.5% patients axial length lies between 25-29 mm.

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A CASE STUDY ON ATYCHIPHOBIA- A TYPICAL FEATURE OF A SOCIAL ANXIETY DISORDER

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Abstract

S.K is a 29-year-old bachelor who came for treatment with presenting complaints of a persistent fear of failure, fear of being negatively evaluated, anxiousness in various social settings and an extreme lack of self-esteem and confidence. He feared that he would exhibit symptoms of anxiety in social setting and would thus be humiliated and embarrassed which would subsequently make him feel like a failure. Because of this fear, he had avoided certain social situations for many years or otherwise endured them with great anxiety. S.K was diagnosed with Social Anxiety Disorder, 33.23 (F40.10) on the basis of formal and informal assessment which included subjective rating of the problematic areas, mental status examination, dysfunctional thought record and Social Interaction Anxiety Scale. 12 individualized sessions were conducted based on cognitive-behavioral therapy. Treatment involved cognitive restructuring, progressive muscle relaxation, shame attacking exercises and graduated exposure. After post-assessment and termination of therapy, 80% improvement was reported by S.K as he demonstrated improvements in many areas including lowered subjective experience of anxiety, decreased avoidance, and decreased physiology associated with anxiety. This case is presented as an example of the use of cognitive-behavioral principles in the treatment of social anxiety disorder.

Keywords: social anxiety disorder, cognitive behavioral therapy

Social anxiety disorder (SAD) is an anxiety disorder which is typically characterized by a significant level of fear in various social situations, leading to anxious distress and impaired ability to function in multiple domains of daily life. These fears can be triggered by perceived or actual scrutiny from others as individuals with social anxiety disorder fear being negatively evaluated by others. Physical symptoms often include excessive blushing, excess sweating, trembling, palpitations and nausea (Cisler, Olatunji, Feldner and Forsyth, 2010). Stammering may be present, along with rapid speech. Panic attacks can also occur under intense fear and discomfort. According to DSM-5 guidelines, the main diagnostic criteria of social phobia are fear of being the focus of attention, or fear of behaving in a way that will be embarrassing or humiliating, avoidance and anxiety symptoms (American Psychiatric Association, 2000). Standardized rating scales can be used to screen for social anxiety disorder and measure the severity of anxiety (Cisler et.al, 2010).

Although estimates of prevalence vary markedly depending on definition, the National Comorbidity Survey (Kessler et al., 2004), utilizing Diagnostic and Statistical Manual of Mental Disorders DSM-5 (American Psychiatric Association, 2000) criteria, found that more than 10% of the population may be affected by social phobia. Thus, social phobia is among the most prevalent of all major psychological diagnoses in the general population. This disorder tends to be more common in females and unmarried individuals (Read, Clark, Rock and Coventry, 2018). There is significant evidence for a strong cognitive component in social phobia. Most commonly, socially phobic individuals perceive their own inadequacies more negatively than others (Boll, Bartholomaeus, Peter, Lupke and Gamer, 2016). Additionally, these individuals display an increase in self-focused attention, indicating that they expend considerable cognitive resources in monitoring their own performance and to potential external threats (Cisler et.al, 2010). Typically, the therapeutic intervention for

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social anxiety is based on a cognitive, behavioral, and pharmacological approach or a combination of these three. However, the most widely developed, studied, and utilized treatments appear to be cognitive behavioral therapy (Wright, 2006). The following case is an example of such treatment incorporating CBT.

CASE STUDY

S.K. was a 29 years old bachelor who was educated up to matric and was currently unemployed. He came to consult the psychologist by himself with the presenting complaints of being extremely anxious in social settings, fear of being negatively evaluated in public and lack of self-esteem and confidence for the last 5 years. Although his social anxiety started to build up when he was in school due to various incidences of physical and emotional abuse by his teacher in front of the whole class, yet his symptoms deteriorated only after he moved away from home 5 years back and started to live independently. His poor social skills had become a major obstacle in the way of his occupational endeavors due to which he had to face distressing financial instability. He was fired from his job thrice because of his extreme fear of being negatively evaluated while performing in the presence of other people. Moreover, he described himself as an anxious person who experienced symptoms of shaking, heart palpitations, flushing, and sweating when in social situations that frightened him. He was able to identify three such situations: (a) performing in front of others, (b) one-to-one situations at work, and (c) talking to strangers, especially the opposite gender. Because of his fear of experiencing these symptoms and becoming embarrassed by them, he stated that he had religiously avoided these situations. S.K. denied any symptoms of depression or substance abuse. Additionally, he denied any prior psychological or psychiatric treatment and/or medication. He was diagnosed with Social Anxiety Disorder, 33.23 (F40.10) on the basis of formal and informal assessment.

Table 1: Pretreatment Ratings on 10 point Scale Reported by the Client

Symptoms	Pretreatment ratings
Extreme level of anxiety in social settings	10
Fear of being in social situations where the client is exposed to possible scrutiny by others	9
Fear of being negatively evaluated by others	9
Low self-esteem and self-confidence	10

Assessment

Subjective Rating (Sommers-Flanagan, 2009).

Subjective rating of symptoms was used in order to determine the intensity of client’s problems at pretreatment level.

Table 2: Scores of client on Social Interaction Anxiety Scale (SIAS)

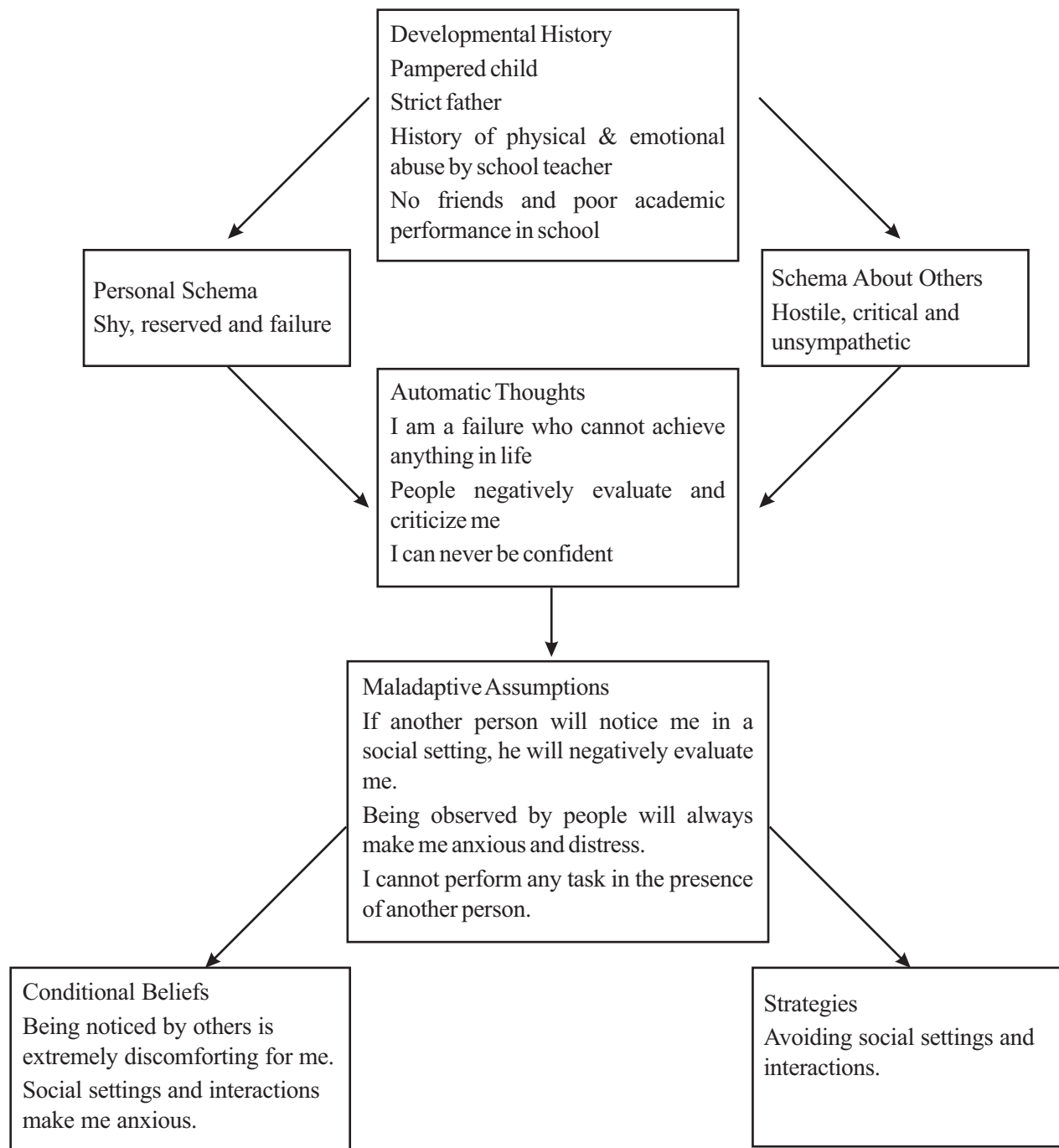
Raw Score	Cut-off Score	Category
64	43	Social Phobia

Mental Status examination (Martin, 2005) and DSM 5 based semi structural Interview (American Psychiatric Association, 2013) was conducted. Moreover, the Social Interaction Anxiety Scale (Mattick and Clarke, 1998) was used for the purpose of assessment social anxiety.

Management Plan

The goal of the management plan was to help the client develop techniques to cope with his prob-lems and to learn adaptive techniques to deal with various life situations. The management plan was tailored from cognitive behavior therapy keeping in view all the identified idiosyncratic factors of the patient’s illness (Heimberg, 1995). The short term goals comprised of establishing a therapeutic alliance and building rapport followed by Psychoeducation. Progressive Muscle Relaxation was taught to the client as a relaxation technique and Dysfunctional thought Record was given to identify his negative automatic thoughts. Exposure Therapy and shame attacking exercises were used incorporating a series of sessions to increase the confidence level of the client and to manage his anxiety in social settings. Moreover, Cognitive Therapy was used to help the client iden-

Case Conceptualization Diagram (Leahy, 2017)



tify and modify patterns of thought that cause anxiety, distress or negative behavior followed by cognitive restructuring to change the negative beliefs. Social skills training and assertiveness training was done to increase the confidence and self-esteem of the client. A Therapy Blueprint was also developed. The long term goals comprised of continuation of short term

goals and relapse prevention by means of follow up sessions (Leahy, 1996; Wells, 1997).

Session Summary

A brief summary of the 12 therapeutic sessions conducted with S.K. is given below.

In the first session, a detailed clinical interview was conducted with the client to know the presenting

complaints, history of the client's illness, information about the family background, client's personal history and premorbid personality. The client was guided about the therapeutic treatment and was informed about the time and number of sessions that would be required so that he could have realistic expectations from the course of treatment.

In the second session, the client's current functioning status was assessed and the precipitating and maintaining factors were identified by means of mental status examination. The client was given Dysfunctional Thought Record (DTR) to identify the dysfunctional thought patterns that are aroused in social situations leading to his social anxiety.

In the third session, assessment was completed using Social interaction anxiety scale. Normalization and Psycho-education was also done. He was provided information related to the nature of his disease and all of the symptoms were discussed in detail as a part of psychoeducation.

In the fourth session, relaxation techniques were taught to the client by using Progressive Muscle Relaxation (PMR). CBT techniques were used and ABC model of CBT was explained with examples to the client.

In the fifth session, the client was explained the CBT model and his cognitive distortions were identified through downward arrow technique. It was explained to the client that he holds cognitive distortions of labelling, overgeneralization, jumping to conclusions and personalization which provoke anxiety in social situations.

In the sixth session, cognitive challenging of social anxiety provoking beliefs was done along with the behavior experiments. A behavioral experiment was done where the client was asked to stand in the corridor of the hospital and talk to himself loudly. The people standing nearby were then asked if they noticed the client and most of the people negated to have observed or negatively evaluated him which helped the client in understanding his cognitive distortions even better.

In the next two sessions, the client was introduced to the concept of exposure therapy and the rationale provided for it was that the more the client will be exposed to social situations which provoke his anxiety, the more he will learn to have control over it. For this purpose, a number of exposure sessions incorporating shame attacking exercises were designed for the client by the therapist who accompanied the client in order to supervise his anxiety level.

In the ninth and tenth session, cognitive restructuring of the client was done in terms of the appraisal he has given to his social anxiety. For this purpose Evidence for and against and role playing technique was used to explain to him how he could alter his negative thoughts.

In the last two session, the client was taught distraction technique for managing stress and anger. Social skills training was done coping statements were also given to change his perception about himself. Therapy blue print was designed for the client and therapy was formally terminated.

RESULTS

On the basis of informal and formal assessment, the client was diagnosed with Social Anxiety Disorder (Social Phobia) 33.23 (F40.10). The client's presenting fear of several social situations stemmed from prior interactions and childhood experiences. His childhood comprised of noteworthy events of physical and emotional abuse which are significant predisposing factors of social anxiety as suggested by research studies (Cisler and Olatunji, 2010). These events resulted in his personal schema of considering himself a failure who is looked down upon by everyone, which is a typical characteristic of people with social anxiety disorder (Hill, 2003). This produced in him a series of assumptions about himself and the world around him, which led him to perceive that he was in danger in social situations. To challenge these personal schemas and maladaptive assumptions of the client, a CBT based management plan was designed and incorporated in 12 sessions.

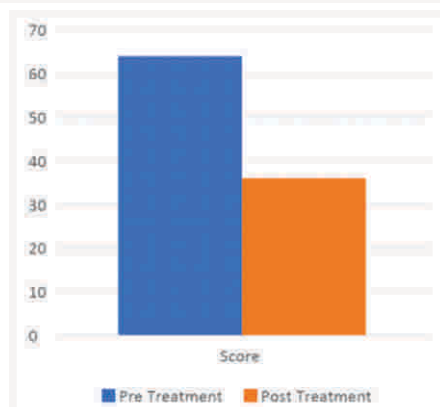
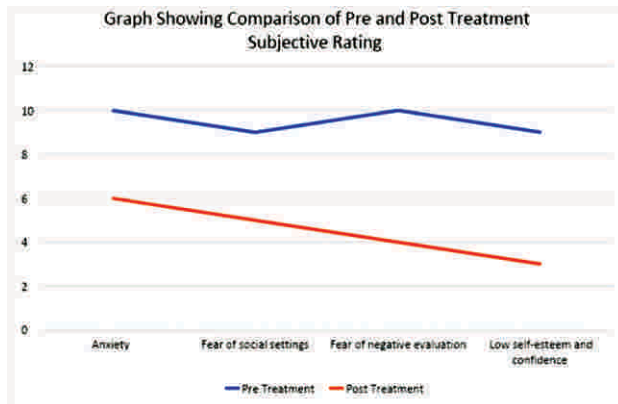
By the end of these 12 therapeutic sessions, the client was post assessed to check the effectiveness of therapeutic intervention in order to analyze the progress of the client. It indicated that there was a

significant degree of effectiveness of CBT based

Symptoms	Pre-treatment rating	Post treatment rating
1. Extreme level of anxiety in social situations	10	6
2. Fear of being in social situations where the client is exposed to possible scrutiny by others	9	5
3. Fear of being negatively evaluated by others	10	4
4. Low self-esteem and self-confidence	9	3

therapeutic intervention (Wright, 2006). Also, the client himself reported an overall improvement of 80% in his complaints. The outcome of therapy turned out to be satisfactory owing to the good prognostic factors of the client's self-referral and high motivation to change. Moreover, the client's insight for the nature of his illness and good understanding of the concept of cognitive distortions played a major role in making this CBT based intervention effective (Wright, 2006).

Post treatment Subjective Rating



Graphical Presentation of Pre and Post Treatment Score on Social Interaction Anxiety Scale (SIAS)

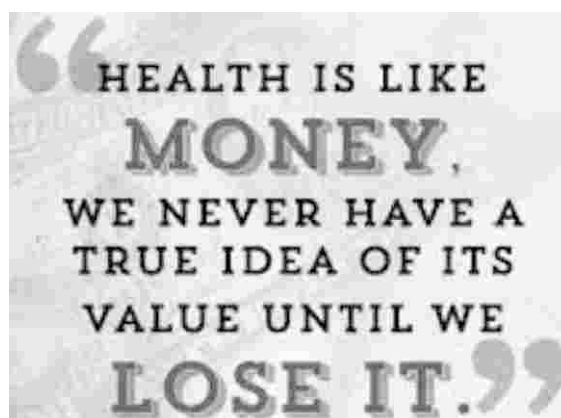
Limitations and Suggestions

- No work could be done regarding the psycho-education of the client's family regarding his illness as they lived in a rural area and could not come for sessions.
- There was a further need to work on his core personal schemas of considering himself a failure for which more therapeutic session were required.

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COGNITIVE BEHAVIORAL THERAPY FOR SCRUPULOSITY: A SINGLE CASE STUDY

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Abstract

This case illustrates the Psychological Management of Obsessive Compulsive Disorder with Cognitive and Behavioral Therapy. Ms. S.I was diagnosed with 300.3 (F 42) Obsessive Compulsive Disorder on the basis of psychological assessment which included dysfunctional thought record, Subjective Rating of Symptoms and Yale Brown Obsessive Compulsive Scale. The present case was conceptualized on Wells and Mathews (1994) model. Management plan was devised on the basis of Cognitive Behavior Therapy keeping in view idiosyncratic needs of the patient. It was used to achieve the short-term goals of education and engagement, identification of metacognitions underlying obsessions, thought-event fusion and thought-action fusion identification, modification of beliefs and relapse prevention. Total 12 sessions were conducted with the patient and she reported 50% improvement in her symptoms that is supported by the objective post assessment treatment.

Keywords: Obsessive Compulsive Disorder, Cognitive and Behavioral Therapy,

Obsessive Compulsive Disorder is known as a serious and debilitating psychological disorder (Markarian, Larson, Aldea, Barlow, & Good, 2010). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) obsessive compulsive disorder is a presence of obsessions, compulsions or both. Obsessions are recurrent persistent thoughts, impulses or images that are experienced, at some time during the disturbance, as intrusive or unwanted, and that in most individuals cause marked anxiety or distress. Compulsions are repetitive behaviors or mental acts that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly. These are time consuming and cause clinically significant distress or impairment in social, occupational, and other important areas of functioning. (American Psychiatric Association, 2013).

It is often a chronic disorder (60% to 70% of cases) and is likely to persist if not treated effectively (Eisen, Mancebo, Pinto, Coles, & Pagano, 2006). Significant improvement or remission is possible when evidence-based therapies are applied (Visser, van Megen, van Oppen, Eikelenboom, & Hoogendorn, 2015). Patients with a later age of onset, shorter duration of symptoms, good insight, and response to initial treatment have an increased likelihood of remission (Cherian, Math, Kandavel, & Reddy, 2014).

Lifetime prevalence of OCD is 2.5% (Davey, 2015). Females are affected at a slightly higher rate than males in adulthood, although males are more commonly affected in childhood (APA, 2013). Different perspectives have highlighted the role of perfectionist beliefs (Frost, Novara, & Rheaume, 2007), inflated-responsibility (Cougler, Lee, & Salkovskis 2007), cognitive deficits or abnormalities in

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decision making (Reed, 1985; Persons & Foa, 1984; Sher, Mann & Frost, 1984), thought-action fusion (Rachman, 1993) and meta-cognitive beliefs (Clark & Purdon, 1993; Wells & Matthews, 1994) in the enhancement of OCD.

Consistent research through randomized controlled trials showed that individual cognitive behavioral therapy (CBT) including exposure and response prevention (ERP) and/or cognitive restructuring (CR), was the first-line psychological treatment leading to symptom improvement in approximately 70% of treated patients (McKay et al., 2015).

ERP has been proved effective for treatment of OCD and the symptoms proved to be maintained up to five months (Abramowitz, 1998), two years (Marks, Hodgson, & Rachman, 1975). ERP also proved effective in intensive treatment (Abramowitz, Foa & Franklin, 2003).

The treatment of obsessional thoughts without any compulsions (Pure $_O'$) has been a challenge for E/RP but CBT claims to be effective in dealing with this symptom too. Freeston et al. (1997) assessed the effects of cognitive behavioral treatment in treating obsessive thoughts in 29 Pure $_O'$ patients in a randomized-control trial. Participants were randomly divided into two groups one received the treatment and other was in controlled condition. Patients in the treatment condition received cognitive behavioral treatment including a thorough description of the development and maintenance of obsessive thoughts, exposure to these obsessive thoughts, prevention from maladaptive rituals, cognitive restructuring, and relapse prevention. An improvement was seen in patients who received psychotherapeutic treatment as compared to wait-list controls. Patients who got benefit from the therapy reported low scores on self-report OCD symptoms, measures of obsessional severity, anxiety and current functioning. When patients who were in the waiting list received treatment they also exhibit improvements. These gains remained the same at 6-months follow-up. Overall results indicated the effectiveness of CBT in

treating obsessions.

CASE STUDY

The patient's problem started in 2012 when she was 20 years old. She moved from Harrapa to Multan and settled there. She took admission in BA on the demand of her elder sister although she was not willing for it and said that nobody paid heed to my desire regarding my education. At that time, they were financially unstable and could not pay her academic fee. Even, they had to sell her earrings to pay dues. She reported that it was embarrassing for her when once the clerk asked for fee and she couldn't pay them on time.

At that time, her uncle offered them financial support as he was financially strong. He also offered them pick and drop service from college. He started to visit them more often. Her mother did not like him as he had perverted sort of nature. He had extra marital affairs that everyone knew about in their family. Her mother asked his wife to tell him to stop visiting her place as she had daughters.

Her mother accused her of having an affair with her uncle although she was innocent which was very distressful for her. However, the constant criticism of her mother led her to think that she is not pious and she has committed a crime. After this, she remained quite all the time at home. She just laid down on her bed and did not talk to anyone.

The first obsessive thought that she had was regarding the food that was fed to the hens at her home. She began to think the food was not permissible so she often wasted the whole food. She then started to think of the hens as forbidden too and stopped eating meet. She had thoughts that she is not a pious girl, her hens are also not Halaal. She also had various nightmares regarding their flesh and blood. This constant feeling of being impure led her to perform compulsive behavior of excessive hand washing. She couldn't even pray due to these obsessions. She used to perform namaz again and again to conform that she had uttered the words with exact pronunciation and haven't missed any rakat. She felt

anxious and even left praying. She started stitching and began to think that whoever will wear the clothes stitched by her will also lose his faith.

These symptoms remained for about 2 years but she did not consult any medical professional as she and her family thought that no one can understand her symptoms. She thought that these symptoms are very strange.

She had obsessions regarding religion. Due to this distress, she did not want to get married. However, her family got her married forcefully in 2015. She was not comfortable with her husband and did not have active sexual relationship. Once, she brought a can of oil in grocery she had to notice a few verses written on back of the can and she assumed or start to think that this oil must have been manufactured in the presence on holy verses and it is pure so she must not touch and use it as she considered herself impure. So, she wasted all the can of oil. Her family took her to a saint for spiritual healing but the symptoms remain untreated.

Her religious obsessions persisted and she particularly started to avoid touching Quran-e-Pak and stopped regarding it at all. She did not even come to the room where Quran-e-Pak was present as she was afraid of getting close to it as she considered herself impure. Once, when she was travelling from Multan to Lahore with her daughter she booked four seats instead of two because she had fear in mind that the people sitting next to her might have Quran e Pak in their cell phones which she wanted to avoid at any cost. When she came to Lahore, her mother took her to Jinnah Hospital where she was referred to the psychiatry department.

Background Information

Ms S.I belongs to a middle socioeconomic class. Her father is 57 years old. He owns a crockery shop. He was caring and had a cool temperament. Her mother is 55 years old, housewife. She has not satisfactory relationship with her mother. She reported that her mother is very suspicious. She did not believe in her.

Ms. S.I has four siblings, two brothers and two sisters. She is a third born. They had some financial issues when she was 20 years of age. She couldn't continue her studies due to this financial instability. She was married at the age of 23 years. It was a cousin marriage. She has a two years old daughter. She did not have an active sexual relationship with her husband as she said that she feels filthy.

Assessment

Assessment was done at both formal and informal level. Informal Assessment was done by Clinical Interview (Zuckerman, 2010), Mental Status Examination (Martin, 2005), Dysfunctional Thought Record (DTR), Subjective Rating of Symptoms (Sommers-Flanagan, 2009) and Hierarchy of Avoidance Behaviors. Formal Assessment was done by administrating Yale Brown Obsessive Compulsive Scale (Goodman & Rasmussen, 1989).

Dysfunctional Thought Record

Dysfunctional thought record was given. The purpose of the DTR was to increase client discrimination between types of thought and provides the focus for treatment on worry about intrusions rather than on the intrusion itself (Wells, 1997). The cognitive distortions revealed from DTR are Overestimating Risk and Danger, What if Thinking, Thought-Action fusion and Over importance of Thoughts (Wells, 1997).

Quantitative Analysis

See therapeutic outcome for pre and post assessment.

Summary

Informal assessment was done by using clinical interview, mental status examination and subjective ratings of symptoms through which the information regarding her personal life, sexual relationships, life styles, chief complaints and cognitive distortions were obtained.

Formal assessment was done by using Yale-Brown Obsessive Compulsive Scale. The patient scored high on 1, 2, 3, 5, 8 and 10. These items suggest that patient's obsessive thoughts were much

disturbing and those thoughts are uncontrollable for

Table 1: Average Frequency and Intensity of the thoughts Reported by the Patient

Areas of observation	Pre Treatment Rating
Average frequency of intrusive thoughts	8 times a day
Average intensity of anxiety	09 (on a 10 point scale)

her. This was also evident in the patient as she was often distressed about the thoughts she had and how

Table 1.2: Showing Pre-Treatment Subjective Ratings of Symptoms

Pre-Treatment Assessment	Subjective Rating By The Patient
Thoughts about losing faith	10
Difficult to control thoughts	10
Avoid to go to the place where Quran-e-Pak is placed	9
Thoughts about separation from her husband	10
Spending time in thinking about that thought	10
Difficulty in completing routine task	8

Table 1.3: Pre Assessment of Severity level on the Basis of Raw score on Yale Brown Obsessive Compulsive Scale (Y-BOCS) (Goodman & Rasmussen, 1989).

Raw Score	Cut-off Range	Category
30	0-14	Severe to Disabling OCD

it affected her personal life.

Diagnosis

300.3 (F 42) Obsessive Compulsive Disorder, with good or fair insight

Prognosis

The client prognosis is guarded by

Points in Favor

- Self-referral
- Fair insight
- Educated
- Motivation

Points Against

- Severe symptoms (Swierzewski, 2011)
- Chronic duration of symptoms (Swierzewski,

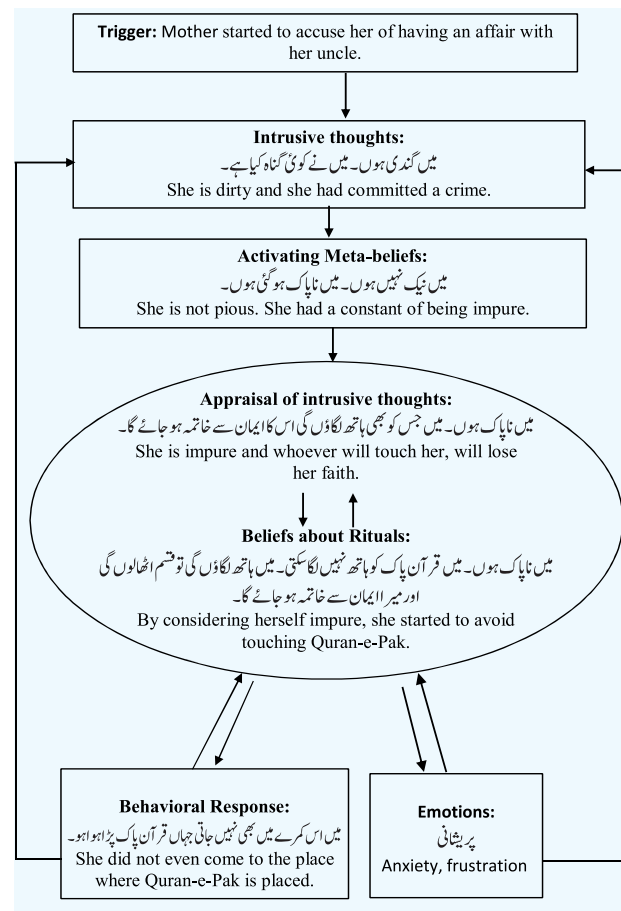
2011)

- Early onset

Case Conceptualization (Wells and Mathews, 1997)

Management Plan

The management plan was devised using the Cognitive Behavioral Paradigm. Psychoeducation will be provided about the symptoms, nature of illness, etiology, diagnosis and rationale of therapeutic techniques. Normalization will be done to remove the alien effect associated with the symptoms. Socialization (Wells, 1997) of the model will be done by explaining the ABC model of CBT. Dysfunctional Thought Record (Leahy, 1996) will be given to client in order to identify his negative automatic thoughts for the obsessions. Suppression experiment (Leahy, 1996), detached mindfulness



(Wells & Mathews, 1994) will be used to help client in order to reduce his habit of suppressing thoughts regarding obsessions.

Coping statements (Leahy, 1996) will be given to the client to control his compulsive behaviors. Relaxation techniques like deep breathing and progressive muscle relaxation (Jacobson, 1938) will be used for stress and anger management. Cognitive restructuring (Leahy, 1996; Wells, 1997) will be done to change negative beliefs. Exposure and response prevention (Leahy, 1996) will be used to reduce the rituals. Attention training technique (Wells, 2009) will be used to enhance and improve his attention and concentration. Relapse Prevention (Wells, 1997) will be done in terminal sessions. The blue print of Therapy will also be provided to the client.

Session Summary

The first step was to engage the patient in the therapy. In the first session active listening was done by providing the patient opportunity of catharsis. She provided the detail regarding the development of this condition.

In the 2nd session she was provided information related to the symptoms and she was introduced the model of CBT. She was explained how the thoughts were responsible for the emotions. In order to clear the picture of the problem the patient came in with and to identify the triggers and NAT's. Dysfunctional thought record was given. Yale Brown Scale was administered to find out the severity of client's symptoms.

In the 3rd session, Deep breathing and Progressive muscle relaxation was also taught to the client. She was explained the rationale for these exercises. The client was instructed that this exercise can be practiced lying down or in a chair with your head supported. Each muscle or muscle group is tensed for 5 seconds and then relaxed for 10 seconds. The therapist also demonstrated the exercise to the client. She was asked to practice the exercise twice a day.

In the 4th session socialization proceed by sharing the case conceptualization of the cognitive model of OCD. She was explained about the negative belief about intrusion along with the behavioral

responses and worry about intrusion rather than the occurrence of the intrusion (Wells, 1997). Thought suppress experiment was used like the pink bear technique helps to understand the behavioral responses exacerbates intrusion and maintain the monitoring of thoughts (Wells, 1997).

In 5th session socratic questioning for eliciting idiosyncratic data for case conceptualization. The conceptualization of the model was completed in fourth session. Detached mindfulness was explained to the patient. The rationale was also given that it will help you feel relax and by letting go of the intrusions and then occupy their own space like any other thought and without engaging with these thoughts. She was asked to detach his thoughts from herself and was told about how she felt.

In 6th session, her cognitive distortions were identified through downward arrow technique. She was also explained about the cognitive distortions that a person might have and what distortion she is having and its consequences. Mini survey was carried out for the explanation of her irrational view and to normalize intrusion she was asked to do a mini survey (Wells, 1997). She reported that she trusted her religious teacher. She was asked to visited her and ask in detail regarding the concept of taking oath.

In 7th session, therapist explained the thoughts action diffusion to the patient about his intrusive thoughts. It included questioning the mechanism of the thoughts that his thoughts would become real. Many examples of TAF were given to him, later, the incongruence of his TAF was asked. It was explained how the intrusive thoughts are against our value system.

In 8th session, cognitive restructuring of the client was done in terms of the appraisal he has given to the obsession. For this purpose Evidence for and against was carried out to examine the evidence as it is a powerful method for helping clients to modify automatic thoughts. This technique involves listing evidences for and against the validity of an automatic thought or other cognition, evaluating this evi-

dence, and then working on changing the thought to be consistent with the newfound evidence (Wright, Basco&Thase, 2006). Besides the cognitive restructuring the therapist also gave the Islamic literature to the client regarding “oath”. Therapists also discussed those teachings within session (Ilyas, 2018).

In 9th and 10th session, exposure and response prevention was carried out. In the present framework, overt and covert rituals act as behaviors that prevent exposure to information that can correct dysfunctional beliefs. In order to overcome anxiety associated with obsessive stimuli it is necessary to expose the individual to the stimuli in the absence of rituals. Exposure and response prevention procedures based on this principle offer the most successful procedures for reducing obsessions and compulsions (Wells, 1997).

Thought habituation technique was carried out in 11th session and also in the following ongoing session. Thought habituation will help the individual to hold the uncomfortable thought in her mind without feeling undue discomfort (Hyman & Pedrick, 1999). She was asked to divide the paper in two columns and write the disturbing thought in one column and then the other. She was also told note its intensity on a scale of 0—100. She was asked to continue writing it till its intensity was reduced to 20—30. In 12th session, post assessment was done. Yales-Brown and Subjective Rating of Symptoms were administered. The concept of follow-up sessions was introduced to the client. The therapist gave therapy blueprint to the patient before the last session. She was asked to review his presenting complaints and conceptualize the same model. She was also asked to report techniques she used to deal with his problems. She was asked what the most effective techniques according to her were and what she would do if she would start experiencing those symptoms again or any other symptoms like this.

Post Treatment Results

Post Treatment Assessment of the client showed decrease in her symptoms. She reported

about 60% improvement.

Table 1.4: Showing Pre, Mid and Post Treatment Subjective Ratings of Symptoms

Subjective Rating(0-10)	Pre-Treatment	Mid	Post
Thoughts about losing faith	10	8	6
Difficult to control thoughts	10	8	5
Avoid to go to the place where Quran-e-Pak is placed	10	6	4
Thoughts about separation from her husband	9	7	5
Spending time in thinking about that thought	9	6	3
Difficulty in completing routine task	8	6	4

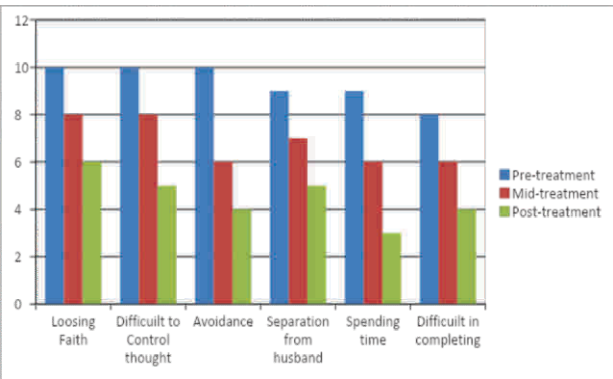


Figure 1: Graphical Representation of Pre, Mid and Post-Treatment.

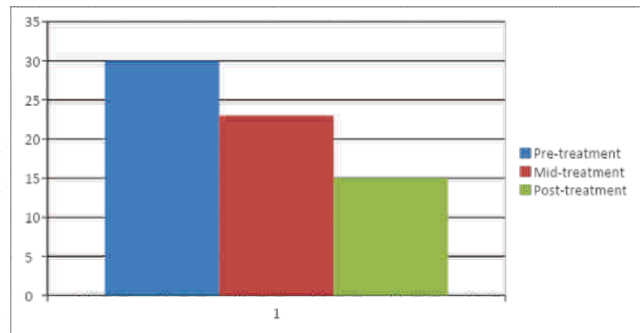


Figure 2: Graphical Representation of Pre, Mid and Post-Treatment Test Scores on Subscales of Y-BOCS

DISCUSSION

The present study aimed to investigate the efficacy of CBT in the treatment of OCD. The case was conceptualized on Cognitive Behavioral model

for OCD (Wells & Mathew, 1994). The results showed that OCD symptoms can be managed with CBT. This finding is consistent with previous researches. Amasi and Maracy (2017) study showed a considerable decrease in OCD symptoms which remained almost persistent after 3 and 6 months. It also shows that religious CBT can leave substantial effect on OCD symptoms; permanency of this intervention after 3 and 6 months is noticeable. In Conclusion this therapy could be helpful for OCD patients with religious content.

Ishfaq (2014) study results revealed that CBT professionals of Pakistan are following the western trends of CBT with slight modifications according to the cultural, religious and educational aspects of patients thus acknowledging the role of culture, religion and personal aspects in phenomenology, thought pattern and CBT management of individual OCD patients. This study, by motivating researchers to study effectiveness of CBT in our culture, is hopefully opening the path towards the bright future of CBT as an effective therapeutic approach in Pakistan.

McKay, Sookman, Neziroglu, Wilhelm, Stein, and Kyrios et al. (2014) research indicates that ERP is the first line evidence based psychotherapeutic treatment for OCD and that concurrent administration of cognitive therapy that targets specific symptom-related difficulties characteristic of OCD may improve tolerance of distress, symptom-related dysfunctional beliefs, adherence to treatment, and reduce drop out.

CBT has been proved a widely applicable therapeutic technique in developed countries. It also has been proved an efficient treatment for dealing with several disorders. Despite all these facts, its efficacy and applicability is quite limited in developing countries, like Pakistan (Naeem, Gobbi, Ayub, & Kingdon, 2010). To enhance the applicability of CBT in different cultures, it is required to make cultural adaptations in the method of CBT. This modification is necessary because of the possible effect of various issues on the application of CBT in

non-western countries (Iwmasa, 1993; Laungani, 2004). Like other cultures, therapists in Pakistan also alter the therapeutic strategies according to the cultural and religious practices (Naeem et al. 2010). In Pakistan psychologists also use religious practices as part of the therapeutic process (Murray, 2002).

Naeem et al. (2010) pointed number of obstacles and problems in implementation of CBT with Pakistani patients such the important component of CBT is use of homework assignments, but patients do not give it much importance. This can be due to high illiteracy rate but educated patients are also observed of not showing interest in homework assignment. Moreover, their expectations from the therapy also affect their engagement and compliance with the therapeutic 39 procedure.

Limitation and Suggestion:

- No work could be done regarding the management of dysfunctional personality patterns although they were identified in the patient. Further sessions are required work on her personality and other symptoms.
- Family counseling is recommended regarding the family attitude towards her illness.

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