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CONTENTS

Volume 15	Number 3	Sep 2020
EDITORIAL	Ishtiaq Ahmed	146
Gift Authorship: An Unethical Practice in Medical Writing		
ORIGINAL ARTICLES		
Outcome of Laparoscopic Cholecystectomy in Patients of Acute Cholecystitis	S H Waqar, Muhammad Tariq Abdullah, Sajid Ali Shah, Zafar Iqbal Malik , Fatima Shahzad	149
Serum IgE Levels and Total Eosinophil Count in Allergic Rhinitis	Mirza Khizar Hameed, Atif Sharif, Mahum Khizar	154
Immunization Status of Children: A Study at Shaikh Khalifa Bin Zayed Al-Nahyan Hospital Rawalakot Azad Kashmir	Sadiq Hussain, Muhammad Farooq, Muhammad Nadeem, Shazia Siddiq, Raja Imtiaz Ahmed, Irum Javed	159
Refractive Errors in Patients Attending DHQ Hospital Sargodha: A Cross-Sectional Study	Ibtissam Bin Khalid, Muhammad Hunaid Hassan, Mazhar Nasim, Yahya Umair Azam	163
Immediate Effects of Dry Needling on Pain and Function among Individuals with Patellofemoral Pain Syndrome	Iqra Khan, Ashfaq Ahmad, Samreen Sadiq	167
To Assess the Impact of Fibroids on Pregnancy Outcome	Rakshinda Mushtaq, Uzma Afridi, Pari Gul, Shama Jogezei , Rukhsana Neelofer	173
Water Pipe A Safe Alternative To Cigarette? A Comparative Study on Hematological and Biochemical Parameters in Mice Exposed to Cigarette and Water Pipe Smoke	Shazia Imran, Rubina Shafi, Tahira Sadiq	177
Prevalence of Visual Impairment among Indoor Diabetic Patients at Teaching Hospital of Rawalpindi	Muhammad Shafeh Shehzad, Muhammad Usayd Khan, Saqib Jan Shah, Aneeq Ullah Baig Mirza	183
MEDICAL EDUCATION SECTION		
Reasons for the Refusal of Spectacle Usage among Medical Students of Rawalpindi and Islamabad	Khadija Mohammad, Iffat Atif, Farah Rashid	188
Assessment of Personality Traits and Job Satisfaction in Surgeons: A Correlational Study	Muhammad Wajih Uddin Butt, Rahila Yasmeen, Manya Tahir	192
ABOUT JIIMC		197
INSTRUCTIONS FOR AUTHORS		201

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EDITORIAL

Gift Authorship: An Unethical Practice in Medical Writing

Ishtiaq Ahmed

"I have often noticed that a bribe has that effect it changes a relation. The man who offers a bribe gives away a little of his own importance" (dGraham Greene).

The Gift authorship is defined as "co-authorship awarded to a person who has not contributed significantly to the study."¹ According to International Committee of Medical Journal Editors (ICJME), authorship criteria guidelines, an "author" is generally considered to be someone who has made a substantive intellectual contributions to a published study, including the conceptualization, acquisition, analysis of data, drafting of the manuscript and approval of the manuscript to be published.² But these guidelines are not accepted or followed by all journals universally. Instead of ICJME author ship criteria, some of the journals has started using contributor lists, showing contribution or role of each person in place of or in addition to traditional lists of authors.³

Authorship is considered one of the most imperative aspect of the research which recognizes the research credit and is crucial for clinician because it is the primary criterion to judge their professional progression and output.^{4,5} Secondly, the entire departmental or institutional efficiency is also judged on their publication record.^{3,4} Due to this, the authorship list is a key information regarding their contribution in research performed and it is considered very important because incorrect information may award credit to undeserving person. Moreover, if a clinician or scientists are giving false information's about contribution in research project or publication than how one should expect him to be any more honest about his findings or results?

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The authorship assignment is a candid decision which is usually troubled by many issues in all research disciplines. During manuscript writing, the principal authors should decide that who will qualify as an author and who will be recognized as collaborators.³ There are several possible reasons for this unethical or malpractice in assigning gift authorship. The two main conditions which affect the solvency of authorship list are award of "gift or honorary" authorship and "ghost" authors i.e. exclusion from manuscript.^{3,6} In first case usually these are the personals included unfairly who are the respected authorities of the institution or belong to department or unit and their inclusion can give more credibility or weightage to the research even if they have no participation in the work.

They usually appear unfairly as an author in all publications generated by their department or institution and get unjustified recognition and material benefit from this unethical assignment. The second type i.e. ghost authors who really participated but they were considered prudent to be excluded because they have obvious conflict of interest which could affect the intent and credibility of the manuscript.⁷ We should view the publication delinquencies as a range of felonies like pressurizing on gift authorship (e.g. as a departmental head) or neglecting a justified junior researcher from authorship is only a one step away from misappropriating results of a subordinate researches and thus committing a crime equivalent to plagiarism. Moreover, inappropriate authorship practices like demand for gift author usually set a bad tradition which may likely to harm the associations between team fellows. The community of scholars suffers when a person is given credit for the work which is not his own, or he has no contribution or credit in shaping the ideas, outcomes, or the authorship is given to a person who was not involved integrally in generation, description, implementation and description of the idea in research work. The reasons for this misconduct have been speculated as recognition need, promotion pressure, tenure issues, poor mentoring and

financial conflict of interest.⁸ Among different reasons why this gift authorship is regarded unethical are firstly, a not genuinely earned authorship may signify the gifted author's expertise falsely. Secondly, gifted author is supposed as being more professional and skilled as compared to his peers. Thirdly, this unethical contribution, gives biased professional advantage to this person over his associates. Finally, a fabricated competency level is to be perceived about this individual and may be expected to achieve goals or tasks which may be outside his competencies and expertise.⁹

Why we should be worried about proper authorship nomination? It is argued that authorship abuse is a victimless crime having no impact on scientific growth or reliability of medical literature. Authorship of a scientific paper matters a lot because the whole research and publication process relies on trust. The anecdotal evidence shows that the person who flouts authorship conventions can also pledge other types of publication or research related misconduct and this authorship abuse is not a victimless corruption.⁴ In academic institutes, the promotion, job contract and remuneration are mainly influenced by the publications volume especially in the peer reviewed journals. The competences and expertise of the faculty is usually presumed on the basis high volume of publications. Awarding honorary authorship to a published work is a misconduct which is dishonest and threatens the foundational assumptions on which a community of scholars operates.²

In literature review, a self-administered, web-based published survey shows that among staggering total of 50%, the 39% of manuscripts has honorary, 9% has ghost and 2% are having both types of authorship.¹⁰ Bates and colleagues compared the authorship criteria and disclosure of contributions from author contribution forms of three medical journals and analyzed according to authorship criteria of ICMJE and observed that honorary authors varied in different journal, reaching up to 60% in the *Annals of Internal Medicine* to a low of 4% in *JAMA*.⁹ Malički and colleagues studied that how authors describe their contribution to the paper submitted to the journal with reference to ICMJE authorship criteria and reported that only 15.6% has correctly or clearly declared their contribution according to ICMJE

criteria.¹¹

The problems regarding level of participation which merits authorship remains vague. The editors are usually unable to arbitrate over authorship disputes because it requires detailed and local knowledge of the institute where manuscript was produced. However, the institutions could play a better role in enforcing and setting up the authorship policies. Disputes could be minimized, if authorship criteria were mutually agreed in writing, between all participants' at the beginning of research project.

To me the authorship in medical writing is very important ethical concern which should be emphasized to the researchers and especially postgraduates. In my view this culture of "Publish or Perish" is mainly responsible for increasing trend in unethical research, medical writing or practice of plagiarism. This also leads to ethical issue in authorship, like order, gift or ghost authorship issues. In my observation and as reported in literature too, the gift authorship practice prevalent widely and on increase in recent years. The ICMJE (International Committee of Medical Journal Editors) has given clear and specific guidelines regarding authorship criteria which are followed by majority of medical journals.¹² According to this, contributors who failed to meet ICMJE criteria should be refrained from authorship but can be listed in acknowledgment section. Among different possible reasons to award gift authorship, the commonest may be that the junior investigators often feel pressure in assigning authorship to their senior co-workers or to the seniors who might have significant role in shaping their future career. Secondly, the junior academics are of impression that addition of senior colleagues as co-author will enhance the chances of publication. Moreover, senior researchers sometime may assign gift authorship to give an impression of collaboration or good working relations or as a compensation for nepotisms. Regardless of justification, this unethical practice of assigning gift authorship is deplorable for academic publications. The authorship should not be assigned or presumed as a veracious just on the basis of status or on association with researches or without a substantial contribution to the research project. In my view, this behavior from senior colleagues shows a sense of superiority and the believe that the rules merely don't apply to oneself, presumably because

one is exclusive and merits special treatment. Claiming off concepts and experiences as one's own, when they are not, and declining to recognize, in acknowledge or authorship or how others shape one's work and ideas is just simply deceitful and "alarming.

In conclusion, gift authorship practice should be strongly discouraged and condemned in medical writing. The authorship credit and order should be based on the relative scholarly abilities and professional contributions of the collaborators.

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ORIGINAL ARTICLE

Outcome of Laparoscopic Cholecystectomy in Patients of Acute CholecystitisS H Waqar¹, Muhammad Tariq Abdullah², Sajid Ali Shah³, Zafar Iqbal Malik⁴, Fatima Shahzad⁵**ABSTRACT****Objective:** To assess the outcome of laparoscopic cholecystectomy (LC) in the treatment of acute cholecystitis.**Study Design:** Quasi experimental study.**Place and Duration of Study:** The study was conducted at Surgical Unit I, Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad from 1st Jan 2013 to 31st Dec 2018.**Materials and Methods:** All those patients who reported within 72 hours of onset of symptoms of acute calculus cholecystitis were included. Patients of acute pancreatitis, choledocholithiasis, with comorbid and previous abdominal surgery were excluded. Three port LC was performed in patients of acute cholecystitis after diagnosis by consultant skilled surgeon. Data were collected in a proforma that included demographics of the patient, operative findings, operating time, intra- or post-operative complications and duration of hospital stay. Data was collected and SPSS version 20 was used for analysis.**Results:** Total 143 patients of acute calculous cholecystitis were studied with 38 males and 105 females. The mean age of patients was 46.23 years ranged from 22 to 76 years. The mean operative time was 68.1 ± 25.31 minutes with conversion rate of 2.1%. The overall rate of complication was 24.5 per cent and no serious bile duct injury was noted in any patient. Bleeding (5.6%) and biliary injury (2.1%) were intraoperative complications. Port site infection (6.3%), chest infection (3.5%) and biliary leak (2.8%) were major postoperative complications. The mean total hospital stay was 4.16 (3–8 days).**Conclusion:** Laparoscopic Cholecystectomy can be performed safely in patients with acute calculous cholecystitis within 72 hours of the onset of symptoms.**Key Words:** *Acute Cholecystitis, Biliary injury, Cholelithiasis, Laparoscopic Cholecystectomy, Post site infection.***Introduction**

Gall stone disease has a worldwide prevalence of 10 – 15% and around 20 percent of patients with cholelithiasis present with acute calculus cholecystitis.¹ Laparoscopic cholecystectomy (LC) has been accepted as the gold standard in treating chronic symptomatic cholecystitis calculus since 1992.² However LC was not previously considered as a preferred treatment in patients with acute cholecystitis. Conservative management was done followed by elective cholecystectomy after 6 – 8 weeks of interval time. Surgeons had concerns regarding increased complication rate and high chances of conversion. Initially laparoscopic

cholecystectomy was performed in selected cases, but with advances in instrumentation, improved visualization due to new cameras, increased knowledge of the hepato-biliary anatomy and improved surgical skills, surgeons began performing laparoscopic cholecystectomy even in acute cholecystitis, which was initially considered a relative contraindication.³

LC for the surgical treatment of patients with acute cholecystitis remains debatable,^{4, 5} in particular the timing of LC with respect to inflammation, oedema and Calot's triangle adhesions. More complications like excessive bleeding, increased chance of common bile duct injury and conversion are known to be associated with LC for the treatment of acute cholecystitis.⁶ Nevertheless, some surgeons recommended early LC as preferred treatment for acute cholecystitis, with increased experience and improvement of the instruments.⁷ Several randomized controlled trials Comparison of early LC (performed within 7 days of symptoms onset) with delayed LC (usually performed 4 to 6 weeks after symptoms onset) reported benefits with early LC of

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shorter hospital stay, decreased cost and same level of clinical safety with no major morbidity or mortality discrepancy.⁸ However sample size of the trials was not big except Gutt et al who recently reported a randomized controlled multicenter trial of 618 patients.⁹ With this emerging supportive data, still only a minority of surgeons are performing early LC in patients with acute cholecystitis.

Once the surgeons had experience in laparoscopic surgery, early LC for acute cholecystitis in the western countries became popular in the 1990's. Tokyo Guidelines 2018 (TG13) of Japanese Society of Hepato-Biliary-Pancreatic Surgery stated that the ideal management for acute cholecystitis due to cholelithiasis is early LC, mainly before 72 h of the symptom onset.¹⁰ Few studies showed that urgent LC should be the first choice therapy for AC in patients who are fit for operative intervention.^{11,12}

The purpose of this study is to evaluate the surgical outcomes of LC for acute calculous cholecystitis within 72 h of symptom onset, as this subject is less addressed in our local setup. Keeping in consideration the results of recent research favouring early LC in acute cholecystitis, this trial is planned with the purpose of evaluating the outcome of LC in patients with acute cholecystitis. The objective of the study is to assess the outcome of LC in the treatment of acute cholecystitis in terms of difficulty of procedure, operative time, duration of hospital stay and incidence of complications.

Materials and Methods

This interventional Quasi experimental study was conducted in Surgical Unit I, department of General Surgery, PIMS, Islamabad from 1st Jan 2013 to 31st Dec 2018. Sample size of 143 patients with acute cholecystitis due to cholelithiasis was calculated by using WHO formula taking power of study = 80 and selected by convenient sampling. Study was conducted after taking approval from hospital ethical committee. Patients were included for inclusion after having written informed consent.

Patients who presented within 72 hours of symptoms of acute cholecystitis in emergency department were included in the study. Diagnosis of acute calculus cholelithiasis was made by either senior postgraduate, senior registrar or assistant professor using clinical, laboratory and radiological findings. Right hypochondrium tenderness with

positive Murphy's sign, leukocytosis, oedematous distended and/or thickened gall bladder, presence of stones and pericholecystic fluid on ultrasound examination were the criteria considered for acute cholecystitis. Patients with choledocholithiasis, previous abdominal surgery, acute pancreatitis and comorbid like hypertension, heart disease, diabetes were excluded from the study.

Patients underwent LC on first available list within 72 hours by consultant surgeon skilled in laparoscopy and was performed using three ports. The study parameters in terms of difficulty in dissection during surgery, operating time, intraoperative and postop complications, postoperative hospital stay, and need to convert to open cholecystectomy were studied.

Data were collected and entered in a pre-designed proforma that included demographics of the patient, operative findings, operative time, intra- or post-operative complications and hospital duration. The Social Sciences Statistical Package (SPSS version 20) was used for the entry and analysis of the collected data. Descriptive statistics for both qualitative and quantitative data was determined. The mean and standard deviation was determined for quantitative factors, such as age and gender. We estimated the frequency and percentages of qualitative data such as gender, difficulties in dissection and the need for open surgery conversion.

Results

Among 143 patients with acute calculous cholecystitis, 38 were males and 105 were females with a ratio of males and females of 1:3.1. The mean age of patients was 46.23 years, ranged from 22 to 76 years. Majority of patients belonged to fourth and fifth decade. Patients' demographics and preoperative clinical data is presented in table I. Ultrasound findings are shown in table II.

The mean operative time was 68.1 ± 25.31 minutes. Laparoscopy was successful in 140 cases, and three cases were converted into open cholecystectomy. The reasons for conversion were unclear and distorted anatomy of Calot's triangle due to thick dense adhesions, edema and exudates, bile leakage from cystic duct with suspicion of injury to common bile duct, and unexplained bleeding. Three patients had biliary injury, two to common hepatic duct and one to accessory duct in gall bladder fossa, during surgery and were managed preoperatively.

Operative and postoperative data was shown in table III.

There was no death in this study. The overall complication rate was 24.5 per cent and no major bile duct injury occurred in any patient.

Postoperative pain was experienced with variable degree of intensity. Visual analog scale (VAS) was used to measure pain intensities. 81 (56.6%) patients had mild pain, 54 (37.8%) had moderate pain, and eight (5.6%) had severe pain as calculated by VAS. The average duration of hospital stay was 4.16 (3–8 days).

Table I: Patient's Demographics and Preoperative Clinical Data (N=143)

Data	Frequency	Percentage/Range
Age (years)	43.26 ± 11.28	22 – 76
Gender		
Male	38	26.5
Female	105	73.4
Pain		
Pain right hypochondrium	131	91.6
Epigastric pain	106	74.1
Referred pain	117	81.8
Nausea and vomiting	124	86.7
Positive Murphy's Sign	136	95
Palpable tender mass	23	16

Table II: Pre-Operative Ultrasound Findings

Findings	Frequency	Percentage
Thick wall gall bladder	121	84.6
No of stones		
Single	24	17
Multiple	113	79
Sludge	06	04
Pericholecystic fluid	101	70.6
Empyema gall bladder	07	4.9
Mirizzi's syndrome	03	2.1

Table III: Operative and Post-Operative Data (n=143)

Data	Frequency	Percentage / Range
Operative time (min)	68.1 ± 25.31	35 – 116
Intraoperative complications		
Bleeding	08	5.6
Biliary injury	03	2.1
Conversion to open technique	03	2.1

Drain		
Patients with drain	89	62.2
Duration	1.18 ± 2.9	1 – 4
Postoperative complications		
Biliary leak	04	2.8
Port site infection	09	6.3
Chest infection	05	3.5
Wound haematoma	02	1.4
Prolonged ileus	04	2.8
Hospital stay (days)	4.16 ± 1.76	3 – 8

Discussion

The application and timing of LC in patients of acute cholecystitis is still controversial, despite of guidelines published that advocate early LC during same hospital admission.¹³ Recently, few studies indicate that LC is feasible and considered safe for acute cholecystitis with various complications and conversion rates.^{14,16} But are these complications and conversions appropriate to surgeons and especially patients who are at the end of suffering? Therefore, further studies are required to obtain definitive results. With this background and intent, we studied the outcome of LC in acute cholecystitis as well as evaluating feasibility and safety in our local setting.

Mean age of patients in this study was 43.26 ± 11.28 (22 – 76 years), which is in consistent with the regional studies^{8,17} but less than the European studies (58 years).^{18,19}

In the present study, the mean operating time was 68.1min (35 – 116) that is comparable to other studies.^{2,20} we started LC in patients of acute cholecystitis after many years of experience of LC in cholelithiasis; so less operative time is possibly due to increase in skills and gaining more confidence. Jarrar M S et al stated that the length of the operation for delayed LC group was significantly longer than for the early LC group (97 minutes versus 82.17 minutes, p=0.003).²¹

LC was successfully completed in 140 patients and only three cases were converted to open cholecystectomy. This conversion rate of 2.1% is in consistent with Rehman et al²² (2.4%) and Abdelkader M et al¹ (2%) but less than reported by Farooq A et al² (5%). Reasons for conversion to open were difficult anatomy and bleeding. The inflammation associated with acute cholecystitis results in an oedematous plane around the gall bladder, which promotes the dissection. This feature was observed in almost all cases therefore,

dissection in majority of these cases was easy, associated with lesser needs to convert to open cholecystectomy. The ease of dissection also resulted lesser mean operative time and low morbidity. The patients had lesser severity of postoperative pain and nausea/vomiting episodes. Laparoscopic cholecystectomy is more likely to be successful within the 72 hours following the onset of symptoms and operation in the next available elective list. This approach is associated with lesser incidence of major complications.²³ We agree that several main technical aspects need to be taken into account when conducting laparoscopic surgery for acute cholecystitis. We used some modifications to handle these technical difficulties, like decompression of the gall bladder, use of retrieval bag, subhepatic drain and widening of epigastric wound.

The overall complication rate was 24.5% that is comparable to rate reported by other researchers.^{16,18} Intraoperative two patients with bleeding and one with bile duct injury were converted to open cholecystectomy.

Limitations of the study are less sample size and single centered study. Future studies are recommended as randomized control trials for outcome of early versus late LC in patients of acute calculus cholecystitis to strengthen the evidence of beneficial effect of LC in acute cholecystitis.

In summary, recent literature favors laparoscopic cholecystectomy in acute cholecystitis, although the timing of operation is debatable. Evidence suggests that LC within 72 hours of onset of symptoms is both safe and cost effective.²⁴ Patients with acute cholecystitis who are discharged without undergoing surgery may have a high risk of presenting with gall stone complications. So early LC in patients of acute cholecystitis is a favorable option in experienced hands.

Conclusion

Laparoscopic Cholecystectomy can be performed safely in patients with acute calculus cholecystitis in expert hands and should be done within 72 hours of the onset of symptoms. It is more effective in terms of patient safety, less operative time, and less duration of hospital stay without increase in morbidity or mortality.

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ORIGINAL ARTICLE

Serum IgE Levels and Total Eosinophil Count in Allergic Rhinitis

Mirza Khizar Hameed¹, Atif Sharif², Mahum Khizar³

ABSTRACT

Objective: To determine the significance of Serum IgE Level and Total Eosinophil Count in establishing diagnosis of Allergic Rhinitis.

Study Design: A descriptive study.

Place and Duration of Study: ENT Department Islamabad Medical Complex, from December 2016 to December 2018.

Materials and Methods: A total of 200 patients diagnosed clinically as 'Allergic Rhinitis', were selected by convenient sampling. Clinical diagnosis was made on the basis of history and complete ENT examination and findings recorded. Detailed history for intermittent or persistent symptoms of nasal congestion, watery rhinorrhea, nasal itching with sneezing and ocular symptoms as paroxysmal redness, itching and watering of eyes was taken. Detailed physical examination including complete ENT examination carried out and a record of presence of post nasal drip, hypertrophic pale or bluish boggy mucosa covered with thin secretion was made. Blood samples were taken for Serum IgE Levels and Total Eosinophil Count. The data was analyzed for frequencies by SPSS 24. Since the data was not parametric, non-parametric tests were applied.

Results: Gender distribution showed a male predominance with males 58.5% (117) and females 41.5% (83). Most of the patients were among the age group 3rd to 5th decades. Serum IgE was raised in 152 (76%) patients, while Total Eosinophil Counts were raised in 104 (52%) patients. Serum IgE levels were found significant as $p \leq 0.50$, while Total Eosinophil Count was not found significant as $p \geq 0.50$.

Conclusion: Serum IgE Levels and Total Eosinophil Counts are good reflector of Allergic Rhinitis. Although Serum IgE levels appear to be very significant in diagnosing Allergic Rhinitis, Total Eosinophil Count has yet to be established as a significant diagnostic tool. Being expensive tests, only Serum IgE levels should be advised in patients with suspicion of Allergic Rhinitis, and Total Eosinophil Count should not be advised routinely.

Key Words: Allergic Rhinitis, Serum IgE Levels, Total Eosinophil Count.

Introduction

Rhinitis is defined as inflammation of the nasal mucosa resulting in nasal congestion, rhinorrhea, itching of the nasal mucosa, and sneezing. It may occur as a result of infection, allergy, vasomotor imbalance (NARES), and may be drug induced or idiopathic.

The term 'Allergy' was first introduced by Clemens von Pirquet in 1906.¹ Allergic Rhinitis is defined as IgE mediated inflammation of the nasal mucosa.² It is the

most common cause of chronic rhinitis and affects 10-20 % of the population.³ Previously it was considered as a localized disease but now it has been acknowledged as a part of a systemic disorder. The close functional and immunological relationship between the upper and lower respiratory tracts, on provocation, not only causes inflammation in the upper respiratory tract but also involves the lower respiratory tract. Therefore, mostly it accompanies allergic asthma and eczema.⁴ In an atopic individual, whenever the nasal mucosa comes in contact with certain allergens, the inflammatory cells including the mast cells, B cells, T cells, eosinophils and macrophages infiltrate the nasal mucosa. The T cells release the cytokines that result in production of the IgE by the plasma cells.⁵ The IgE binds with the mast cells resulting in release of the inflammatory mediators like histamine and leukotrienes, that are responsible for the inflammatory reaction causing vascular dilatation, increased vascular permeability,

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watery rhinorrhea, mucus secretion and smooth muscle contraction.⁶ In the next stage, these mediators induce a further cellular inflammatory response, the late phase response, responsible for recurrent nasal congestion.⁷

Allergic rhinitis may be divided into two types; intermittent or persistent, as previously described as seasonal and perennial.⁸ On the basis of severity it may be divided into mild, moderate and severe forms for management purposes. Traditionally the diagnosis is clinical, on the basis of history and physical examination. History of nasal congestion, itching, and sneezing, watery rhinorrhea, along with itchiness, redness and watering of eyes is fairly common.⁹ In most of the cases there is an association with asthma. There may be a positive family history. Certain environmental factors as dust, pollens, humidity, fumes, exposure to furred animals, tobacco, fumes or intake of drugs as beta blockers, NSAIDs, aspirin, ACE inhibitors, certain hormones may be the triggering factors.¹⁰ Physical examination may reveal a transverse nasal crease on the dorsum (allergic salute), dark circles around the eyes (allergic shiners), turbinate hypertrophy with pale or bluish boggy mucosa covered by thin watery secretion, nasal polyps, post nasal drip, prominent lymphoid follicles on posterior pharyngeal wall (cobble stoning), adeno-tonsillar hypertrophy, OME, wheeze, skin eczema etc.

Besides the history and physical examination, certain Allergic Tests are also carried out to reach the diagnosis, as the clinical features may appear similar in other types of non-infective rhinitis. These tests include skin prick tests for specific allergens. Allergen specific IgE tests (RASTs/ ELISA) are considered equally effective in reaching the diagnosis as they indicate atopy, but are considered a bit expensive.¹¹ Since there is an established association of eosinophilia with allergic respiratory disease, nasal smears for eosinophilia and systemic eosinophilia are also considered an important investigative tool for the diagnosis of allergic rhinitis.¹²

Although Allergic Rhinitis badly affects the quality of life of the patients, most of them do not appreciate this and do not seek treatment. Even the primary physicians fail to diagnose these patients hence some sort of screening tests need to be carried out in such patients with such a longstanding history.¹³

So far we have not seen any study that could show how accurate is the diagnosis of Allergic Rhinitis made on the basis of history and physical examination.¹⁴ Moreover, there are not many studies on the diagnosis of Allergic Rhinitis. As most of these patients are managed on the basis of clinical diagnosis, and are subjected to a life-long anti allergic treatment, a need was felt that this long term treatment should be advised evidence based, after confirming the diagnosis on the basis of laboratory tests. This was the rationale behind the present study with an objective to determine the significance of Serum IgE Level and Total Eosinophil Count in establishing diagnosis of Allergic Rhinitis.

Materials and Methods

A descriptive study was carried out in Islamabad Medical Complex ENT Department from December 2016 to December 2018. Approval of Hospital Ethical Committee for this study was taken beforehand. A total of 200 patients diagnosed clinically as 'Allergic Rhinitis', were selected by convenient sampling after taking informed consent from them for this study. Clinical diagnosis was made on the basis of history and complete ENT examination and findings recorded on a preformed Performa. Detailed history for intermittent or persistent symptoms of nasal congestion, watery rhinorrhea, nasal itching with sneezing and ocular symptoms as paroxysmal redness, itching and watering of eyes was taken. Detailed physical examination including complete ENT examination carried out and a record of presence of post nasal drip, hypertrophic pale or bluish boggy mucosa covered with thin secretion was made.

Inclusion criteria comprised of at least three of the following symptoms: nasal congestion, watery rhinorrhea, itching of nose with sneezing, post nasal drip, whether intermittently or persistently, for at least two years. Presence of turbinate hypertrophy with pale or bluish boggy mucosa covered by thin secretions was recorded. Exclusion criteria included any active infection or trauma of respiratory tract, local use of steroid nasal spray or drops, intake of systemic steroids, antihistamine, montelukast or mast cell stabilizers in past one month, age below 12 years or above seventy years, and pregnancy.

Patients were called one month after cessation of any local or systemic medicine intake for their

symptoms. Blood samples were taken for Serum IgE Levels and Total Eosinophil Count. Serum IgE levels were measured by chemi-luminescent micro particle immunoassay (CMIA) Cobas Methodology, while Total Eosinophil Counts were measured by Cell Dyn Ruby Methodology: MAPSS.

The data were analyzed for frequencies by SPSS 24. Since the data was not parametric, non-parametric tests were applied.

Results

In our study the Gender distribution shows a male predominance with males 58.5% (117) and females 41.5% (83) as shown in Figure: 1

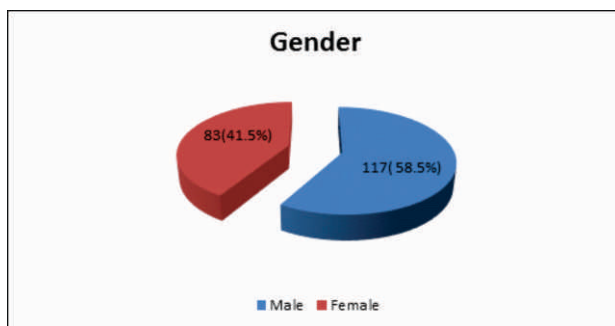


Fig 1: Gender Distribution (n= 200)

Most of the patients were among the age group 3rd to 5th decade as shown in the Figure: 2.

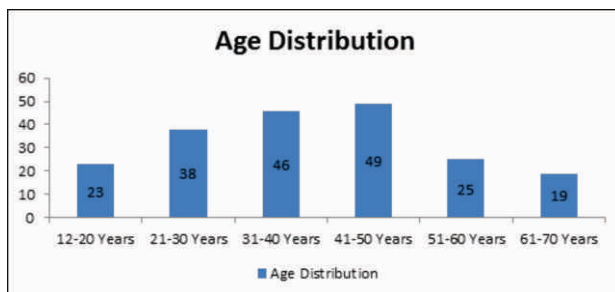


Fig 2: Age Distribution (n= 200)

Serum IgE was raised in 152 (76%) patients, while Total Eosinophil Counts were raised in 104 (52%) patients as given in Figure 3.

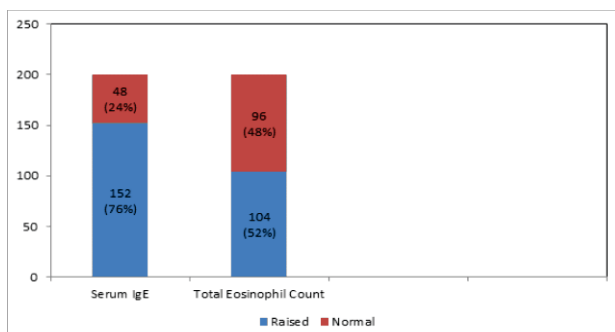


Fig 3: Serum IgE Level & Total Eosinophil Count (n= 200)

One-sample Binomial Test (Non parametric) shows Significance level to be 0.50. Serum IgE levels were found significant as $p \leq 0.50$, while Total Eosinophil Count was not found significant as $p \geq 0.50$.

Discussion

Allergic Rhinitis is one of the commonest chronic disorders that affect the quality of life badly.¹⁵ Though it is quite common with an incidence of 10-20% of population suffering from it, the diagnosis presents a significant challenge due to similarity of its clinical picture with other forms of non-infective rhinitis.¹⁶

Our study shows gender distribution with a male predominance. Similarly a study by Jagadeeshwar et al (2001) also shows a male predominance in patients with Allergic Rhinitis.¹⁷ Jung et al (2011) also show a male predominance among patients with Allergic Rhinitis.¹⁸ But in another study carried out by Khan (2013) shows a female predominance in patients with Allergic Rhinitis.¹⁹ But our study results can be explained as convenience sampling was done. In our study, the incidence seems to be more in patients of 3rd to 5th decades.²⁰ Wheatley & Togias (2015) show it to peak its prevalence in the 3rd and 4th decades.²¹ Muddaiah & Venkatarangaih (2020) also show an increased incidence in age group 3rd to 4th decades. Droste et al (1996) also shows an increased incidence in the 5th decade with a male predominance.²² Although the patients were selected on the basis of convenience sampling, the disease appears to have similar age incidence even in other studies.

Being an allergic disorder, Allergic Rhinitis has a well-established association with eosinophils. In our study, raised Eosinophil count has been observed in only 52% of the patients, and thus it fails to appear as a significant indicator of Allergic Rhinitis. Similar to our observations, Patel & Nagpal (2014) also observe that although there is a strong correlation with nasal smear eosinophilia but Allergic Rhinitis has absolutely no correlation with systemic eosinophilia.²³ But another study by Mostafa et al (2020) reveals that the Absolute Eosinophil Count was positive in 70.4% patients with Allergic Rhinitis, so it is considered a good indicator of the disease.²⁴ Baldacci et al (2001) also consider Serum Eosinophil Count as an important though less used investigation for monitoring the clinical course of AR.²⁵ Another

study by Prabakaran et al (2018) shows that in case of only nasal symptoms, the Total Eosinophil Counts do not go beyond normal range, but when nasal symptoms are associated with respiratory symptoms then Serum Eosinophil levels are found elevated.²⁶ In another study, Sharma et al (2019) in a study claim Serum Eosinophil Counts and Serum IgE Levels as reliable investigation tools for the diagnosis of Allergic Rhinitis.²⁷ Interestingly, in a study by Poznanovic & Kingdom (2007) a correlation between raised eosinophil count and mucosal sinus disease on CT scan has been established while no correlation was found with raised IgE levels.²⁸ This finding points towards significance of raised eosinophil counts during an active sinus disease. In yet another study, Koh et al (2013) also showed a positive relationship between allergic disease and Serum IgE levels as well as Total Eosinophil Count.²⁹ On these various findings we can infer that a High Eosinophil Count may be present during an active disease, otherwise it may not be very significant in diagnosing Allergic Rhinitis. Our study shows Serum IgE levels to be raised in 76% of the patients, which is very similar to the study by Vijayan et al (2019), in which they show a rise of Serum IgE in 80% of the patients.³⁰ In a study by Chaudhary et al (2017) S IgE levels were found to be raised in 100% of patients.² Another study by Chowdary et al (2003) also reveals raised S IgE in acute phase of Allergic Rhinitis, but Serum Eosinophils are not raised at all, although they recommend that S IgE and Serum Eosinophil Counts should be carried out in all the patients with suspicion of Allergic Rhinitis.¹¹ Satwani et al (2009) also claim S IgE to be a good predictor of Allergy especially in children.³¹ Jung et al (2011) also claim Total Serum IgE as a strong predictor of Allergic Rhinitis.¹⁸ Cakanlar et al (2015) also shows Total IgE as an important indicator of Allergic Rhinitis.³² Hameed et al (2020) consider it obligatory to carry out Serum IgE in any patient with a clinical diagnosis of an allergic disorder.³³ In view of these studies, we can easily claim Serum IgE to be a significant indicator of Allergic Rhinitis.

Traditionally, the diagnosis of Allergic Rhinitis is made on the basis of history and clinical examination, and on the basis of response to empirical treatment.²⁴ Even the presence of specific IgE just points towards sensitization even among

asymptomatic people.³⁴ With all this evidence, we can infer that there is no single laboratory test that can replace clinical diagnosis of Allergic Rhinitis or considered superior to it and the diagnosis has to be made while considering both the clinical and laboratory based evidence.¹⁸ In the light of above evidence we can recommend that in the presence of positive clinical evidence, the patients should undergo Serum IgE assays as it is positive in 76% of the patients. And only those patients in whom Serum IgE levels are raised, should be recommended long term anti allergic treatment.

Since the scope of our study is limited, carried on only 200 patients, it is further recommended that more studies need to be carried out at larger scales to find out a suitable and cost effective evidence based strategy and guidelines be made at national level for diagnosis of Allergic Rhinitis in patients needing long term anti-allergic treatment.

Conclusion

Serum IgE Levels and Total Eosinophil Counts are a good reflector of the disease (Allergic Rhinitis). Although Serum IgE levels appear to be very significant in diagnosing Allergic Rhinitis, Total Eosinophil Count has yet to be established as a significant diagnostic tool. Being expensive tests, only Serum IgE levels should be advised in patients with clinical diagnosis of Allergic Rhinitis before advising long term anti allergic treatment.

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ORIGINAL ARTICLE

Immunization Status of Children: A Study at Shaikh Khalifa Bin Zayed Al-Nahyan Hospital Rawalakot Azad Kashmir

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ABSTRACT

Objective: To know the status of vaccination among children via Expanded Program of Immunization and its relation with maternal education and awareness of mothers about vaccination.

Study Design: Observational descriptive study.

Place and Duration of Study: This study was conducted at Shaikh Khalifa Bin Zayed Al-Nahyan Hospital Rawalakot from 1st January 2019 to 30th June 2019.

Materials and Methods: Children less than age 05 years, brought to the pediatric outpatient department were included in the study by consecutive sampling. The vaccination status of these subjects was noted and confirmed by vaccination card issued to them by the local health authority. A self-designed Proforma was filled by interviewing the mothers; which included detail about mother's and child age, address, socioeconomic status, education of mother, awareness of mothers regarding preventive role of vaccination and status of vaccination of child. Data was entered on SPSS version 20 and statistical analysis was done.

Results: A total of 397 mothers responded. Out of these 82.9% mothers were educated and 17.1% were uneducated, 67.2% were aware about the preventive role of vaccination and 32.8% were unaware. Study showed that 79.3 % children were fully and 1.5% were partially vaccinated, whereas 19.1 % were unvaccinated. Vaccination rate was 85% among children where mothers were aware about the preventive role of vaccination, as compared to 67.7% children of unaware mothers ($p < 0.0001$). Statistically no significant association was found between maternal education and status of vaccination ($p = 0.072$).

Conclusion: Vaccination status of children is not satisfactory in Azad Kashmir. The status of vaccination among the children is directly related to the awareness of mothers about the preventive role of vaccination.

Key Words: Awareness, Education, Immunization, Mothers.

Introduction

In Pakistan the infant mortality rate is about 60/1000 live births and neonatal mortality is 40/1000 live births.¹ However, as compared to Pakistan the infant mortality rate in Azad Kashmir is 58/1000 live births.² Many deaths under 05 years of age can be prevented by effective vaccination.³ There is significant reduction in mortality worldwide among children less than 5 year of age, from 69.4 per 1000 live births to 38.4 per 1000 live births between 2000 and 2016. One of the factors causing this reduction in child mortality is vaccination of children.⁴ About 3.6% reduction per year was found in child mortality

globally since 2005 and vaccination was one reason.⁵

A complete course of vaccination leads to prevention of diphtheria, pertussis and tetanus not only in children but also in adults.⁶ Some vaccines used during pregnancy result in prevention of neonatal diseases. Tdap is used during pregnancy, which includes tetanus, diphtheria and pertussis vaccine.⁷ To vaccinate the children, the vaccines are provided by the government free of cost via expanded program of immunization (EPI) in Pakistan. Expanded program of immunization was started in 1978 against six common diseases; tuberculosis, poliomyelitis, measles, tetanus, pertussis and diphtheria. Later on Hepatitis B vaccine, Hib and pneumococcal vaccine were included in EPI in 2002 and 2009 respectively. Inactivated polio vaccine was added in 2015⁸ Rota virus vaccine also has been added to in 2017.⁹

Pakistan is among those countries where progress of vaccination is not according to the international standards, although vaccination has increased from 54% in 2012-2013 to 66% in 2017-2018.¹⁰ Coverage is

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not uniform throughout the country and for all diseases. Studies have shown that coverage is better in some areas as compared to others, same is true for different diseases.^{11,12,13,14} Many children are still either unvaccinated or under vaccinated in Pakistan.¹¹ The vaccine coverage in Azad Jammu and Kashmir is claimed 94 % by Government of Azad Kashmir² but no studies are available to confirm these statistics. Many factors affect vaccination, including maternal education and information about preventive role of vaccination.^{14,15} In many countries formal maternal education has shown a positive correlation in promoting immunization in children.¹⁵ We do not have enough data from Azad Kashmir about the exact status of vaccination in children and role of maternal education and information in vaccination. Therefore we conducted this study to know the status of vaccination among children visiting the Sheikh Khalifa Bin Zayed Hospital Rawalakot Azad Kashmir and its association with maternal education and awareness of mothers regarding role of vaccination in prevention of diseases.

Materials and Methods

This observational descriptive study was conducted at Department of pediatrics, Shaikh Khalifa Bin Zayed Al-Nahyan Hospital Rawalakot from 1st January 2019 to 30th June 2019. In this study 397 subjects were included by consecutive sampling. Informed verbal consent was taken from the mothers before enrollment. Ethical approval was taken from the hospital ethics committee before the start of study. Vaccination status of children less than age 05 years, brought to the pediatric outpatient department of Shaikh Khalifa Bin Zayed Al-Nahyan Teaching Hospital with different complaints was noted. The vaccination status of these subjects was confirmed by vaccination card issued to them by the local health authority. Mothers who were not sure about the status of vaccination of child were excluded from the study. A performa was designed which included mother's and child age, address, socioeconomic status, education of mother, awareness of mother about preventive role of vaccination and status of vaccination of child. The performa was filled by interviewing the mothers by the authors from pediatric department.

Data was entered on SPSS and statistical analysis was

done in SPSS for Windows, version 20. Means and standard deviations were calculated for quantitative variables like age of children. Frequencies were calculated for qualitative variables like gender, education, awareness of mothers, socio economic status and vaccination status. Chi square test was applied to see the relation between different factors and status of immunization. P value ≤ 0.05 was considered as significant.

Results

Total 397 mothers responded to our questionnaire. Out of these 83% (n=329) were educated and 17% (n=68) were uneducated, 67.2% (n=267) were aware about the preventive role of vaccination and 32.8% (n=130) were unaware, 56.4% (n=224) were from rural background and 43.6% (n=173) belonged to urban areas. As for as socioeconomic status was concerned, 62.7% (n=249) were from lower class, 36.8% (n=146) from middle class and only 0.5% (n=2) from upper class. Out of 397 children, 56.2% (n=223) were male and 43.8% (n=178) were female. Average age of children was 26 ± 6.17 months.

Vaccination status of children is shown in Table I. Association of maternal education and awareness of mothers about the preventive role of vaccination with the status of vaccination is shown in Table II.

Table I: Vaccination Status of Children (n=397)

Fully Vaccinated	Partially Vaccinated	Unvaccinated	Total
79.3% (n=315)	1.5% (n=6)	19.2 % (n=76)	397

Table II: Association of Maternal Education and Awareness of Mothers with the Vaccination Status of Children (n=397)

		Un Vaccinated	Partially Vaccinated	Fully Vaccinated	p value
Maternal Education	Uneducated	28% (n=19)	4.4% (n=3)	67.6% (n=46)	0.072
	Primary to matric	19% (n=17)	0	81% (n=73)	
	Matric and above	16.7% (n=40)	1.3% (n=3)	82% (n=196)	
Maternal Information Regarding Preventive Role of Vaccination	Yes	12.7% (n=34)	2.3% (n=6)	85% (n=227)	<0.0001
	No	32.3% (n=42)	0	67.7% (n=88)	

Discussion

Our study showed that only 79.3 % children were fully vaccinated. Vaccination coverage is less than

international standards. WHO recommends at least 90% national vaccination coverage and 80% in every district.¹³ We also concluded that awareness of mothers regarding the preventive role of vaccination is significantly associated with status of vaccination. No association was found between maternal education and vaccination status. Our study showed that 79.3% (n=315) children were completely vaccinated, whereas 19.1% (n=76) were unvaccinated. Our result does not match the results of 2017 census; it is shown that coverage is 94% in Azad Kashmir.² However it is close to immunization coverage in Pakistan which is 80 %.¹⁰ This vaccination coverage is less than the global targets of vaccination which should be > 90%.¹³ Many studies from Pakistan has shown much lower vaccination coverage as compared to our results.^{11,12,13,14} Vaccination coverage in Azad Kashmir is lower than other countries of South Asia.¹⁶ Comparing with developed world we are far behind, a study from china shows full immunization in 93% children.¹⁷

There are many factors which affect vaccination in children. These factors are maternal education and awareness of mothers about vaccination, political commitments of governments, socioeconomic setup, availability of vaccines, outreach population, low salaries of health workers, health workers home visits, lack of information about vaccines benefits and side effects of vaccine.^{15,18} Among these factors, maternal education is considered an important factor in promoting vaccination in children. The impact of education is highlighted in various studies in different parts of the world. In these studies education has shown a positive correlation in promoting vaccination.¹⁹ Education also increases vaccination indirectly by improving socioeconomic status.²⁰ Although 28% children of uneducated mothers were found unvaccinated as compared to 19% and 16.7% children of mothers having education below matric and above matric respectively in our study but statistical difference was not significant (p value= .072). This is in contrast with the above mentioned studies. This contrast may be due to difference in education standards, different geographical distribution and sampling technique. However, information received through different sources leading to awareness of mothers about the preventive role of vaccination from infections has

shown a positive correlation in increasing vaccination in our study. These results are comparable with studies done earlier.²¹ This study shows that mere education is not the only tool that will increase vaccination in children; it is the information regarding the preventive role of vaccination that helps. Mothers have leading role in increasing vaccination of their children. It will be more rewarding if mothers are educated about the disease preventing role of vaccines and consequences of not vaccinating their children.²² All available means of educating the mothers about the life saving and health promoting role of vaccines should be utilized. These include community, political and religious leader's involvement. Print, electronic and social media also should be used to achieve the target. These community and media campaigns should mobilize the society so that the vaccination of children becomes the mouth word of the society.^{23,24}

Our study had few limitations. It was single center study including children less than 5 year of age only. It was a hospital based study not community based. We also studied only two factors associated with vaccination status. Community based studies considering more factors are required in future.

Conclusion

Vaccination status of children is not satisfactory in Azad Kashmir. The status of vaccination among the children is directly related to the awareness of mothers about the preventive role of vaccination.

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ORIGINAL ARTICLE

Refractive Errors in Patients Attending DHQ Hospital Sargodha: A Cross-Sectional Study

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ABSTRACT

Objective: To determine the frequency of different refractive disorders in patients visiting DHQ hospital Sargodha.

Study Design: Cross sectional study.

Place and Duration of Study: Study was conducted at Department of Ophthalmology, DHQ. hospital Sargodha from 3rd February 2017 to 7th April 2017.

Materials and Methods: A total of 5764 patients attending ophthalmology department of DHQ hospital Sargodha were screened for refractive disorders by measuring visual acuity and carrying out pin-hole test. After this auto refraction (using Topcon Refractometer) and subjective refraction examination (trial and error method) were carried out. Retinoscopy was done in children, following which cycloplegic refraction was performed. The results of examination were recorded from hospital records and data analyzed using SPSS version 19. *P* value of <0.05 was taken as significant for chi square test.

Results: Among refractive disorders, hypermetropia (28.29%) was most prevalent followed by astigmatism (28.32%), myopia (21.76%) and presbyopia (21.63%). Females suffered more from refractive disorders (58.21%) as compared to men (41.79%). On the basis of age group, myopia was the most common disorder amongst children (2.44%), adolescent (4.67%) and early adulthood (9.81%) while presbyopia was most common in middle adulthood (17.23%) and late adulthood (2.38%).

Conclusion: Hypermetropia, astigmatism, myopia and presbyopia are common refractive disorders in population of Sargodha District of Punjab, Pakistan. Refractive disorders are more common among females. With the exception of myopia, these tend to occur more in older age groups.

Key Words: Astigmatism, Hypermetropia, Myopia, Presbyopia, Refractive Disorders.

Introduction

Refractive errors result because of inability of eye to focus light onto the retinal plane. This leads to the blurring of vision. Refractive errors are categorized into (i) Myopia (ii) Hypermetropia (iii) Presbyopia (iv) Astigmatism. Myopia results when light entering eye is focused in front of retina either on account of increased refractive power of eye or because of increased axial length of eyeball. Hypermetropia

occurs when light is focused behind retina. Again this can be because of decreased refractive power of eye or its reduced axial length. Presbyopia is an insufficiency of accommodation while astigmatism results when parallel rays of light entering eye fail to form a single focal point on retina.¹

WHO launched its first report on vision in 2019 in an effort to address the challenges posed by uncorrected refractive errors. A whopping 2.6 billion people are estimated to be myopic and 1.8 billion suffering from presbyopia. It is also estimated that 1 billion people suffer from vision impairment that could have been prevented or is yet to be addressed. 123.7 million, of these 1 billion people suffer from unaddressed refractive errors.² The costs of the coverage gap for uncorrected refractive disorders and cataract globally are estimated to be \$14.3 billion US dollar.² Lack of basic healthcare infrastructure further compounds problems faced by low income countries like Pakistan. While WHO report on vision and other global studies provide a

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rough estimate, these fail to highlight challenges faced at a local level and there is a need to supplement these with local level studies so as to get a better picture of the task at hand^{3,4,5}. Mapping of disease at district level will allow efficient distribution of limited health care resources. There is no record of a prior study on refractive disorders in Sargodha district. Addressing this scarcity of local level data and to highlight gender/age based variations in refractive disorders were the main aims of this study. Sargodha district, Punjab (Pakistan) was selected for this purpose. Sargodha district has an estimated population of 2.67 million as per 1998 census⁶ DHQ hospital Sargodha provides health care services to a large chunk of this population which made it an ideal place for conducting a study with the objective of determining the frequency of different refractive disorders in patients visiting the hospital.

Materials and Methods

This was a cross-sectional study conducted at department of ophthalmology, DHQ Sargodha from 3rd Feb 2017 to 7th April 2017. A total of 5,764 patients with refractive disorders visited the ophthalmology department during this period. The diagnosis of any of the refractive disorders was the inclusion criteria while Emmetropic individuals and those with squint were not included in the study. Permission was granted by the ethical review board of DHQ hospital Sargodha after reviewing the pilot study. On the basis of age, patients were classified as (I) Children (0-12yr) (II) Adolescence (13-19yr) (III) Early Adulthood (20-40yr) (IV) Middle Adulthood (41-65yr) (V) Late Adulthood (more than 65yr). Patients were informed about the nature of study and its significance. In a brief interview in with the patient their name, age, sex and address were inquired. Initially, visual acuity was determined and pin-hole test carried out by the medical officer in charge of refraction room. This was followed by auto refraction using Topcon Refractometer and subjective refraction examination (Trial and error method) by consultant ophthalmologist. Retinoscopy was carried out in Children (0-12yr), following which they underwent cycloplegic refraction. Myopia was defined as spherical equivalent values of less than -0.5 D, hypermetropia as greater than +0.5 D and emmetropia as spherical equivalent between -0.5 and +0.5 D. Cut off value of greater or equal to 0.25 D

in minus cylinder was used for astigmatism. The results of examination were recorded from hospital records and data analyzed using SPSS version 19. While performing Chi-square test *P*-value of <0.05 was taken as significant. Literature related to the study was sought using PubMed Health, Medline and manual google searches.

Results

A total of 5,764 patients were included in the study. The mean age and standard deviation of study subjects was 37.43 and 18.40 respectively. The overall age-range of study participant was 3-105 yr. A majority of patients presented with combination of refractive disorders rather than a single disorder. Table I shows distribution of different refractive disorders on the basis age and sex. Table II shows the distribution on the basis of gender (without taking age into consideration), while table III indicates distribution in different age groups (without taking gender into consideration).

Table I: Relative Proportion of Myopia, Hypermetropia, Astigmatism and Presbyopia in Different Age Groups

	MALE			
	Myopia	Hypermetropia	Presbyopia	Astigmatism
Children	1.18%	0.79%	0%	0.69%
Adolescence	2.11%	0.70%	0.04%	1.16%
Early Adulthood	4.90%	2.88%	0.64%	3.73%
Middle Adulthood	1.55%	5.45%	6.03%	5.69%
Late Adulthood	0.38%	1.10%	1.42%	1.35%

	FEMALE			
	Myopia	Hypermetropia	Presbyopia	Astigmatism
Children	1.26%	0.91%	0.01%	0.75%
Adolescence	2.56%	0.25%	0.02%	1.23%
Early Adulthood	4.91%	4.95%	1.31%	3.78%
Middle Adulthood	2.62%	10.48%	11.20%	8.98%
Late Adulthood	0.29%	0.78%	0.96%	0.96%

Table II: Gender Differences in Refractive Disorders

MALE			
Myopia	Hypermetropia	Presbyopia	Astigmatism
10.12%	10.92%	8.13%	12.62%

FEMALE			
Myopia	Hypermetropia	Presbyopia	Astigmatism
11.64%	17.37%	13.5%	15.7%

Females suffered more from all of the refractive disorders (58.21%) as compared to men (41.79%) and the difference was found to be significant. The difference between genders in hypermetropia was

most significant ($p<0.05$) followed by presbyopia, astigmatism and then myopia.

Table III shows distribution of different refractory errors in different age groups. Myopia was most prevalent in 'Early Adulthood'. Hypermetropia was relatively more prevalent in older age groups. A similar trend was seen with astigmatism. Presbyopia was found to be virtually nonexistent in early age with majority of cases being in 'Middle Adulthood' and 'Late Adulthood' categories.

Table III: Age Differences in Refractive Disorders

	Myopia	Hypermetropia	Presbyopia	Astigmatism
Children	2.44%	1.70%	0.01%	1.44%
Adolescence	4.67%	0.95%	0.06%	2.39%
Early Adulthood	9.81%	7.83%	1.95%	7.51%
Middle Adulthood	4.17%	15.93%	17.23%	14.67%
Late Adulthood	0.67%	1.88%	2.38%	2.31%

Discussion

The overall occurrence of refractive disorders was as following (I) Hypermetropia (28.29%) (II) Myopia (21.76%) (iii) Presbyopia (21.63%) (IV) Astigmatism (28.32%). Females suffered from all refractive disorders and this difference was statistically significant. Myopia was most prevalent in early adulthood while the rest of refractive disorders occurred more in older age groups. Earlier studies conducted in Pakistan show mixed results in terms of magnitude of different refractive disorders. A study conducted in rural population of Pakistan showed Hypermetropia to be most common, followed by myopia and astigmatism.⁷ The study shows prominent difference between myopia and Hypermetropia in terms of magnitude. However this trend is not seen in case of our which can be explained by the fact that Sargodha district is not yet fully developed and lies somewhere in a grey area between rural and urban classification. Other studies, such as on 3-22 yr old patients in rural areas of Paraguay and on pediatric patients in rural India^{8,9} indicate myopia as the most common refractive disorder which is consistent with our findings. A relationship between type of refractive disorder and the nature of area (Rural or Urban) might be there and requires further investigation. Hypermetropia was found to be most common refractive disorder in older age groups; this was reported by a number of studies. For instance, a study on European

population showed similar results.¹⁰ Work by Phillipa, Yanchun, et al in UK indicated hypermetropia as the most common refractive disorder in 40+ year old adults¹¹. Similar findings were reported by a study conducted in Mexico and Pakistan.^{7,12} Myopia on the contrary was the most common refractive disorder amongst younger age groups; a finding supported by multiple studies.^{11,13} While we found females to be suffering more from all refractive disorders, a detailed work on Indian pediatric patients by Ojha Sushil, et al shows similar findings for myopia {Girls (59.38%), Boys (40.62%)}, hypermetropia {Girls (84.21%), Boys (15.79%)} and astigmatism {Girls (69.52%), Boys (35.48%)}.⁹ On the contrary a study done in Europe found astigmatism more common in men and hypermetropia in women. No statistically significant difference was noted in case of myopia.¹⁰ Similarly a UK based study found hypermetropia to be more common in females but didn't report any similar differences with other refractive disorders¹¹. Female children were found to be suffering more from combined refractive errors as compared to male {OR: 1.2 and OR: 1.1 respectively} in India.¹⁴ It is worth noting that prevalence of refractive disorders amongst males and females shows a great deal of variation depending upon the geographical area in question. For instance, myopia was more common in girls, hypermetropia in boys and no association of astigmatism was reported with gender in Saudi Arabia¹⁵, while in South Africa¹⁶ myopia and astigmatism were more common in males whereas women suffered more from hypermetropia. This gender based variation in case of myopia might be due to hormonal factors as pointed out by a global study into the trends of myopia and high myopia.³ The purpose of our study was not only to point out the trends in refractive disorders in different age groups but also to assess the burden of these disorders on the health care system of district Sargodha. It can be argued that the data collected from DHQ hospital Sargodha is not an accurate representation of actual situation. The reliance on one source for data collection is a major limitation of this study and there is a need to carry out multiple studies at THQ (tehsil headquarter) hospital level so as to carry out satisfactory mapping of refractive disorders. Another limitation of the study was the failure to explain gender differences. Future studies

should address this and explore any association between sex hormones and refractive disorders.

Conclusion

Hypermetropia, astigmatism, myopia and presbyopia are common refractive disorders in population of Sargodha District of Punjab, Pakistan. Refractive disorders are more common among females. With the exception of myopia, these tend to occur more in older age groups.

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ORIGINAL ARTICLE

Immediate Effects of Dry Needling on Pain and Function among Individuals with Patellofemoral Pain Syndrome

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ABSTRACT

Objective: The purpose of this study was to determine the immediate effects of dry needling on pain and function among individuals with myofascial trigger points due to patellofemoral pain syndrome.

Study Design: It was a single centered quasi experimental study.

Place and Duration of Study: It was performed at University of Lahore teaching hospital from August 2018 to January 2019.

Materials and Methods: Thirty participants aged between 20 to 40 years were recruited. Participants obtained a single treatment session of dry needling. Function and pain was assessed at baseline and at 72 hours of trigger point dry needling. Mean and standard deviation were reported, pre and post intervention scores were compared using Wilcoxon signed rank. P value of less than 0.05 was considered significant.

Results: Significant improvement was measured in pain (92.7 ± 15.9) at 72 hours of intervention as compared to baseline value (89.0 ± 12.2) on Knee Society Score. The function score (73.6 ± 11.1) was also improved. 90% individuals showed positive ranks on the Lower Extremity Functional Scale at 72 hours after the dry needling intervention.

Conclusion: Dry needling cause's immediate and clinically significant reduction in pain and improvement in function of knee joint in the subjects with patellofemoral pain syndrome at 72 hours post treatment session. The immediate effects were studied but it is suggested that dry needling should be studied for its long term effects in patients with PFPS. Dry needling needs further investigation to be accepted as an isolated intervention for patients with Patellofemoral Pain.

Key Words: Acupuncture therapy, Anterior Knee Pain syndrome, Myofascial pain syndrome, Patellofemoral Pain Syndrome, Trigger areas.

Introduction

Patellofemoral pain syndrome is one of the most frequent injuries of the knee joint as well as the most common orthopedic illness. The incidence rate of this condition was found to be 1.5 to 7.3% in United States.¹ This syndrome is common among athletic and nonathletic teenagers.² The syndrome is caused due to daily life activities exerting compression on the joint for example descending stairs, performing

squats, running and prolonged sitting.³ This challenging condition is recurrently seen with chronic symptoms in 70-90% of individuals.⁴

In the past decades, several treatment strategies have been utilized for the treatment of patellofemoral pain syndrome.⁵ An increasingly attention gaining method of treatment for the patellofemoral pain syndrome is dry needling, also referred as westernized acupuncture.⁶

Dry needling is considered as an emerging intervention strategy. It is the insertion of a solid needle into the skin and myofascial trigger area for the reduction of neuromuscular pain and restoration of range of motion. This technique is cheap, less invasive and can be performed with minimal risk but the actual mechanism behind is yet to be elucidated.⁷ According to literature, the proposed mechanism of action is that dry needling generates localized and centralized nervous system responses, augmented blood flow, improved oxygenation^{8,9} and reduced peripheral and central pain sensitization.^{10,11} It has

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been reported that there is also a role of pain gate theory in alleviating pain.¹²

Previous clinical studies have revealed that dry needling initiates a localized action resulting in increased range of motion and decreased pain at the tender point.¹³ Elizabeth et al conducted a systematic review comparing the effects of dry needling to standard care in different painful body areas, and it was concluded that there is less evidence available in the favor of dry needling.¹⁴

There is increasing demand of use of dry needling by physical therapists and certified professionals for the trigger points in various body parts.¹⁵ Despite the positive effectiveness of dry needling in pain relief, improved range of motion and quality of life, the utilization of dry needling is yet to be established and demonstrated. It is essential to continually evaluate and review the existing evidence to counter or favor the use of dry needling in myofascial trigger point release.¹⁶

Recent investigations have depicted that dry needling can provide a positive effect on pain in various musculoskeletal conditions.¹⁷ To our knowledge there has not been a single study targeting patellofemoral syndrome with dry needling, its management is largely based on the expert opinions. A literature gap exists when considering the effect of dry needling as management strategy among patients with patellofemoral trigger points for pain reduction and improvement in overall function. Therefore, the purpose of current study was to evaluate the immediate effects of dry needling as an intervention on the pain and function in the patients having myofascial trigger points due to PFPS.

Materials and Methods

A single centered quasi experimental study was performed at University of Lahore teaching hospital from August 2018 to January 2019. Thirty participants aged between 20 to 40 years were recruited for the study. The sample size calculation was done using WHO sample size calculator keeping level of significance as 95%, standard deviation as 4.58 study power kept as 90%. The sampling technique used was non probability convenient sampling. Informed consent was obtained from each participant of the study. The study was approved by Institutional Review Board at University of Lahore

with reference number as IRB-UOL-FAHS/508/2019. Those patients with patellofemoral pain syndrome diagnosed by orthopedic physician based on the inclusion criteria were taken in the study. Inclusion criteria also comprised of patients who presented with complain of anterior knee pain almost for six months and had knee pain ranging from three to six on Numeric Pain Rating Scale. Patients who experienced knee pain during at least two activities such as ascending and descending stairs, squatting, prolonged sitting periods with knee joint flexion, jumping activities and running were also included. Those patients were excluded from the study who had history of arthritis, any surgical procedure around knee, meniscal injury, muscle or ligamentous rupture. Exclusion criteria also constituted individuals who previously received acupuncture therapy or dry needling technique for knee extensor muscle in last six months. Participants obtained a single treatment session of dry needling. They were instructed to fill the outcome measure questionnaire before the treatment and upon the second visit which was after 72 hours of intervention.

The patient was instructed to lie supine and palpation of quadriceps muscle was performed on the effected side. Three of the quadriceps muscles were targeted having two more painful areas each. The needling therapy was performed using Classic Plus sterile acupuncture needle 0.25*40mm. Needles being inserted for approximately six to ten seconds and the motion sparrow pecking was used. Quick in and out motion with coning was performed so that the twitching response can be achieved. The motions continue for a while until twitching can no more be elicited. Subjects were asked to report any side effect noticed during anytime of the intervention. The intervention was executed by experienced and certified Physical Therapist. Knee Society Score was used to assess function and pain at baseline and at 72 hours of trigger point dry needling. It is composed of two domains pain and function. Each domain is graded as 0 to 100 scores; the greater value represents better function and less pain. Grading for The Knee Society Score is 80-100 being excellent, 70-79 being good, and 60-69 being fair and below 60 is considered as poor. The Lower Extremity Functional Scale was used to evaluate the functional level. It is scored on 5-point scale and total

score is 80. Minimally detectable change recorded for this is 9 points. Data was analyzed using SPSS version 21. The normality of collected data was checked and it came out to be non-parametric on Shapiro-wilk test. Mean and standard deviation were reported, pre and post intervention scores were compared using Wilcoxon signed rank test. *P* value of less than 0.05 was considered significant.

Results

Between August 2018 to January 2019 total of the thirty consecutive subjects met eligibility criteria for the study. There were 22 (73%) female and 08 (27%) male study participant. The mean age calculated was 29.7 years with standard deviation being 9.5. Mean intensity of knee pain was calculated at baseline Numeric Pain Rating Scale during squatting (4.1 ± 2.3), upgoing (1.7 ± 1.9) and down going (2.3 ± 1.8) the stairs. (Table I)

Pain and function level was measured by Knee Society Score test and within-Group Mean change Scores were evaluated showing *p* value less than 0.05 in both function ($p=0.003$) and pain ($p=0.001$) subscales. (Table II) The scoring was done at baseline and at 72 hours of intervention depicting the improvement through mean and standard deviation values. The baseline scores were less than the 72 hours recorded scores for KSS function score, showing that the function was improved after the needling intervention. Wilcoxon signed rank test was used to evaluate the function level through The Lower Extremity Functional Scale before and after intervention. (Table III)

None of the subjects reported any adverse event to discontinue the treatment, and there have been no experience of minor side effects like blackouts, nausea, lethargy or weakness after the dry needling session.

Table I: Participants Self-Reported Baseline Demographics and Variables

Subject Characteristics	Frequency/Mean $\pm$ Standard Deviation
Patients (n)	30
Age (Y)	29.7 $\pm$ 9.5
Gender (M/F)	08/22
NPRS squatting	4.1 $\pm$ 2.3
NPRS downstairs	2.3 $\pm$ 1.8
NPRS upstairs	1.7 $\pm$ 1.9

F: female, M: male, NPRS: Numeric Pain Rating Scale, Y: years

Table II: Knee Society Score Within-Group Mean Change Scores

Outcome	Dry Needling Group	n	P-value
KSS pain score (0-100)			
Baseline(S.D)	89.0 $\pm$ 12.2		
72 hours(S.D)	92.7 $\pm$ 15.9		
		30	0.001
KSS function score (0-100)			
Baseline(S.D)	65.7 $\pm$ 10.9		
72 hours(S.D)	73.6 $\pm$ 11.1		
		30	0.003

KSS: Knee Society Score, S.D: Standard Deviation

Table III: Wilcoxon Signed Ranks Test – Ranks

		N	Mean Rank	Sum of Ranks
LEFS: post intervention score - LEFS: pre intervention score	Negative Ranks	2 ^a	2.00	4.00
	Positive Ranks	27 ^b	15.50	418.50
	Ties	1 ^c		
	Total	30		
a. Lower Extremity Functional Scale: post intervention score < Lower Extremity Functional Scale: pre intervention score				
b. Lower Extremity Functional Scale: post intervention score > Lower Extremity Functional Scale: pre intervention score				
c. Lower Extremity Functional Scale: post intervention score = Lower Extremity Functional Scale: pre intervention score				
	LEFS: post intervention score - LEFS: pre intervention score			
Z	-4.672 ^a			
Asymp. Sig. (2-tailed)	.000			

^aBased on negative ranks

Discussion

Patellofemoral pain syndrome is a multifaceted and complex clinical issue. Numerous biomechanical and neuromuscular etiological factors cause the joint reaction forces contributing to pain and poor function.^{18,19} A number of intervention strategies have been advised due to variations in etiological factors. Dry needling is an innovative therapeutic intervention that is supported by recent researches.^{14,20,21} Effects of dry needling have been studied widely in subjects complaining low back pain^{22,23,24,25} cervical pain^{26,27,28} and shoulder girdle pain.^{20,29,30} Limited researches have evaluated the dry needling impact on less prevalent musculoskeletal conditions including plantar fasciitis³¹ and

temporomandibular joint dysfunction.³² There has been no previous research on dry needling in the subjects of patellofemoral pain syndrome. Thus, the primary objective of this study was to explore the immediate effects of dry needling among individuals with myofascial trigger points due to patellofemoral pain syndrome. Post intervention improvement was examined on Knee Society Score test.

The current study investigated the immediate response of subjects having patellofemoral pain syndrome to a single treatment session of dry needling therapy. This was the probable limitation of the present study as the results were evaluated at 72 hours of intervention. Whereas many other studies have reported the results of their randomized trials with weekly or monthly follow up period.^{33,34,35}

The conflicting results were described by two literature studies that were exploring the effects of acupuncture needling in the patients having anterior knee pain. No published study has been seen targeting dry needling in the patellofemoral pain syndrome patients. One study utilized the traditional acupuncture technique targeting the trigger points in low back area and the muscles around knee joint including vastus lateralis and medialis. The pain was reduced in the subjects which was noted at five-month post-treatment period.³⁶ The other study stimulated the proximal and distal sites of the knee joint twice a week. The reduction in pain was noted at six month follow up period with no significant differences.³³ However the interventional strategy used in the above studies was not exactly the dry needling, so it is not possible to compare the conclusions with our study.

Our study targeted the quadriceps femoris muscle for dry needling technique as patellofemoral syndrome is closely related to this weakened muscle group. Gain in muscle strength and function of quadriceps group plays good prognostic role and early rehabilitation of patellofemoral syndrome patients. A study proposed that needling the quadriceps group of muscles improve the peripatellar pain. Our study in accordance to that study targeted the vastuslateralis, medialis and rectus femoris muscle, hypothesizing the early rehabilitation, diminished pain and improved function associated with patellofemoral syndrome.

The study had some potential limitations being less

patients recruited, and the study setting for the patient selection was a single hospital. Secondly, the study did not include follow up period as the results were calculated at 72 hour interval only. It could not be predicted whether the long term evaluation will have same results. The study did not include the control group for comparison. Future studies should target the other muscles involved in the patellofemoral syndrome that are gluteal, lateral rotators and trunk musculature. Additionally, multicenter studies should be done to increase generalizability of the results and dry needling to be used in conjunction with other specific treatment strategies like manual therapy and taping.

Conclusion

Dry needling cause's clinically significant reduction in pain and improvement in function of knee joint in the subjects with patellofemoral pain syndrome at 72 hours post treatment session. The immediate effects were studied but it is suggested that dry needling should be studied for its long term effects in patients with PFPS. Dry needling needs further investigation to be accepted as an isolated intervention for patients with Patellofemoral Pain.

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ORIGINAL ARTICLE

To Assess the Impact of Fibroids on Pregnancy Outcome

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ABSTRACT

Objective: To assess the impact of fibroids on pregnancy outcome.**Study Design:** A retrospective descriptive study.**Place and Duration of Study:** The study was conducted at department of Obstetrics & Gynecology during a period of 2 years from 1st January 2017 to 31st December 2018.**Materials and Methods:** All pregnant patients with fibroids ≥ 3 cm either diagnosed during antenatal period or incidentally during cesarean section were included in this study. Data regarding obstetrical outcome was extracted from the maternity ward record. Maternal age, parity, obstetrical complications, mode of delivery and indications for caesarean section were noted. Neonatal outcomes were ascertained from the maternity record and chart review. Results were summarized as %age, average and presented as tables using MS Excel version 13.**Results:** During the study period 38 pregnant women with fibroid are included in the study. Major proportion of patients with fibroid were in age group of 30-35 years. Obstetrical complications observed were; placental abruption (5.26%), PPH (15.78%), Obstructed labor (5.26%), prolonged labor (28.94%), abdominal pain (10.52%), preterm labor (2.63%) and malpresentation (2.63%). Miscarriages during early 2nd trimester were recorded in (5.26%) cases. Caesarean section was required in 69.44% cases. One lady ended up in Cesarean Hysterectomy due to intractable bleeding during c/section. During the course of pregnancy (21.05%) women with fibroid uterus remained asymptomatic. Fetal outcome was good with (88.88 %) alive babies, (5.55%) NND, (2.77%) IUD and (2.77%) neonatal intensive care unit (NICU) admission were recorded.**Conclusion:** Pregnancies with fibroids are associated with increased risk of fetomaternal complications. Pregnant women with myoma may have frequent antenatal visits in a consultant led clinic and well defined care pathways. Significant number of still birth due to placental abruption associated with large myoma may warrant elective caesarean section at relatively earlier gestational age.**Key Words:** *Caesarean Hysterectomy, Fibroid, Myoma, Neonatal outcome, Obstetrical outcome.*

Introduction

Fibroid is the most common benign tumor of the female internal genital organs, affecting 20%–60% of young women.¹ Incidence of fibroids varies from 0.1% to 12.5%.² As most fibroids are asymptomatic, the true prevalence of fibroids may be greatly higher.³ Fibroid is the most common smooth muscle tumor of the uterus seen in child bearing age and if associated with pregnancy may adversely affect the

outcome of pregnancy. The incidence of fibroids in pregnancy reported ranges from 0.1 to 10.7% of all pregnancies and increases with increasing maternal age.⁴ Fibroids may negatively affect fertility and outcome of pregnancy.¹ Myoma are associated with increased risk of spontaneous abortion, antepartum hemorrhage, placental abruption, malposition of the fetus, foeto-pelvic disproportion, premature rupture of membranes, retention of the placenta, postpartum hemorrhage (PPH), preterm delivery, low birth weight infants, dysfunctional labor, and increased need to cesarean deliveries.^{5,6,7,8} About 10-40% of women with fibroid uterus developed complications during pregnancy.⁹ Large size fibroids and submucosal fibroids are associated with more complications.¹⁰ Although fibroid uterus is associated with many adverse events during pregnancy, but still the perinatal outcomes in these patients tend to be fair.¹¹

As an increasing number of women with fibroid

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during pregnancy is observed, therefore the study was aimed to find out the obstetrical outcome of the pregnancies complicated with fibroid presenting in BMCH Quetta to help developing local guidelines and protocols for management of these women in order to reduce the risk associated with myoma. So, a study was planned to assess the impact of fibroids on pregnancy outcome in a local set up.

Materials and Methods

This retrospective study was carried out at department of Obstetrics & Gynecology Bolan medical complex hospital, Quetta, for the period of 2 years from 1st January 2017 to 31st December 2018. All pregnant patients with fibroids ≥ 3 cm either diagnosed during antenatal period or incidentally during cesarean section were included in this study. Patients with subserous fibroids of less than 3cm were excluded from the study. The permission of institutional ethical review committee was obtained and all ethical issues were addressed. Data regarding obstetrical outcome was extracted from the maternity ward record. Maternal age, parity, obstetrical complications (miscarriage, preterm labor, abdominal pain, prolonged labor, malpresentation, cesarean hysterectomy, PPH, Placental abruption), mode of delivery and indications for caesarean section were noted. Neonatal outcomes (Alive, IUD, NND, Admissions in neonatal ward) were ascertained from the maternity record and chart review. Results were summarized as %age, average and presented as tables using MS Excel version 13.

Results

During the study period, 38 women were identified with fibroid uterus during pregnancy. During antenatal visits, 32 women (84.21%) were diagnosed with fibroid uterus, while in 6 women (15.78%), myoma was an incidental finding during cesarean section; contributory to the cause of operative delivery. Most of the women in our study population (34.21%) were in 30-35 years age group as shown in table I. Fibroids were more frequent (86.84 %) in multigravida as compared to primigravida (13.15%) shown in Table I. Common obstetrical complications encountered in pregnancies with myoma were; placental abruption 2(5.26%), PPH 6(15.78%), Obstructed labor 2(5.26%), prolonged labor 11 (28.94%), abdominal pain 4(10.52%), preterm labor

1(2.63%) and malpresentation 1(2.63%) [Table, II]. Two women (5.26%) had miscarriages during early 2nd trimester [Table III]. Out of 36, about 25 women (69.44%) required caesarean section and 4 of them had technically difficult procedure [Table III]. In 12 cases (48%) of fibroid uterus Cesarean section was done for non-progress of labor. Other indications for caesarean section were malpresentation 2(8%), fetal distress 4(16%) obstructed labor 2(8%), placental abruption 1(4%) and repeat section d/t previous c/section 4(16%). 6 women (15.78%) developed PPH [Table II]. One lady ended up in Cesarean Hysterectomy due to intractable bleeding during Cesarean section. 8(21.05%) women with fibroid uterus remain asymptomatic during the course of pregnancy. Fetal outcome was good with 32 (88.88 %) alive babies. 2 (5.55%) NND, 1(2.77%) IUD and 1(2.77%) NICU admission [Table IV].

Table I: Parity Wise Distribution of Women with Fibroids

Gravidity	N=38	Percentage
Primigravida	5	13.15
Multigravida	33	86.84

Table II: Obstetrical Outcome in Women with Fibroids

	No. of Patients	Percentage
Asymptomatic	8	21.05
Miscarriages	2	5.26
Pain (Abdominal Pain)	4	10.52
Malpresentation	1	2.63
Cesarean Hysterectomy	1	2.63
Placental Abruption	2	5.26
Pre-term Labor	1	2.63
Prolonged Labor	11	28.94

Table III: Mode of Delivery in Women with Fibroids

Mode of Delivery	N=36	Percentage
SVD	8	22.22
Vacuum Delivery	3	8.33
LSCS	25	69.44

Table IV: Fetal Outcome in Women with Fibroids

Fetal Outcome	N=36	Percentage
Alive	32	88.88
IUD	1	2.77
NND	2	5.55
Admission in NICU	1	2.77

Discussion

Fibroids are the most common benign tumors of child bearing age with an overall incidence of 40-60%.¹² Pregnancy with fibroid is potentially serious problem. The aim of this study was to find out the

obstetrical outcome of pregnancies complicated by leiomyomas, with special emphasis on following outcomes measures, such as preterm delivery, malpresentation, mode of delivery and postpartum haemorrhage. Furthermore. The efforts were made to estimate the magnitude of the problem to help formulate guide lines regarding management of pregnancies with fibroid in our set up.

The clinical data of obstetrical outcome of 38 pregnant women with fibroid were evaluated. About 84.21% women were diagnosed during routine antenatal visits while in 15.78% women, myoma was an incidental finding during cesarean section. These cases were also included in this study because fibroids seemed contributory to the pathology leading to cesarean section owing to their size and location. Mean maternal age in our study was 33 years which is comparable with national and international studies.^{13,14} Fibroids were more frequently found in multigravida, 33 (86.84 %) as compared to primigravida 5(13.15%) which is in consistent with the study conducted by Sheinner et a.¹⁴ Out of total about 8(21.05%) women with fibroid uterus remained asymptomatic during the course of pregnancy. Miscarriages during early 2nd trimester were found as 5.26%.

One patient presented with sudden unexplained IUD at 35 weeks of gestation. She had a large lower segment intramural fibroid and no other identifiable cause for IUD.6 (15.78%), Women developed PPH, 3 during cesarean section and 3 after vaginal birth. 4 women were managed conservatively but one woman ended up in obstetrical hysterectomy (2.63%) due to uncontrolled PPH during caesarian section. The increased incidence of PPH noted in the study is consistent with findings of study conducted by kremer MS ET al.¹⁵ 2 (5.26%) women with fibroid presented with placental abruption at term gestation. One of these women was diagnosed during antenatal visits with multiple fibroids. She presented at 38 weeks of gestation with placental abruption. A large anterior upper segment myoma was an incidental finding during cesarean section in another women who was undergoing c/section for severe APH due to placental abruption. Both of these women had no other identifiable risk factor for placental abruption other than myoma. Both of them lost their newborns during early neonatal

period. Findings of our study in case of placental abruption are conflicting with a study conducted in china which found no association between fibroid and placental abruption.¹⁶ Out of 36, 25 (69.44%) women required caesarean section and 4 of them had technically difficult procedure. The most common indication for caesarean section was non progress of labour 12(48%). The rate of Cesarean section found in our study was comparable with other studies conducted by Klatsky et al,¹¹ and Irum et al.¹⁷ The results of placental abruption and PPH found in this study are comparable with the study conducted by Saha M et al.¹⁸ Another study by Zhao R et al also confirm the results of this study by reporting increased risk of caesarean section and PPH associated with fibroid uterus.¹⁶ Contrary to findings of this study, another study conducted by Wang et al deny any association between fibroid uterus and adverse obstetrical outcome.¹⁹ Fetal outcome was good with (88.88 %) alive babies.(5.55%) NND, (2.77%) IUD and (2.77%) NICU admission. This study has its limitations. As this was a retrospective study which has its own inherent limitation of availability of information. Furthermore it was a small scale study and the findings are to be interpreted with caution in the presence of small sample size.

However, this study will provide useful data to help clinicians in counseling and management of pregnant women with fibroid uterus. Elective cesarean section at an earlier gestation in case of large myoma and lower segment myoma may reduce the risk of placental abruption and obstructed labour. A study may be conducted in future to see the effect of elective caesarean section in reducing the obstetrical complications of fibroid uterus.

Conclusion

Pregnancies with fibroids are associated with increased risk of fetomaternal complications. Pregnant women with myoma may have frequent antenatal visits in a consultant led clinic and well defined care pathways. Significant number of still birth due to placental abruption associated with large myoma may warrant elective cesarean section at relatively earlier gestational age.

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ORIGINAL ARTICLE

Water Pipe A Safe Alternative To Cigarette? A Comparative Study on Hematological and Biochemical Parameters in Mice Exposed to Cigarette and Water Pipe Smoke

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ABSTRACT

Objective: To compare the toxic effects of cigarette and water pipe/shisha smoking on hematological parameters such as hemoglobin (Hb) and Total Leukocyte Count (TLC) and also on serum Triglycerides levels (TAG) in BALB/c mice.

Study Design: Experimental randomized controlled study.

Place and Duration of Study: The study was carried out at Islamic International Medical College, department of Anatomy in collaboration with National Institute of Health. Duration of the study was six months, from October 1st 2013 till March 30th 2014.

Materials and Methods: Forty adult male mice of strain BALB/c were obtained from National Institute of Health and were randomly divided into three groups. They were kept in whole body smoke exposure chamber. Control group C was exposed to fresh air. Cigarette smoke group CS and Shisha/water pipe smoke group SS were exposed to cigarette and water pipe smoke respectively in separate chambers for 8 weeks. After 8 weeks, blood samples were collected by cardiac puncture in separately labeled test tubes. Blood was analyzed for hematological parameters including Hemoglobin and Total Leukocyte count and also Triglycerides and results were compared among three experimental groups. Data was analyzed using SPSS version 20.0. Mean $\pm$ S.D was used for quantitative hematological and biochemical parameters. A p-value of ≤ 0.05 was considered as statistically significant.

Results: Average hemoglobin was 11.95 ± 0.792 g/dl in control group C, 13.80 ± 1.095 g/dl in group CS and 13.66 ± 1.349 g/dl in group SS. Control group had significantly lower average hemoglobin as compared to group CS ($p < 0.05$) and group SS ($p < 0.05$). Average serum Triglyceride level was 102.50 ± 31.785 mg/dl in control group, 127.80 ± 13.487 mg/dl in group CS and 147.00 ± 18.326 mg/dl in group SS. All the groups were significantly different from each other ($p < 0.05$). Median Total Leukocyte count was $5900/\mu\text{l}$ (IQR: 5150-6875 $/\mu\text{l}$) in control group, $5200/\mu\text{l}$ (IQR: 4200 – 7200 $/\mu\text{l}$) in group CS and $9900/\mu\text{l}$ (5300 – 13300 $/\mu\text{l}$) in group SS. Difference among three groups was significant ($p < 0.001$).

Conclusion: Water pipe smoking is more toxic than cigarette smoking in terms of its adverse effects on Hemoglobin, Total Leukocyte Count and Serum Triglycerides levels.

Key Words: Cigarette Smoking, Hemoglobin, Total Leukocyte Count, Triglycerides, Water Pipe Smoking.

Introduction

Researches show that life span of a tobacco smoker, on an average, is reduced by approximately ten years as compared to people who do not smoke.¹ There are

multiple ways of tobacco smoking with cultural differences around the globe. Common ways of smoking include cigar, cigarettes, hookah, water pipe, vaporizers and kretek.¹ Tobacco, smoked by any means, contains more than 4000 compounds and free radicals among which, nicotine and carbon monoxide are responsible for most of the deleterious effects associated with long term smoking. In addition to many known cardiovascular, respiratory and neurological disorders, these free radicals are believed to cause derangements in hematological parameters like hemoglobin, white cells count and triglycerides levels.²

Carboxy hemoglobin is formed when carbon

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monoxide binds with hemoglobin resulting in left sided shift of the oxygen-hemoglobin dissociation curve. This results in reduced ability of the hemoglobin to carry and deliver oxygen to the tissue leading to compensatory high levels of hemoglobin in smokers.^{2,3}

Total leucocyte cell count is a useful, relatively inexpensive biomarker used to assess endothelial damage and is also an important predictor of atherosclerosis and cardiovascular disease. Nicotine in tobacco smoke induces an inflammatory response in the tracheobronchial tree along with an increase in the inflammatory markers in the blood. Smokers with high TLC count might be at greater risk for developing atherosclerosis and cardiovascular diseases as compared to non-smokers.³

Similarly, a proatherogenic lipid profile is also related to an increased incidence of coronary artery disease in smokers. Studies have shown high levels of triglycerides in smokers posing a greater risk of atherosclerotic changes in cardiovascular system.⁴ Nicotine stimulates adrenal-sympathetic system which releases catecholamine. This surge in catecholamines induces lipolysis, thus increasing levels of serum free fatty acid, promoting cholesterol synthesis, and secretion in the liver.⁵

Recently, water pipe smoking has regained popularity especially in young population. When compared to a cigarette, water pipe tobacco smoking is associated with almost four-fold more carboxy hemoglobin, and more than 50-fold inhaled volume of smoke. Thus, water pipe smoking is associated with more risk of dependence, disease, and death.⁶

It is a common misconception that water pipe smoke is comparatively less harmful than cigarette smoke because the smoke first passes through water before being inhaled through the mouth piece. Thus, it filters the smoke from tar, nicotine and other carcinogenic substances. On the contrary, the water only cools down the smoke³ and this leads to deeper inhalation by the smoker. This causes deep penetration of smoke into the lungs leading to adverse health effects.⁷ In fact, water pipe smoking has been suspected to be a risk factor for a number of diseases such as lung and esophageal cancer, cardiovascular disease and adverse pregnancy outcomes.⁸ Mainstream hookah smoke contains several toxicants including tar, nicotine, carbon

monoxide, ammonia, polycyclic aromatic hydrocarbons (PAHs), aldehydes, phenolic compounds and heavy metals, to name a few.⁹ The difference in heating process and charcoal combustion might lead to more toxicants in water pipe smoke. A complete session of water pipe smoking usually lasts 60 minutes, with smokers taking up to two hundred puffs. On the other hand, cigarette smoking takes about 7 minutes with 8-12 puffs/cigarette. There is thus possibility of inhaling higher levels of toxicants in water pipe smoking than cigarette smoking.¹⁰

This study was thus done with an objective to compare the toxic effects of cigarette and shisha/water pipe smoking on hematological parameters such as hemoglobin (Hb) and Total Leukocyte count and on biochemical parameter Serum Triglycerides levels (TAG) in BALB/c mice.

Materials and Methods

This randomized controlled trial was conducted at Islamic International Medical College, Rawalpindi, in the department of Anatomy in collaboration with National Institute of Health Islamabad.^{10,11} The Institutional Review Committee of Riphah International University approved the study design and duration of the study was six months, from October 1st 2013 till March 30th 2014. Sample size consisted of forty male BALB/c mice, weighing 35-45g which were obtained from animal house of NIH, Islamabad and were kept in separate cages. Mice with any pathology and less than 3 months old, weighing less than 35g or more than 45g were not included. Female mice were not used because of risk of pregnancy. All mice were kept in a room at 24°C with 12 hours light and dark cycle and were given pelleted diet. They were acclimatized for one week before smoke exposure. They were randomly divided into 3 groups; Control Group C n =10, Shisha Smoke (SS) Group n =15 and Cigarette Smoke (CS) Group n =15. Simple randomization was done using random allocation cards through computer-generated random numbers.

For water pipe smoke commercial *Ma'assel* was used that contains 30% tobacco and 70% honey or molasses.¹¹ Nonfiltered cigarettes of a local brand with known percentage of nicotine content were used for cigarette smoke. Locally made plastic chamber were used for whole body inhalational

exposure.¹² These chambers were designed according to the WHO specifications.^{13,14}

Approximately 10g of water pipe flavor was placed in the plate on the top of water pipe apparatus and covered with aluminum foil. Hot coal biscuit was placed over it and smoke was introduced as puffs into the chamber using a manual vacuum pump.

Twenty commercial non-filtered cigarettes were ignited and placed in a plastic stand and placed in the chamber of CS group. The smoke-exposure group CS was exposed to nicotine concentrations equivalent to Shisha/water pipe smoke group. The flavor used in Shisha/water pipe contains approximately 2.5 mg of nicotine.¹⁵ The nicotine content in side stream smoke of one cigarette is 0.12 mg. So, nicotine content in 20 cigarettes is 2.4 mg.¹⁶

The mice in experimental groups were exposed to smoke until all water pipe flavor and cigarettes were consumed, which took approximately two hours. Mice were exposed to water pipe and cigarette smoke in morning and evening for two months. All mice were sacrificed at the end of 2nd Month. They were anaesthetized 24 hours after the last dose of smoke by placing them in a closed glass container with cotton balls soaked in chloroform, until they lose consciousness.

Blood samples were collected by cardiac puncture in separately labeled test tubes. The blood for hemoglobin and Total Leucocyte counts was collected in test tubes with anticoagulants while the blood for triglycerides was collected in plain test tubes and serum was extracted after centrifugation. The values were obtained by using commercially available kits. (Hemoglobin meter hb-101 certeza Germany for Hb and Coulter® DxH 800 analyzer for TLC).

Statistical analysis was done using SPSS version 20.0. Mean $\pm$ S.D was used for quantitative biochemical parameters. The quantitative variables Hb, TLC count and TAG were checked for normal distribution by applying Kolmogorov-Smirnov test that showed that Hb and TAG were normally distributed variables. One Way Analysis of Variance (ANOVA) was used to compare the mean differences of normally distributed data of Hb and TAG levels among three groups. Post-hoc tukey test was applied to compare which group mean differs individually from other two groups. A p-value of ≤ 0.05 was considered as

statistically significant.

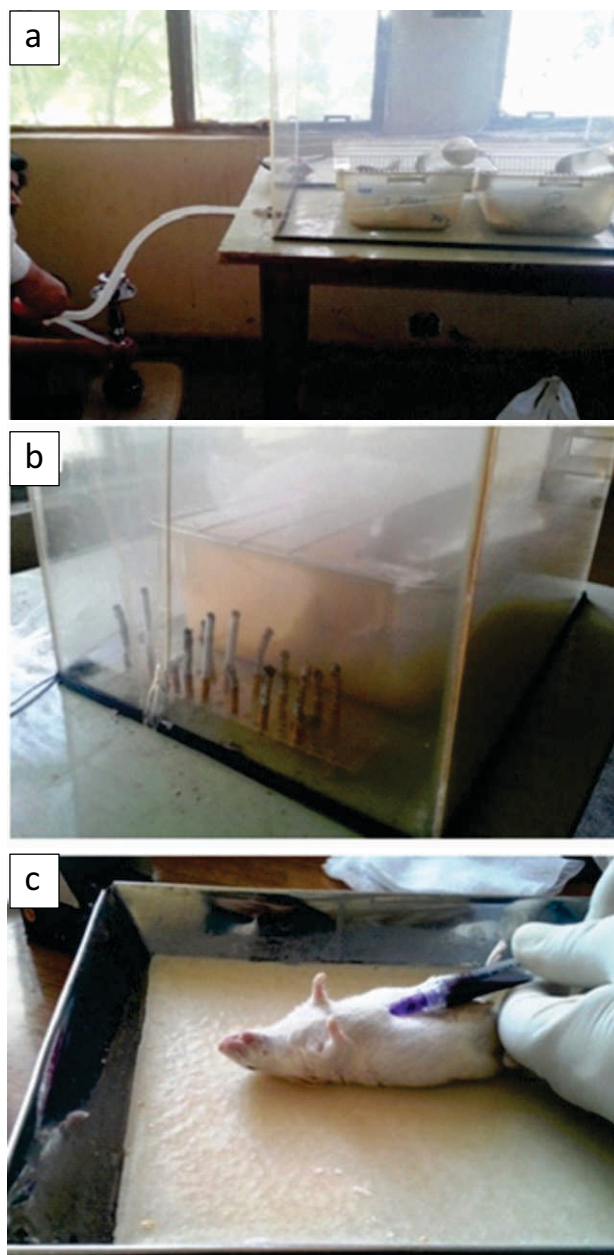


Fig 1 (a) Photograph showing generation of water pipe smoke with manual vacuum pump^{11,12}, (b) whole body cigarette smoke exposure chamber showing burnt cigarettes and (c) blood collection through cardiac puncture.

Results

The average hemoglobin was 11.95 ± 0.792 g/dl in control group C, 13.80 ± 1.095 g/dl in group CS and 13.66 ± 1.349 g/dl in group SS. ANOVA test showed a significant p- value and post hoc test was then applied to compare all the three groups individually with each other. The CS and SS groups were

significantly ($p < 0.05$) different from control group C. Control group had significantly lower average hemoglobin as compared to group CS ($p < 0.05$) and group SS ($p < 0.05$). While the difference in hemoglobin between experimental group CS and experimental group SS was not significantly ($p > 0.05$) different. Group CS although had higher average hemoglobin level than group SS but this difference was insignificant statistically (Table-I).

The average serum triglyceride level was 102.50 ± 31.785 mg/dl in control group, 127.80 ± 13.487 mg/dl in group CS and 147.00 ± 18.326 mg/dl in group SS. All the groups were significantly different from each other ($p < 0.05$). Control group had significantly lower average serum triglyceride level as compared to group CS ($p < 0.05$) and group SS ($p < 0.05$) while the group SS had significantly ($p < 0.05$) higher level of TG as compare to CS group (Table-I).

The Total Leukocyte count (TLC) was normal in the control group C (normal range: 5500-11,000/ μ l). The data of TLC count did not follow the normal distribution based upon Kolmogorov Smirnov test of normality so Interquartile range (IQR) was calculated for this data. Median TLC count was 5900/ μ l (IQR: 5150-6875 / μ l) in control group, 5200/ μ l (IQR: 4200 – 7200/ μ l) in group CS and 9900/ μ l (5300 – 13300/ μ l) in group SS. Difference among three groups was significant ($p < 0.001$) (Table-II).

Table I: Post Hoc Comparison of Hemoglobin (G/Dl) and Serum Triglycerides (Mg/Dl) Between the Groups.

Groups	Hemoglobin(g/dl)			Serum Triglycerides(mg/dl)		
	Mean	SD	p-Value	Mean	SD	p-Value
Group C vs. Group CS	11.95	.792	0.001*	102.50	31.785	0.015*
	13.80	1.095		127.80	13.487	
Group C vs. Group SS	11.95	.792	0.002*	102.50	31.785	0.000*
	13.66	1.349		147.00	18.326	
Group CS vs. Group SS	13.80	1.095	0.939 ¥	127.80	13.487	0.044*
	13.66	1.349		147.00	18.326	

* Difference is Significant at 5% level of confidence

¥ Difference is not Significant at 5% level of confidence

Table II: Comparison of White Cell Count between the Group CS and SS

Groups	Total Leukocyte Count/ μ l Median (IQR)
Group C (n = 10)	5900 (5150 – 6875)
Group CS (n = 15)	5200 (4200 – 7200)
Group SS (n = 15)	9900 (5300 – 13300)
p-value	0.031*

* P-value by Kruskal-Wallis test is Significant at 5%

Confidence level

Discussion

The tobacco smoke is known to cause many biochemical changes in the body including alterations in hemoglobin, white cell counts and triglycerides levels. Free radicals and peroxides generated during smoking are reportedly linked with physiological changes in the body such as increased synthesis of prostaglandins and thromboxane and advanced pathological changes like atherosclerosis, inflammation and metastatic changes. Effects of smoking on antioxidant status and hematological parameters have been extensively studied but results on comparative effects of cigarette and water pipe smoking are inconsistent. In this study, hematological parameters were used for comparative analysis among study groups.

The hemoglobin levels showed significant differences between control and experimental groups. While it was normal in control group C, the value was higher in both experimental groups SS and CS. Similar results have been shown by Asif³, Shah BK¹⁶, and Kumar¹⁷ in their studies done on effects of cigarette smoke on hemoglobin levels. According to Rabbe¹⁸ normal value of hemoglobin in male mice is 13.3-16.1g/dl.

Carboxyhemoglobin, formed after binding of carbon monoxide with oxygen, is an inactive compound that shifts the dissociation curve of hemoglobin to the left side. This reduces the ability of hemoglobin to deliver oxygen to the tissue. Tissue hypoxia leads to an increased secretion of erythropoietin causing enhanced erythropoiesis. Smokers, thus, maintain a higher hemoglobin level than non-smokers^{2,3} to compensate the tissue hypoxia.

The difference between the values of group CS and SS was highly significant. A single water pipe session

delivers higher levels of CO than a single cigarette⁷, which explains the higher levels of hemoglobin in group SS as compared to group CS in this research. In a comparative study by Eissenberg¹⁹, the first five minutes of water pipe smoking produced more than four times more carboxyhemoglobin as compared to an entire cigarette.

The normal range of TLC count in mice is 5000-12,000/ μ l.²⁰ TLC count was increased in smoke exposure groups as compared to the control. An increase in TLC count in smokers has been reported previously by Kume^{16, 21}, Shenwai,²² Asif³ and Malenica.²³ All of them have observed an increased total leukocyte count in smokers as compared to nonsmokers. According to Shenwai,²² toxicants in smoke cause marked release of inflammatory cytokines from the epithelial cells which influence the growth, differentiation and activation of leucocytes. Inflammation also cause endothelium damage and increased aggregation of leukocytes that further predispose to microcirculatory occlusion and vascular damage. This can be the underlying mechanism of leukocytosis in smokers. Nicotine also causes a surge in circulating catecholamine which can increase the total white cell count.²²

The difference between group CS and SS was statistically significant. This could be possible due to large volume of smoke per puff in Shisha/water pipe smoking as compared to cigarettes. According to Chaouachi¹⁵, cigarette smokers on an average take 7-10 puffs, inhaling a total of 550 ml of smoke. In contrast, complete water pipe session usually encompasses 60 minutes with around 150 puffs. The smoker inhales 500 ml of smoke in each puff.^{11,12} Thus one complete session of water pipe smoking produces 50,000ml of smoke¹⁵ causing much higher degree of systemic inflammation and leucocytosis.

The comparative analysis of serum triglycerides (TAG) also showed differences among study groups. The normal range of serum triglyceride in mice is 102-188mg/dl.²⁴ The control group C showed a normal average level of 126mg/dl while group CS and SS showed an increase in triglyceride levels. This has been reported earlier in cigarette smokers by Yan-Ling²⁵, Rashidi²⁶, Alharbi²⁷ and Lietz.⁴ Shafique²⁸ observed a significantly increased levels of TAG in water pipe smokers. Sahnoun²⁹ in his comparative research on water pipe and cigarette observed an

elevated TAG levels with no significant difference between the two groups. This supports the finding in this research in which the difference between group CS and SS was statistically insignificant ($p=0.078$).

According to Rashidi²⁶, smokers are susceptible to metabolic disorders characterized by insulin resistance, which increases postprandial triglyceride and low density lipoprotein. Similar results are reported by Mc Govern³⁰ who observed that high doses of nicotine lead to resistance to insulin. This causes rapid surge in the levels of catecholamines. Smokers have low levels of adiponectin, an adipose-derived protein which modulates insulin sensitivity and has anti-inflammatory effects. The insulin resistance alters body composition leading to an increased fat in viscera.

Conclusion

Water pipe/Shisha smoke contains higher levels of chemical irritants that cause respiratory tract inflammation as well as derangements in many hematological and biochemical parameters that are indicators of several systemic disorders. The damage is more as compared to cigarette smoke given in same quantity and for same duration. Thus, water pipe smoking is not a safe alternative to cigarette smoking.

Limitation of the study Baseline values of hematological and biochemical parameters could not be recorded in experimental animals because of their small age and size. Thus, values were compared with those of control group.

Future recommendations Further experimental studies can be carried out on rabbits or even humans comparing effects of cigarette and water pipe smoke with baseline parameters.

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ORIGINAL ARTICLE

Prevalence of Visual Impairment Among Indoor Diabetic Patients at Teaching Hospital of RawalpindiMuhammad Shafah Shehzad¹, Muhammad Usayd Khan², Saqib Jan Shah³, Aneeq Ullah Baig Mirza⁴**ABSTRACT**

Objective: To determine the prevalence of blindness and partial sight among the indoor Diabetic patients of a teaching hospital.

Study Design: Observational/cross-sectional study.

Place and Duration of Study: The departments of Medicine, Surgery, Obstetrics and Gynecology and Ophthalmology at Pakistan Railway Hospital Rawalpindi from 1st November 2018 to 30th November 2019.

Materials and Methods: History and clinical information of 200 indoor diabetic patients (400 eyes) admitted in the departments of Ophthalmology, Medicine, Surgery and Obstetrics & Gynecology were noted on organized and institutionalized questionnaire. Detailed ocular examination was performed by a qualified ophthalmologist. Only visual acuity (VA) criteria was used to define visual impairment. The data was evaluated using SPSS version 21.

Results: Two hundred indoor diabetic patients (400 eyes) were included in the study. Among them 91 (45.5%) were males and 109 (54.5%) were females. The number of patients having age below 30 years were 7 (3.5%), between 30 to 60 years of age were 84 in number (42%) and 109 patients (54.5%) were over 60 years of age. No visual impairment was found in 38 patients (19%). There was partial sight in 97 patients (48.5) and blindness was recorded in 65 patients (32.5%) of the total. Cataract as the cause of visual impairment was found in 63 patients (38.8%). Diabetic retinopathy was the cause in 55 patients (33.9%). Diabetic macular edema was found in 35 patients (21.6%) and age-related macular degeneration in 7 patients (4.3%). Glaucoma was found in 2 patients (1.2%). Visual impairment in our patients was significantly associated with age, duration of diabetes, BMI, hypertension, heart disease, peripheral neuropathy, pregnancy ($p < 0.05$).

Conclusion: It is concluded that the prevalence of visual impairment among diabetic patients is quite high. There is an increased risk of visual impairment with the increase in the age, duration of diabetes and other associated risk factors such as hypertension, heart disease, increased BMI and peripheral neuropathy.

Key Words: *Blindness, Diabetes Mellitus, Diabetic Retinopathy, Prevalence, Visual Impairment.*

Introduction

Diabetes Mellitus (DM) is a multifactorial disease responsible for many complications including visual impairment.¹ According to WHO, by 2025, there will be 300 million diabetics of which 75% will be in developing countries with Pakistan as the 4th country in the list.²

Pakistan exhibits a rise in diabetes. More than 10% of

its adult population has diabetes.³ In Pakistan, we have an expected 7.5 million individuals known to have diabetes, and number is to be expanded to 16.1 million by year 2045.⁴

The increase in the frequency of DM proposes that more individuals with this condition will turn out to be visually impaired if steps are not taken to anticipate the occurrence of DM and its visual complications. DM is driving reason for the visual impairment among various regions of the world. Diabetic Retinopathy causes 12000 to 24000 new cases of blindness every year in United States.⁵ Changes in the way of life have expanded the danger of diabetes as well as visual impairment in many developing countries.⁶ In Oman, the prevalence of visual impairment in diabetics is 28.4%. With increase in the incidence of DM, the odds of visual misfortune are on the rise. It is entrenched that in the

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upcoming 15 years, roughly 2% of diabetics may turn lawfully blind, and around 10% may create serious visual impairment.⁷ Thus, for the avoidance of visual impairment at around the world, tending to visual complications of diabetes is required. It is assessed that the pervasiveness of hypertension in type 2 diabetes is 50%.⁸

In Pakistan, a research conducted 10 years ago showed the prevalence of Non-proliferative diabetic retinopathy (NPDR) in 25.14% and proliferative diabetic retinopathy (PDR) in 11.11% of cases.⁸

Variations in the incidence of diabetes suggests that the current status of visual impairment in the diabetics is expected to be different from that reported previously.

The objective of our study is to determine the prevalence and reasons of blindness and partial sight among the indoor diabetic patients of a teaching hospital and to assess the effect of duration, type, gender, hypertension, body mass index (BMI), heart disease, smoking, pregnancy, neuropathy and nephropathy on incidence and progression of visual impairment.

Our information will be valuable for future correlations and give benchmark data to screen the advancement towards the reduction in visual impairment because of diabetic eye difficulties.

Materials and Methods

In this observational/cross-sectional study, all the ambulant patients who were diabetic and admitted in the departments of medicine, surgery, obstetrics & gynecology and ophthalmology at Pakistan Railway Hospital Rawalpindi from 1st November 2018 to 30th November 2019 were examined in detail.

The number of indoor diabetic patients thoroughly examined to check for the visual impairment was 200 (400 eyes). The sampling technique used was non-probability consecutive sampling. The study was approved by the ethics review committee of Islamic International Medical College.

Type 1 and Type 2 diabetic patients above the age of 20 years were included in the study. The patients who were non-ambulatory due to their deteriorated clinical condition were excluded from the study. Informed verbal consent was taken before examination.

History and clinical information were noted on structured questionnaire. Age, gender, type and

duration of diabetes, existence of one or more comorbidities including hypertension, heart disease, renal disease and neuropathy were noted. Biological assessment included BMI, smoking and pregnancy.

Detailed ophthalmic examination was done by a qualified ophthalmologist which included Snellen's visual acuity and pinhole vision to rule out refractive errors. Slit-lamp examination for anterior segment and funduscopy with maximum mydriasis was done for the posterior segment. Where there was more than one cause of visual impairment, the irreversible cause was mentioned.

Only visual acuity (VA) criteria was utilized to depict visual impairment in our study using the US definitions which defines Partial sight as 20/200 (6/60) < VA < 20/40 (6/12) and blindness is defined as VA of < 20/200 (6/60) in the better eye.⁹

When describing both blindness and partial sight, the term visual impairment (VI) was used. The main diagnostic group of the causes of visual impairment were cataract, age-related macular degeneration (ARMD), glaucoma and diabetic retinopathy (DR). Diabetic Retinopathy was further classified into non-proliferative diabetic retinopathy (NPDR) and proliferative diabetic retinopathy (PDR).¹⁰

The data collected was of non-parametric type and was evaluated using SPSS version 21. Chi-square statistics was utilized to evaluate the relations. The Confidence level (CI) of 95% was set. A *p*-value of less than 0.05 was deemed statistically significant.

Results

Two hundred indoor diabetic patients (400 eyes) were included in the study. Demographic findings are shown in Table I.

Table I: Age and Gender. n=200

		Gender		Total n (%)
		Male	Female	
Age	<30	3	4	7 (3.5)
	30-60	34	50	84 (42)
	>60	54	55	109 (54.5)
Total n (%)		91 (45.5)	109 (54.5)	200

Type 1 DM was found in 6 patients (3%) and type 2 in 194 patients (97%). Patients having span of diabetes mellitus for under 5 years were 70 (35%), those with the length of illness between 5 to 10 years were 47 (23.5%) and those over 10 years was found in 83 patients (41.5%).

Prevalence of the visual impairment is shown in Table II.

Table II: Prevalence of Visual Impairment. (n=200)

Visual Impairment	Frequency	Percent
No Visual loss	38	19.0
Partial sight	97	48.5
Blindness	65	32.5

Patients of DM with associated systemic diseases were 131 hypertensives (65.5%), 77 patients (38.5%) had some sort of adult onset heart disease, peripheral neuropathy was found in 123 patients (61.5%), and renal disease was found in 73 patients (36.5%).

During the biological assessment according to BMI 12 patients (6%) were underweight, 116 (58%) were normal in range and 72 patients (36%) were found to be overweight. 43 patients (21.5%) were active smokers. Our study comprised of 7 female pregnant patients (3.5%).

The main causes of visual impairment among the diabetic patients found in our study are mentioned in Table III and Figure 1.

Table III: Causes of Visual Impairment (n=162)

		Visual Impairment		
		Partial Sight	Blindness	Total n (%)
Causes	Cataract	48	15	63 (38.8)
	DR	42	13	55 (33.9)
	DME	4	31	35 (21.6)
	ARMD	3	4	7 (4.3)
	Glaucoma	0	2	2 (1.2)

Our study showed that cataract was the major cause of visual impairment overall with prevalence of 38.8% and Diabetic Macular Edema was main reason of blindness with an occurrence of 47.6% among blind people as shown in Figure 1.

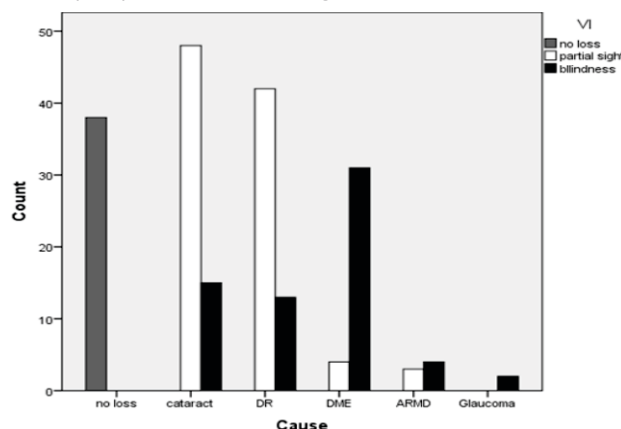


Fig 1: Causes of Visual Impairment.

Prevalence of the stages of diabetic retinopathy was also assessed among the patients. NPDR was found in 126 eyes (31.5%) and PDR was found in 56 eyes (14%).

It was similarly noticed that with the increase in the duration of diabetes mellitus, the significant cause for visual impairment was seen as DR with a prevalence of 50.6% in individuals with duration of diabetes greater than 10 years as shown in Figure 2.

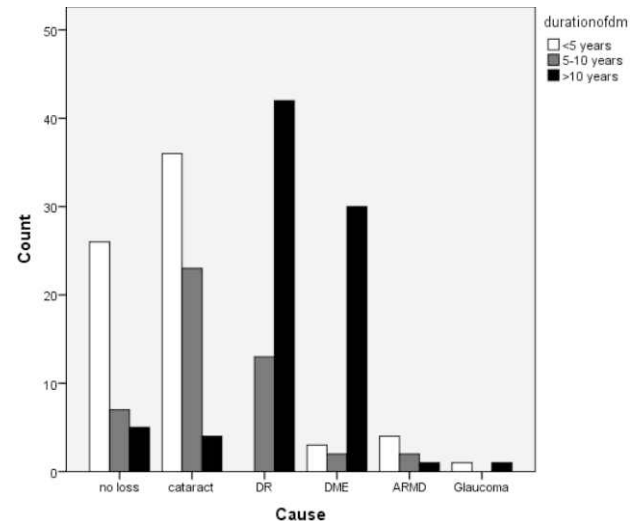


Fig 2: Changes in the Causes of Visual Impairment with the Increase in Duration of DM

Visual impairment in our patients was significantly connected with age ($p=0.001$), duration of diabetes ($p=0.00001$), BMI ($p=0.01$), hypertension ($p=0.02$), heart disease ($p=0.041$), peripheral neuropathy ($p=0.044$), pregnancy ($p=0.01$).

Visual impairment was also significantly related with causes of visual impairment including cataract ($p<0.001$), DR ($p<0.001$), stage of DR ($p<0.001$), DME ($p<0.001$), ARMD ($p<0.001$), Glaucoma ($p<0.001$).

However, our study didn't show a significant association with gender ($p=0.11$), type of DM ($p=0.45$), smoking ($p=0.34$) and renal disease ($p=0.53$).

Discussion

For the reduction of visual problems, we need information of the occurrence and reasons for visual impairment among the individuals with DM. Our study gives such information to the health care experts to plan effective management for the patients.

Our study reports high prevalence of partial sight (48.5%) and blindness (32.5%) among the diabetic

patients. Cataract was the significant reason for visual impairment in our investigation with a frequency of 38.8%. Our study also recorded a high prevalence of 31.5% with NPDR and 14% with PDR. Diabetic macular edema (DME) was found to be the major reason of blindness with incidence of 47.69% of the blind population in our study.

This can be compared with a study of another developing country where it was found that partial impairment was found in 39.3% of the patients and 15.7% were blind. The higher rate of blindness in our study can be due to the fact that our study was performed on indoor patients who are admitted with increased comorbidities. It was likewise noticed that there were more patients of higher age group included in the study. It was noted that with increasing age more patients were found to be visually impaired which is also mentioned in another previous study.⁵

By comparing our study with a study conducted in a developed country like England showed significant difference in visual impairment and blindness. Their study showed data of visual impairment in 2.84% and blindness in 1.13%.⁷ this difference is because of better health care facilities provided in developed countries.

A past report of Jordanian diabetic's demonstrated cataract as the major source of visual impairment in diabetics with incidence of 37.8%.^{11,12} Cataract is similarly seen as the main source of visual impairment in other developing countries.^{5,13,14,15}

Our study also showed that in individuals with the increase in duration of DM of over 10 years, DR was seen as the main source of visual impairment. This can be compared with a previous study which additionally indicates that with increasing duration of DM, DR is seen as the main source of visual impairment.¹⁶ Some previous studies also show that DME as the main source of blindness in diabetics.^{12,13,15}

Age related macular degeneration (ARMD) was seen as the main source of visual impairment in the developed nations like England.⁷ An investigation of the developed nation indicated that DR was seen as driving reason for visual impairment among the working age population of individuals with DM.⁷ However, in our study, cataract was the major cause of visual impairment among the working age

population.

The prevalence of stages of DR can be compared with previous study held in a developing country where ratio of NPDR was 31.1% and PDR was 22% among the diabetic patients.¹³ In another previous research of a developing country NPDR was detected in 54.8%, this higher value in their research was because the patients which were included mainly presented in the eye departments when they got their condition of the eyes worst. In a previous research of a developed country NPDR was found in 11.66% and PDR in 0.36%.¹⁷ The lower number of patients with both PDR and NPDR compared to our research are because of better health facilities including early screening programs throughout the country.

By comparing our results with a research conducted 10 years ago in the same hospital as ours showed increase in the prevalence of NPDR and PDR.¹⁸ NPDR increased from 25.14% to 31.5% and PDR increased from 11.11% to 14%. This increase in patients may be because of the low socioeconomic status of the area of study due to which they cannot afford the treatment.⁵

In our study, the incidence of visual impairment was not statistically associated with gender, but it was associated with age hence it increased with the increase in the age. The other risk factors that had significant associations included increased BMI, hypertension, heart disease and peripheral neuropathy. Smoking was not statistically associated with visual impairment. This was compared with a previous study among Tunisian diabetic patients which also had a significant relation of the above-mentioned risk factors.¹⁹ However, in contrast to the mentioned study, our study did not show a significant correlation of renal disease with the visual impairment, this may be because our collection of data on renal disease was based on the history alone. It is noted in our study that visual impairment was associated with the duration of diabetes. With the increase in the span of diabetes it was seen that visual impairment also increased. Visual impairment was also significantly associated with complications such as cataract, DR, DME, ARMD and glaucoma. The associations of duration of diabetes, advanced stage DR, DME and cataract with visual impairment were also seen in the previous studies.²⁰

This study has some limitations so the outcomes ought to be perused with caution. The hospital based indoor contextual analysis for the most part chooses the patients which are bed bound already in crumbled condition when contrasted with outdoor patients. Study was directed in a single teaching hospital so the results may not be summed up for the entire population. Other limitations included cross sectional nature and the data collection of associated risk factors were based on previous health records. Regardless of these confinements this investigation gives important information which can characterize the magnitude of the issue in population.

Our study provides a baseline data for future comparison studies in this region and other developing countries. In addition, our data will also be useful for the health care providers to minimize the comorbidities such as visual impairment associated with diabetes. Aggressive screening programs should be inculcated in primary health care. Proper eye care services should be provided at affordable rates.

Conclusion

It is concluded that the prevalence of visual impairment among diabetic patients is quite high. There is an increased risk of visual impairment with the increase in the age, duration of diabetes and other associated risk factors such as hypertension, heart disease, increased BMI and peripheral neuropathy.

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ORIGINAL ARTICLE

Reasons for the Refusal of Spectacle Usage among Medical Students of Rawalpindi and Islamabad

Khadija Mohammad¹, Iffat Atif², Farah Rashid³

ABSTRACT

Objective: To identify reasons for the refusal of spectacle usage among medical students of Rawalpindi and Islamabad.

Study Design: Cross sectional study.

Place and Duration of Study: Different medical colleges of Rawalpindi and Islamabad from 15th April to 18th September 2018.

Materials and Methods: A total of 254 medical students who were prescribed constant use of spectacles were selected through simple random sampling technique. A structured close ended questionnaire was administered and collected data was analyzed through SPSS version 22.

Results: Mean age of the participants was 22.5 ± 1.4 years, female students were 60.7% and 39.3% were male. It was found that majority of female participants do not use spectacles due to cosmetic reason (64.5%). Unwillingness to use spectacles was the next most common reason for not using spectacles i.e., 57.2%. The students who reported that they face inconvenience and difficulty in managing the glasses were 47.9%. 31.8% of students were not using spectacles due to social stigma. Many students either lost their spectacle or not using spectacles due to breakage of glasses (23.1%). The gender differences among various reasons were found to be statistically significant.

Conclusion: The current study concludes that various reasons leading to refusal and inadequate usage of spectacles among medical students are cosmetic unacceptability, unwillingness, social stigma and inconvenience. Targeted health education measures are imperative to formulate comprehensive corrective strategies.

Key Words: Medical Students, Reasons, Refusal, Spectacle Usage.

Introduction

The global enormity of visual impairment that can be ascribed to uncorrected refractive errors is on rise. Refractive errors are the most frequent cause of visual disorders and blindness among young adults following cataract globally.¹ The uncorrected refractive errors (URE) pose a considerable consequence on daily life impairment, education and future economic anticipation of a student, particularly medical students.²

Worldwide, about 27.1 million in age group 16-39 years develop visual impairment due to refractive

errors, prevalence being 1.11%. The prevalence of URE varies widely around the globe, showing higher among East Asian countries.³ The prevalence of uncorrected refractive errors in Pakistan has been found as 23.9% in males and 20% in females.⁴ In Pakistan, 3% of blindness can be attributed to uncorrected refractive errors.⁵ The high prevalence rate of uncorrected refractive errors among medical students has led to a mounting concern for this problem.⁶

The dilemma of continuously escalating burden of disease due to refractive errors is growing, regardless of the availability of a reasonably simple and cost-effective interventions.^{7,8} Spectacles are mainly used method for correcting vision in developing as well as in developed countries.⁹ In spite of the fact that spectacles are the easiest preference for vision correction, however, several factors determine compliance with prescribed glasses and for the reason that ignorance, stigmas, taboos, cultural beliefs and cost related issues, it is underutilized.¹⁰ At

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present knowledge about various causes leading to influence compliance with spectacle usage is very trivial particularly in our setting, therefore this study was carried out to highlight the importance of these issues and embark upon the problem.

The literature search has revealed that many studies have been focused on primary and secondary school children neglecting the university students such as medical students. Although numerous studies had been carried out to determine the prevalence of refractive errors, there is comparatively insufficient data available on the causes and associated factors acting as barriers to spectacle wear. The current study has been conducted to identify reasons of refusal and issues related to low usage of spectacles among medical students for effective interventions to prevent vision deterioration in future.

Materials and Methods

A cross-sectional study was conducted in different medical colleges of Rawalpindi and Islamabad from 15th April to 18th September 2018. Sample size was calculated by WHO sample size calculator, keeping confidence interval at 95%, and prevalence of uncorrected refractive errors to be 21% (found in literature review), the calculated sample size was 254 selected through simple random sampling technique from these institutions. Ethical approval was taken from ethical review board of Yusra Medical & Dental College. Permission was taken from administration of the medical colleges; the response rate of students was 100%. Informed consent was taken from the respondents explaining them the purpose of this study and confidentiality of data was ensured. In this study, the medical students who had already been diagnosed with REs were included, out of these who were strictly compliant were excluded from the study and a total of 254 non-compliant students who had been prescribed spectacles for constant use, were included in this study. The contact lens users and those with refractive surgery were also excluded, the reason being they have already left spectacle use and opted for an alternative choice, focusing on the students whose main modality of treatment was spectacles. The non-compliance with spectacle usage was defined as refusal to the use of spectacles prescribed for refractive errors, assessed either by observation or by interviewing the student. Structured closed

ended questionnaire was self-administered and the data was analyzed using SPSS version 22. Frequency distributions were calculated using descriptive statistics. Chi-square test was employed to establish the association between qualitative variables and a p-value less than 0.05 was considered as significant.

Results

There were a total of 254 participants with a mean age of 22.5 ± 1.4 years. Female students were 60.7% (n=155) and males were 39.3% (n=99). It was found that out of 254 individuals, 16.2% participated from 1st year, 13.4% from 2nd year, 19.2% from 3rd year, 40.7% from 4th year and 10.5% from 5th year. Out of 254 respondents, 18% were from high socioeconomic status while 74.8% from upper middle, 1.9% from middle and 4.7% belonged to low socioeconomic status.

The time duration of spectacle wear by respondents shown in figure 1.

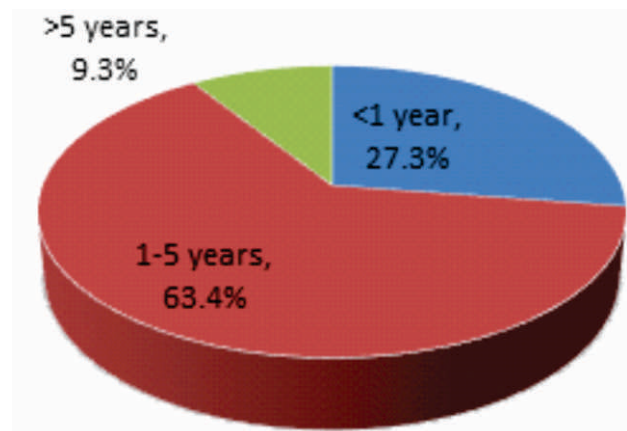


Fig. 1: Time Duration for Participants Who Were Prescribed Spectacle Usage

The various reasons of refusal as shown in figure 2, it was found that majority of participants (64.5%) perceived that wearing spectacles was unacceptable aesthetically and awkward to use in social gatherings. 57.2% of the respondents showed unwillingness and they refrained from using spectacles even if they are in need of using them. The students who faced inconvenience while wearing spectacles along with issues related to managing the glasses were 47.9%. Various students did not wear spectacles due to social stigma and unacceptability, many students lost their spectacle or not using due to breakage of glasses and some students forgot spectacles at home.

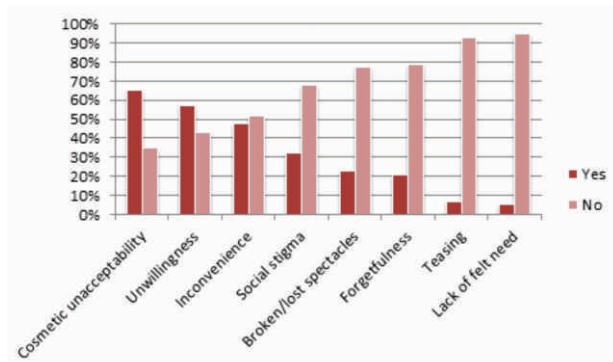


Fig 2: Frequency of Various Reasons of Spectacle Usage Refusal

Cosmetic unacceptability, social stigma and unwillingness were recognized as the foremost reasons of refusal in female students and broken/lost glasses and forgetfulness were the most important causes of refusal to spectacle usage among male students, found to be statistically significant (Table I).

Table I: Gender Differences among Various Reasons

Gender	Refusal Reasons		p-value
	Yes n (%)	No n (%)	
	Cosmetic Unacceptability		0.000
Female	106(68.3%)	49(31.7%)	
Male	12(12.1%)	87(87.9%)	
	Social Stigma		0.002
Female	87(56.2%)	68(43.8%)	
Male	5(5.1%)	89(94.9%)	
	Unwillingness		0.017
Female	91(58.7%)	64(41.3%)	
Male	56(56.5%)	43(43.5%)	
	Forgetfulness		0.000
Female	29(18.7%)	126(81.3%)	
Male	65(65.6%)	34(34.4%)	
	Broken/Lost Spectacles		0.007
Female	43(27.7%)	112(72.3%)	
Male	68(68.6%)	31(31.4%)	

Discussion

This study was conducted to address the issue of refusal of spectacle wear and its various causes and associated factors among medical students. The consistently high prevalence rates among medical students are attributable to extensive and intensive study duration and lengthened use of near vision.^{2,4}

The focal problem causing refusal and low usage among the participants found to be cosmetic factors i.e., frames leaving impressions/indentations on face

by nose pad and distort the overall image and appearance. The participants think that their use may lead to low self-esteem and decreased confidence level, more evident in female students, hence, have a propensity to incline towards supplementary alternatives accessible to them. This finding is similar to the study done in Pakistan.⁵ The second reason showed by this study is unwillingness or intolerance towards spectacle use. 57.2% of respondents were not willing just for the reason that they simply just did not like to wear glasses. This result is quite higher as compared to other studies.⁶⁻⁸

The others reasons mentioned for not using was the stigma attached to the use of spectacles especially for females in a social set up like ours where there is cultural as well as social unacceptability of spectacle use tends to be higher than other societies and therefore the problem is aggravated, similar with the study results reported from other countries.^{9,10}

A proportion of students did not feel spectacles use convenient or at ease while using these. They consider use of spectacles as hindrance in daily routine activities and vigilance in handling, placing and maintenance, similar with the findings of other studies.^{11,12,13} Some students stopped using due to breakage or they lost their glasses and had difficulty in picking a new one. Some showed the habit of forgetting spectacles at home, a behavior found more common in males as compared to the females, a finding consistent with other studies.^{14,15}

A small proportion felt that they do not require spectacles and they have no issue of vision without spectacles, a finding in contrast to other studies.^{16,17}

Only a small percentage did not use spectacles due to being teased by their colleagues, this finding is inconsistent with other studies.¹⁸ The measures taken to tackle with this situation should be broad based like health education intervention to promote spectacle use like done in other countries.^{19,20}

The main limitation of our study was that information about certain potential confounders such as severity of refractive errors could not be collected as most of the students did not know their present refractive status, needs to be considered while interpreting findings of this study. In the current study only quantitative approach was adopted but in future a mixed method approach with qualitative element including open ended questions

as well as focus group discussions will give an in-depth analysis in identifying reasons for refusal of spectacle use.

Conclusion

The current study concludes that several socio-cultural reasons leading to refusal and inadequate use of spectacles among medical students include cosmetic unacceptability, unwillingness, social stigma and inconvenience. These factors tend to contribute towards raising the burden of visual impairment owing to refractive errors.

Targeted health education measures directing to cultural beliefs and social barriers pertaining to spectacle wear, early screenings and community ophthalmology involvement are imperative to formulate effective and comprehensive corrective strategies.

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ORIGINAL ARTICLE

Assessment of Personality Traits and Job Satisfaction in Surgeons: A Correlational Study

Muhammad Wajih Uddin Butt¹, Rahila Yasmeen², Manya Tahir³

ABSTRACT

Objective: The purpose of this study was to assess and correlate the Personality Traits with Job Satisfaction level of Surgeons in Pakistan.

Study Design: Quantitative, Correlational study

Place and Duration of Study: The study was conducted at 8 Teaching Hospitals of Rawalpindi and Islamabad from 17th January to 17th June 2017.

Materials and Methods: A total of 132 surgeons were selected by convenient sampling. Big Five Inventory (BFI) for personality assessment and Minnesota Satisfaction Questionnaire (MSQ) for job satisfaction were used. Data collected from 105 surgeons was analyzed on SPSS version 21. Correlation coefficient for each Personality factor with Job satisfaction was calculated using Pearson's test.

Results: The mean job satisfaction level of surgeons included in our study was 73.828 ± 11.68 . The mean Likert score for personality using BFI was highest for Agreeableness (4.00) followed by Conscientiousness (3.75), Openness (3.54) and Extraversion (3.37) and was lowest for Neuroticism (2.52). Pearson's test showed a positive correlation of Agreeableness, Extraversion and Conscientiousness and a Negative correlation of Openness and Neuroticism with Job satisfaction level of surgeons in Pakistan. Among these the positive correlation of Agreeableness ($r=0.32$, $p\text{-value}=0.001$) and a negative correlation of Neuroticism ($r= -0.21$, $p\text{-value}=0.027$) was statistically significant.

Conclusion: The overall Job satisfaction level of Surgeons in Pakistan is towards the positive side. The surgeons assessed in our study had a balance of different personality traits with the value being highest for Agreeableness and lowest for Neuroticism. The personality traits of Agreeableness and Neuroticism strongly correlate with job satisfaction.

Key Words: Job satisfaction, Personality, Surgeons.

Introduction:

Personality is defined as the characteristics and behaviors that define a person. It is made up of a combination of different elements and is influenced by a variety of factors which include early childhood experiences, relationships, life events, education, society, culture and genetic factors.¹ Job Satisfaction is a measure of how happy or satisfied an employee is while working in an organization. Studies show that a doctor's performance is linked to his job

satisfaction and both of these factors are also influenced by personality.² Surgery is a demanding field with long working hours and a variety of stresses that requires dedication, devotion and a strong personality.³ It is anticipated that people who cannot sustain this stress will be dissatisfied in this profession. Research shows that the job satisfaction level of surgeons is on the decline and many surgeons complain of fatigue and burn out.⁴ Selecting and training only those, who have the right aptitude for a specialty is a novel idea.⁵ Although studies have been conducted internationally on the personality traits of surgeons and as well as on their job satisfaction. Limited literature is available that correlates these two aspects. This aspect needs exploration and a relationship needs to be established. Differences in social upbringing, training, inhospitable and sometimes hostile hospital environment and ill developed service structure of the surgeons working in Pakistan means

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that the results of our study could be different from studies carried out internationally.⁶ The study will guide us about the suitability of different personality traits for surgical specialty. This will in turn help in career counselling of future specialists and in making placement decisions.⁷ Incorporating personality testing into the selection and recruitment process will help in choosing 'the right person for the right job'. This would result in better performance and better job satisfaction of our surgeons and will directly affect patient outcomes.^{8,9,10}

Materials and Methods

A Quantitative, Correlational study was carried out among the FCPS qualified General Surgeons and Sub-specialists (Urologists, Thoracic, Vascular, Orthopedic, Pediatric, Plastic, Cardiac and Neuro Surgeons) working at eight Public, Private and Military Hospitals of Rawalpindi and Islamabad (Combined Military Hospital, Military Hospital, Armed Forces Institute of Urology, Armed Forces Institute of Cardiology, Pakistan Institute of Medical Sciences, Pakistan Railway hospital, Fauji Foundation Hospital and Benazir Bhutto Hospital) from 17th January to 17th Jun 2017.

The ethical approval was obtained from the "Ethics Review Committee (ERC) RIPHAH University". Informed written consent was taken from each of the participant on a pre designed proforma. Permission to carry out the study among the surgeons working at the hospital was also obtained from the MS/Commandants of the respective Hospitals/ Institutes. Confidentiality and anonymity was strictly maintained and guaranteed to all of the participants. The sample size was calculated using the sample size calculator. The accessible number of surgeons in hospitals of Rawalpindi and Islamabad was 200. Keeping the confidence interval at 95% and a 5% margin of error the recommended sample size was calculated as 132. Convenient sampling was done to select 132 FCPS qualified male and female General surgeons and Sub specialists. The FCPS part 2 trainees, non FCPS qualified surgeons, retired and non-practicing surgeons were excluded from the study. The participants were contacted via personal visits, phone call or email and were briefed about the purpose and nature of the study followed by distribution of questionnaires via email or hard copies. After collecting the filled questionnaires 7

forms that were incompletely filled were excluded from the study. 20 of the participants did not return the questionnaire so the final data of 105 surgeons (93 males, 12 females) was entered in SPSS version 21 for analysis.

The Personality assessment was made using the 44 item Big five inventory.¹¹ The Job satisfaction level of the surgeons was assessed using the 20 item short form version of Minnesota satisfaction questionnaire.¹⁶ Both the instruments are widely used, reliable and valid tools. The surgeons rated themselves for each item on a Likert scale of 1 to 5 in both the questionnaires. The mean Likert score and SD of each item and the mean of each scale were calculated. All the 5 factors of personality acted as independent variables whereas the job satisfaction was the dependent variable. Correlation coefficient for each personality factor with the job satisfaction was calculated using Pearson's test. Significance for each correlation was calculated. A *p* value of less than 0.05 was considered significant.

Results

The filled questionnaires from 105 surgeons were analyzed having 93 males and 12 females (Table I). The study included both General surgeons and Subspecialists (Table II). The mean age of the surgeons was 40.38 (std. deviation 7.369) with a minimum age of 30 years and a maximum age of 59 years (Table III). The Mean Working hours per day were 11 hours with a minimum of 6 and a maximum of 18 hours per day (Table III). Mean experience in year's post FCPS was 9.50 years with a minimum of 1 and a maximum of 31 years (Table III). Table IV gives the number of surgeons included from each hospital.

Table I: Gender Distribution among the Sample Population

Gender		
	Frequency	Percent
Male	93	88.6
Female	12	11.4
Total	105	100.0

The mean Job Satisfaction level was 3.691/ 5 $\pm$ 0.584. The mean overall score of the Job Satisfaction in MSQ was 73.828/100 with a Std. deviation of 11.686. The minimum score obtained was 43/100 while the maximum was 99/100.

The mean Likert score was highest for Agreeableness

Table II: Frequency of General Surgeons and Subspecialists in the Sample Population

	Specialty	
	Frequency	Percent
General Surgery	72	68.6
Thoracic Surgery	2	1.9
Plastic Surgery	4	3.8
Cardiac Surgery	6	5.7
Vascular Surgery	2	1.9
Orthopedic Surgery	6	5.7
Neuro Surgery	3	2.9
Urology	7	6.7
Pediatric Surgery	3	2.9
Total	105	100.0

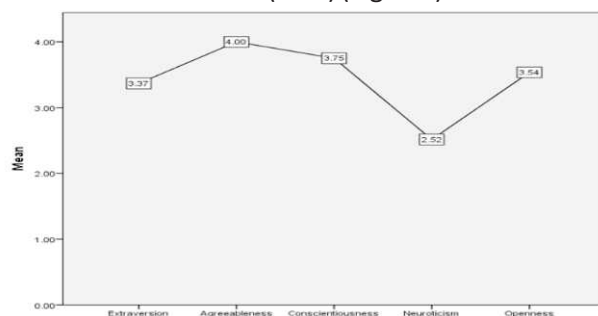
Table III: Age, Working Hours per Day and Years of Experience Post FCPS of the Sample Population

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	105	30	59	40.38	7.369
Working Hours per day	105	6	18	11.10	2.921
Years of experience post FCPS	105	1	31	9.50	7.486

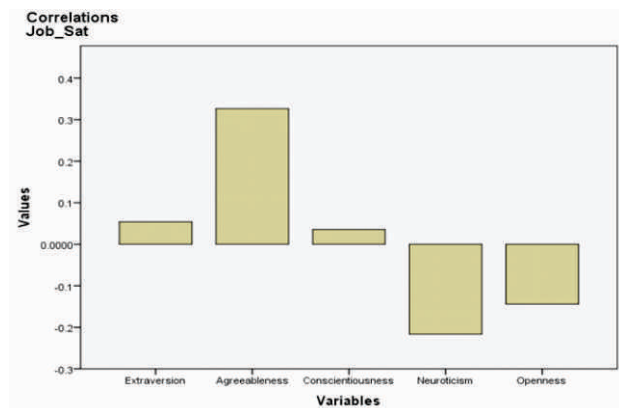
Table IV: Hospital Setting of the Surgeons

Hospital	Frequency	Percent
Combined Military Hospital Rawalpindi	18	17.1
Military Hospital Rawalpindi	7	6.7
Armed Forces Institute of Urology	6	5.7
Armed Forces Institute of Cardiology	7	6.7
Railway Hospital Rawalpindi	6	5.7
Fauji Foundation Hospital	14	13.3
Pakistan Institute of Medical Sciences Islamabad	31	29.5
Benazir Bhutto Hospital Rawalpindi	16	15.2
Total	105	100.0

(4.00) followed by Conscientiousness (3.75), Openness (3.54) and Extraversion (3.37) and was lowest for Neuroticism (2.52) (Figure I).

**Fig 1: Graph Showing the Mean Likert Scores of Independent Variables (Personality Factors)**

The correlation coefficient calculated by the Pearson's test showed an r value that is positive for Agreeableness ($r = 0.327$), Extraversion ($r = 0.054$) and Conscientiousness ($r = 0.035$); and is negative for Openness ($r = -0.144$) and Neuroticism ($r = -0.217$). This shows that there is a Positive correlation between three of the Personality factors (Agreeableness, Extraversion and Conscientiousness) and Job Satisfaction; and there is a Negative correlation between two Personality factors (Openness, Neuroticism) and Job satisfaction level of Surgeons in Pakistan (Figure II). The r value for Agreeableness ($r = 0.327$) was more than 0.3 which indicates a strongly positive correlation. The p-value for Agreeableness (0.001) and Neuroticism (0.027) was 0.05 which shows a statistically significant relationship.

**Fig 2: Graph Showing the Correlation Coefficient of Personality Traits with Job Satisfaction Level**

Discussion

The results of our study support the relationship of personality with the job satisfaction level of surgeons in Pakistan.¹² The mean job satisfaction was $73.828/100 \pm 11.68$ implying that the surgeons included in our study had an 'Average degree of Job satisfaction' as measured by the MSQ (75=High, 25-74=Average, 25=Low) showing thereby that the job satisfaction level of surgeons in Pakistan is towards the positive side and is better as compared to studies carried out elsewhere.^{4,8}

The means of the Likert score for the five personality variables using the BFI showed that the surgeons included in our study had a balance of different personality traits with the value being highest for Agreeableness and lowest for Neuroticism. The values are comparable to a study that compared the personality traits of surgeons and non-surgeons at

different career points which were; Conscientiousness 4.30, Agreeableness 3.76, Openness 3.75, extraversion 3.74 and Neuroticism 2.46.³ The results of our study show a positive correlation between the personality traits of Agreeableness, Extraversion and Conscientiousness and a negative correlation between Openness and Neuroticism with the job satisfaction level. Agreeableness and Neuroticism strongly correlate with job satisfaction as per our results. This implies that surgeons who are high on the scale of Neuroticism are dissatisfied with their job and those who are low on the scale of Neuroticism are more satisfied. Conversely, the higher someone is on the scale of Agreeableness the more satisfied he is. This can be compared with the results of a meta-analysis relating the Big Five traits to job satisfaction which showed that Neuroticism correlates strongly with job satisfaction, followed closely by Conscientiousness and Extraversion. Agreeableness and Openness to Experience showed a weak correlation with job satisfaction.¹²

Our result for Agreeableness show a fairly strong and statistically significant correlation which is different from studies carried out elsewhere according to which conscientiousness and extraversion are the strongest predictors of job satisfaction in surgeons.⁸ The facets grouped under agreeableness are; trust, altruism, compliance, modesty, kindness, cooperation, empathy helpfulness and tender-mindedness compliance. They get along well with others and are more likely to control negative emotions like anger in conflict situations. This can be explained on the basis of our social and cultural structure. Family values, relationships and traditions are given a high place in our society. Surgeons possessing such attributes will most likely be satisfied in their jobs.¹³ However those lacking these traits can face adjustment issues and decreased satisfaction level.¹⁴ Our results also showed a weakly positive correlation between Conscientiousness, Extraversion and job satisfaction. This aspect needs further exploration as according to many international studies including one on trauma surgeons; the personality trait of extraversion strongly correlates with academic/profession performance and job satisfaction.⁸ The other surprising finding in our study is the negative

correlation of Openness with job satisfaction. This can probably be due to the influence of departmental or administrative restraints and a lack of research and discovery culture in our hospitals and society. Openness involves six facets including active imagination, aesthetic sensitivity, awareness about own feelings, preference for variety, experience seeking and intellectual curiosity. People who score low on openness are considered conventional, traditional and closed to experience⁶. They prefer routine to new experiences and have a narrower range of interests. Surgeons who like to introduce new techniques or procedures, want to bring change to the existing systems, introduce new and evidence based teachings and have an innovative nature are always met with resistance and are seldom supported by the administration or seniors. This causes frustration and makes them disillusioned. This fact has been highlighted in our study. People who are high on the score of openness are dissatisfied and those low on the score of openness are satisfied with their profession.¹⁵ Limitations of our study can be the bias caused by the element of faking by the participants. They are satisfied with their profession.¹⁵ This means that surgeons having conventional ideas and those that stick to the routine without taking risks will generally remain satisfied with their jobs. The results of job satisfaction can be affected by mood and problems faced by the surgeons at that point of time, both at personal and professional level. Similarly the results can differ among the surgeons working in public, private and military hospitals as the workload, clientele, service structure, perks, privileges, security and professional development opportunities are different among these setups and this aspect needs further exploration.^{16,17,18}

Conclusion

We can conclude by saying that personality plays a significant role in the job satisfaction of surgeons in practice. The results of our study show that the overall Job satisfaction level of Surgeons in Pakistan is towards the positive side. The surgeons assessed in our study had a balance of different personality traits with the value being highest for Agreeableness and lowest for Neuroticism and these two personality traits strongly correlate with job satisfaction level. Our study shows that the personality traits of Agreeableness, Extraversion and Conscientiousness

are more suited for surgical practice as these factors correlate positively while Neuroticism and Openness correlate negatively with job satisfaction of Surgeons in Pakistan. We recommend that the assessment of personality should be incorporated in the selection process and for career counseling of aspiring surgeons. Educational programs should be developed that can help to enhance the personality attributes that are necessary for success in the surgical practice.

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- Shall not copy the manuscript submitted for assessment.

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- Reviewer shall make effort to meet the deadline (2 weeks) for the review of manuscript.
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The revised version received from author is re-assessed by editor. It is further checked for correctness of references and verified that

manuscript is free from plagiarism. If found fit, is sent for editing which is done by the specialized managing editor team for correct grammar, spelling and medical terminology, ensuring incorporation of all the necessary/relevant details in the article. Managing Editor and its team are involved during the whole process.

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INSTRUCTIONS FOR AUTHORS

The 'JIIMC' agrees to accept manuscripts prepared in accordance with the "Uniform Requirements submitted to the Biomedical Journals" published in the British Medical Journal 1991; 302: 334-41.

The material submitted for publication should be sent completely to the Journal of Islamic International Medical College, Pakistan. Research work that has already been reported in a published paper or is described in a paper sent or accepted elsewhere for publication should not be submitted. Duplicate submission of the same research work to other journal should be avoided as this fall into the category of publication misconduct. A complete report following publication of a preliminary report of a preliminary report, usually in the form of an abstract, or a paper that has been presented at a scientific meeting, if not published in a full proceedings, may be submitted.

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It is mandatory to submit online a duly filled-in copyright, authorship and undertaking proforma along with the manuscript. (<https://jiimc.riphah.edu.pk/downloads/>). The sequence/ order of name of authors submitted at the time of initial submission of manuscript shall not be changed at any stage.

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All those designated as authors should meet all four criteria for authorship as stated in ICMJE recommendations (<http://www.icmje.org/icmje-recommendations.pdf>). According to ICMJE recommendations authorship is based on the following four criteria: 1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data; and 2. Have been involved in drafting the work or revising it critically for important intellectual content; and 3. Have given final approval of the version to be

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The manuscript should be typed in MS Word. Each manuscript should include a title page (containing email address, cell numbers, institution and postal address of the corresponding author), abstract, key words, text, acknowledgements (if any), references, tables (each table, complete with title and footnotes) and legends for illustrations and photo-graphs. Each component should begin on a new page. Sub-headings should not be used in any section of the script except in the abstract.

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MANAGING EDITOR JIIMC

Westridge-III, Pakistan Railway Hospital
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MATERIAL FOR PUBLICATION

The material submitted for publication may be in the form of an Original Research (Randomized controlled trial - RCT, Meta-analysis of RCT, Quasi experimental study, Case Control study, Cohort study, Observational Study with statistical support, etc.), a Review Article, a Case Report, Recent Advances, New Techniques, Debates, Book/CDs Review on Clinical/Medical Education, Adverse Drug Reports or a Letter to the Editor. Studies more than five years old at the time of submission are not accepted for publication in JIIMC. Non-English articles are not accepted for publication in JIIMC.

ORIGINAL ARTICLES should report original research of relevance to clinical medicine and may appear either as papers or as short communications. The original paper should be of about 2000-2500 words excluding abstract and references. The abstract should be structured of about 250 words. Three to 10 keywords should be mentioned at the end of abstract as per MeSH (Medical Subject Headings). There should be no more than four tables or illustrations. The data should be supported with 20 to 25 local as well as international references. More than 50% of the references should be from last five years.

SHORT COMMUNICATIONS should be about 1000 words, with a non-structured abstract, two tables or illustrations and 5 references.

CLINICAL CASE REPORT and brief or negative research findings may appear in this section. Clinical Case Reports should be of academic value and provide relevance of the disease being reported as rare or unusual. The word count of case report should not be more than 800 words with 3- 5 key words. The abstract should be non-structured of about 150 words (case specific) with maximum of 5

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REVIEW ARTICLE should consist of structured overview of relatively narrow topic providing background and recent development with reference of original literature. An author can write a review article only if he/she has written minimum of three original research articles and some case reports on the same topic. Review article should be of 2500 to 3000 words with non-structured abstract of 150 words and minimum 3 key words.

LETTERS TO THE EDITOR should normally not exceed 400 words, have no more than 05 references and be signed by all the authors-maximum 3 are allowed. Preference is given to those that take up points made in contributions published recently in journal. Letters may be published with a response from the author of the article being discussed. Discussions beyond the initial letter and response will not be entertained for publication.

OBITUARIES should be of about 250 words. Editorials are written by invitation.

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An article based on dissertation/thesis submitted as part of the requirement for a postgraduate degree (M. Phil, FCPS, MS) can be sent for publication after it has been approved by the institution's ethical review board/committee and the college/university evaluation committee/board. The data should not be more than five years old. Thesis/dissertation based article will be assessed by proper review process. Once accepted for publication, then disclosure will be made that 'it is a Dissertation based article'.

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 - ✓ Publication of a formal notice detailing the misconduct.
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All manuscripts except Short Communication and Letter to the Editor should be divided into the following sections.

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Abstracts of original article should be in structured with following sub-headings: i. Objective, ii. Study Design, iii. Place & Duration of Study iv. Materials & Methods, v. Results, vi. Conclusion. Four elements should be addressed: why did you start, why did you do, what did you find and what does it mean. Why did you start in the objective. What did you do constitutes the methodology and could include design, setting, patients or other participants, interventions, and outcome measures. What did you find is the results, and what does it mean would constitute; our conclusions. Please label each section clearly with the appropriate sub-headings. Structured abstract for an original article, should not be more than 250 words. At least 3 key words should be written at the end of abstract. Review article, case report and other require a short, unstructured abstract. Commentaries do not require abstract.

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Write this section with references as per following instructions:

- a. Give background information about the subject matter and the issues your study intends to address. Only strictly pertinent references should be cited and the subject should not be extensively reviewed.
- b. Describe what is known (in the literature) and what is not clear about the subject with reference to relevant literature thus identifying the literature gap.
- c. You write the rationale (justification) of your study.
- d. Finally you mention the objective of your study

MATERIALS AND METHODS

Methodology is written in past tense.

Follow this sequence **without headings**:

- Study design
- Place and Duration of Study
- Sample size
- Sampling technique
- Mention about permission of ethical review board and other ethical issues addressed.
- Inclusion and Exclusion Criteria
- Data collection procedure-
- Type of data: parametric or nonparametric
- Data analysis; including Statistical Software used, and statistical test applied for the calculation of p value and to determine the statistical significance. Exact p-values and 95% confidence interval (CI) limits must be mentioned instead of only stating greater or less than level of significance. All percentages must be accompanied with actual numbers.

RESULTS

These should be presented in logical sequence in the text, tables and illustrations. All the data in the tables or illustrations should not be repeated in the text; only important observations should be emphasized or summarized. No opinion should be given in this portion of the text.

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- b. Discuss key studies relevant to your study.

- c. Compare your work with other's work.
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- e. Suggest future work if necessary.

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Tables and illustrations should be merged within the text of the paper, and legends to illustrations should be typed on the same sheet. Table should be simple, and should supplement rather than duplicate information in the text; tables repeating information will be omitted. Each table should have a title and be typed in double space without horizontal and vertical lines on an 8 1/2" x 11 paper. Tables should be numbered consecutively with Roman numeral in the order they are mentioned in the text. Page number should be in the upper right corner. If abbreviations are used, they should be explained in foot notes and when they first appear in text. When graphs, scattergrams, or histogram are submitted, the numerical data on which they are based should be supplied. All graphs should be made with MS Excel

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REPRINTS

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EDITORIAL

Gift Authorship: An Unethical Practice in Medical Writing

Ishtiaq Ahmed

146

ORIGINAL ARTICLES

Outcome of Laparoscopic Cholecystectomy in Patients of Acute Cholecystitis

S H Waqar, Muhammad Tariq Abdullah,
Sajid Ali Shah, Zafar Iqbal Malik , Fatima Shahzad

149

Serum IgE Levels and Total Eosinophil Count in Allergic Rhinitis

Mirza Khizar Hameed, Atif Sharif, Mahum Khizar

154

Immunization Status of Children: A Study at Shaikh Khalifa Bin Zayed Al-Nahyan Hospital Rawalakot Azad Kashmir

Sadiq Hussain, Muhammad Farooq,
Muhammad Nadeem, Shazia Siddiq,
Raja Imtiaz Ahmed, Irum Javed

159

Refractive Errors in Patients Attending DHQ Hospital Sargodha: A Cross-Sectional Study

Ibtissam Bin Khalid, Muhammad Hunaid Hassan,
Mazhar Nasim, Yahya Umair Azam

163

Immediate Effects of Dry Needling on Pain and Function among Individuals with Patellofemoral Pain Syndrome

Iqra Khan, Ashfaq Ahmad, Samreen Sadiq

167

To Assess the Impact of Fibroids on Pregnancy Outcome

Rakshinda Mushtaq, Uzma Afridi, Pari Gul,
Shama Jogezeai , Rukhsana Neelofer

173

Water Pipe A Safe Alternative To Cigarette? A Comparative Study on Hematological and Biochemical Parameters in Mice Exposed to Cigarette and Water Pipe Smoke

Shazia Imran, Rubina Shafi, Tahira Sadiq

177

Prevalence of Visual Impairment among Indoor Diabetic Patients at Teaching Hospital of Rawalpindi

Muhammad Shafeh Shehzad,
Muhammad Usayd Khan, Saqib Jan Shah,
Aneeq Ullah Baig Mirza

183

MEDICAL EDUCATION SECTION

Reasons for the Refusal of Spectacle Usage among Medical Students of Rawalpindi and Islamabad

Khadija Mohammad, Iffat Atif, Farah Rashid

188

Assessment of Personality Traits and Job Satisfaction in Surgeons: A Correlational Study

Muhammad Wajih Uddin Butt, Rahila Yasmeen,
Manya Tahir

192

ABOUT JIIMC

197

INSTRUCTIONS FOR AUTHORS

201