ESCULAPIO

JOURNAL OF SERVICES INSTITUTE OF MEDICAL SCIENCES, LAHORE.

VOLUME 19 JULY - SEPTEMBER 2023 ISSUE 03

PUBLISHED BY

ESCULAPIO OFFICE, GYNAE UNIT - I, SERVICES HOSPITAL LAHORE
PHONE: 042-99204879, WWW.ESCULAPIO.PK

ONLINE EDITION
VISIT THE WEBSITE FOR ONLINE: WWW.ESCULAPIO.PK
FOR SUBMISSION: PUBLICATIONS@ESCULAPIO.PK

COMPOSED BY
AMEER ALI

PRINTED BY
TALAL PUBLISHERS
9- ROSE CENTRE, KABIR STREET, URDU BAZAR LAHORE
0300-4327951
HEC RECOGNISED: "Y" CATAGORY

TABLE OF CONTENTS

Editorial

Original Articles

TABLE OF CONTENTS

Medical Negligence or Malpractice: Critical Review of Relevant Laws in Pakistan

Arif Rasheed
Department of Forensic Medicine, Services Institute of Medical Sciences, Lahore
DOI: https://doi.org/10.51273/esc23.25131930

Introduction

The terms 'medical negligence or medical malpractice' are often used synonymously, however, in stricto senso 'medical negligence' include “criminal negligence” while 'medical malpractice' encompasses civil negligence including two other types, i.e., contributory and third party negligence. The word negligence is a noun meaning “not to give proper care or carelessness”. Therefore, the medical negligence means medical treatment without proper care or is an act or omission by a medical practitioner therein he has deviated from accepted standards of practice in the medical fraternity and caused damage/injury or death to the patient. In case of damage/injury, it falls within the ambit of civil negligence and in case of death of patient; it falls within the purview of criminal negligence. Medical Negligence comes under the category of tort law. The scope of medical negligence is not limited to conduct of the medical practitioner alone. It extends to his staff working under his supervision (3rd party negligence) and in a hospital setting to the whole unit (captain of ship theory/master is responsible /vicarious liability) and in some cases role of patient also contribute in it (contributory negligence).

In all cases of medical negligence, burden of proof is on the patient (plaintiff) than on the medical practitioner (defendant). To prove negligence claim, the plaintiff is required to prove, first, that the doctor owed him a duty of care; second, the doctor breached that duty; and, third, that the breach resulted in damage/injury, however, there is a unique entity, RES **IPSA LOQUITRE**, (thing speaks for itself, e.g., leaving a swab or instrument in the body of the patient during surgery), where medical practitioner (defendant) has to prove that he was not negligent.

however, in stricto senso 'medical negligence' include “criminal negligence” while 'medical malpractice' encompasses civil negligence including two other types, i.e., contributory and third party negligence. The word negligence is a noun meaning “not to give proper care or carelessness”. Therefore, the medical negligence means medical treatment without proper care or is an act or omission by a medical practitioner therein he has deviated from accepted standards of practice in the medical fraternity and caused damage/injury or death to the patient. In case of damage/injury, it falls within the ambit of civil negligence and in case of death of patient; it falls within the purview of criminal negligence.

Medical Negligence comes under the category of tort law. The scope of medical negligence is not limited to conduct of the medical practitioner alone. It extends to his staff working under his supervision (3rd party negligence) and in a hospital setting to the whole unit (captain of ship theory/master is responsible /vicarious liability) and in some cases role of patient also contribute in it (contributory negligence).

In all cases of medical negligence, burden of proof is on the patient (plaintiff) than on the medical practitioner (defendant). To prove negligence claim, the plaintiff is required to prove, first, that the doctor owed him a duty of care; second, the doctor breached that duty; and, third, that the breach resulted in damage/injury, however, there is a unique entity, RES **IPSA LOQUITRE,** (thing speaks for itself, e.g., leaving a swab or instrument in the body of the patient during surgery), where medical practitioner (defendant) has to prove that he was not negligent.

Relevant Laws in Pakistan

Legal Position (Common Law):

1. Law begins with the presumption:-
   (a) that neither a doctor can be forced to start the treatment nor a patient can be forced to submit to treatment.
   (b) When both agree, (i.e. patient consents to get treatment and medical practitioner promises to provide cure), they enter into an “implied contract”, having their share of responsibilities.
2. Patients share of responsibility:-

(a) Pay the mutually agreed fee.

(b) Submit himself to the command of the doctor:- i- History (all secrets), ii- Exposure body parts for examination, iii-

Accept treatment advised.

3. Doctors share of responsibility:-

a) Apply skill with competence proportionate to his own claim (general practitioner/expert etc.)

b) During application of skill should exercise carefulness (reasonable).

4. The treatment must proceed without interruption till:-

(a) Mutual agreement when the physician refers him to another physician and the patient accepts this advice.

(b) Discharge of physician by the patient (when the patient is not satisfied and decides unilaterally to go to some other medical practitioner) and

(c) The death of either party.

NOTE: The position of the medical practitioner under employment with government or an organization is slightly different. He is under an obligation to provide medical treatment to any member of the public or organization who requires or requests it during the doctor's duty. Further the responsibility to provide treatment may shift to his successor, i.e., on change of duty or on transfer.

The Article 9 of **Constitution of Pakistan** 1973 ensures a fundamental assurance that it is the duty of a welfare state to ensure the best enforcement of right of life; and as laid down by the Supreme Court that the word life covers all means of human existence, all such services and facilities that a person is entitled to enjoy legally and constitutionally. It includes medical care too as a right to have proper health care facilities and all goals and purposes of medical care are meant for the protection of life. It is also well established under the Constitution of Pakistan 1973 that no one, including doctors, enjoys complete immunity.

Laws have been enacted to regulate medical profession and to control the acts of medical practitioners, rules and regulations have also been formulated to regulate the policies.

It is pertinent to mention that after 18th Amendment in the Constitution of Pakistan, the health and matters auxiliary to it including planning, financing, implementation, management, oversight, supervision, monitoring, regulation, medical education and training have become provincial subjects to legislate upon (Waraich, 2018).

Lawsuits can be brought against medical negligence under civil, criminal, tort and consumer law of the country such as:

1) Pakistan the Pakistan Medical & Dental Council (PM&DC) Act 2022.
2) Medical Tribunal Act 2020
3) Disciplinary Action under Health Care Commission Acts.
4) Laws entailing civil liabilities under law of Torts and Code of Civil procedure 1908 Section 19.
5) Consumer Protection Act 2005.
6) Criminal liability under Pakistan Penal Code 1860
7) Liability under code of Criminal Procedure of Pakistan 1898
8) Pakistan Medical and Dental Council (PMDC), authorized by its Constitution to initiate an inquiry under the jurisdiction of the Medical Tribunal as per Medical Tribunal Act 2020, if medical practitioners found guilty of negligence, their license to practice can be suspended, temporarily or permanently and revoked. In case of permanent suspension of license to practice, there is permanent erasure of name from registering register as per section 44 (Removal of names from the register)—that is called professional death.

However, from the perusal of the aforementioned PM&DC ACT, one thing is obvious that primarily it is to manage the affairs of medical education as well as recognition of medical and dental qualifications (Waraich, 2018). The objective pertaining to determination of the rights and liabilities and the modus operandi to confer liability on the doctors, paramedical staff and medical & dental institutions on the account of their negligence and medical

malpractices, has not been comprehensively addressed in it.

In Punjab, the Punjab Healthcare Commission Act 2010 and in Sindh, the Sindh Healthcare Commission Act 2013 has been promulgated to deal with cases of medical negligence in their respective provinces. The practical part associated with medical negligence or malpractice in these ACTS has been reproduced herein as under:

- Section 4 of the Punjab Healthcare Commission Act 2010 empowers the Commission that on application of any aggrieved person to hold enquiry and investigate into malpractice services by any healthcare provider and issue resulting orders and while doing so can exercise the powers of a civil court for the execution of its orders. Pakistan Social Sciences Review (PSSR) March, 2021 Volume 5, Issue I 475
- Section 19 of the same Act defines medical negligence as a healthcare service provider may be held guilty of medical negligence when a healthcare provider does not exercise with due care and caution with rational proficiency the expertise which he or his employee did possess.
- Section 23 of the Act prescribes the procedure of the investigation to be followed by the commission and details the process required to be followed for filing a complaint.
- Section 26 of both the enactments (Punjab and Sindh) Healthcare Commission Acts 2010 and 2013 respectively provides that where the conditions of a case permit action under any other law can also be taken, the Act empowers the Commission to refer any case to the executive authorities or law enforcing agencies for appropriate action under relevant laws. Meaning thereby that once an inquiry is completed by the Commission and the commission is of the view that it is proved by cogent evidence that charges levied against accused healthcare provider hold water then it may refer the case accordingly.
- Section 28 confers jurisdiction on the Commission to adjudicate and impose fine up-to five hundred thousand rupees, keeping in view gravity of offence, but only after affording an adequate opportunity of hearing to a person to be fined. And in case the complaint is proved false, it could impose fine up-to two hundred thousand rupees upon the complainant.
- Under section 35, all administrative authorities of the Government have been directed to act in support of the Commission for executing the mandate given to it by Law. Where it appears to the Commission that the circumstances of a case warrant action under any other law, the Commission may refer such cases to the concerned governmental authorities or law enforcement agencies for appropriate action under relevant laws.

The Health care Commissions Acts were enforced in the province of Punjab, Sindh, KPK after the accruals of the enormous cases of medical malpractices across the country. From perusal of all these supra mentioned HCC ACTS, it is obvious that although there are sufficient provisions in the statutes governing the conduct of medical practitioners, however, owing to poor understanding of the procedure, lack of proper mechanisms for implementation, these remedies against negligence and medical malpractice are not implemented in true letter and spirit. This area has been so badly neglected at the platform of technicalities and stereotyped red-tapism inbuilt in the system. The fundamental purpose of these laws to ensure the application of the generally acknowledged principles of wellbeing of patient has been vanished.

Another significant aspect is to determine the question of jurisdiction as far as the medical malpractice and negligence of medical practitioner are concerned. Wariarch in 2018 has asserted that Consumer courts of Pakistan has jurisdiction over the matters regarding malpractice and negligence of the healthcare provider; however, this is an outdated idea now particularly after the promulgation of special laws on the subject, the jurisdiction of the general law (Consumer Protection Act 2005) is redundant. The same has been stated by honourable Lahore High Court judge, Justice Farrukh Irfan that Section 29 of the HCC Act barred proceedings under any other law which included the Punjab Consumer Protection Act, 2005. These bottlenecks can be removed through a

ved through a revised and meticulous enactment exclusively dealing with conduct of healthcare provider including misfeasance, malfeasance, and negligence (Khowaja, K. 2009). It is stated in PLD 2019 Lah 429 that in the matters of medical malpractice and negligence the exclusive jurisdiction is of Punjab Healthcare Commission in Punjab (Pakistan Social Sciences Review (PSSR) March, 2021 Volume 5, Issue I 477) to investigate and impose penalty. It is further stated in 2011 C L C 463 that once it is decided by the Healthcare Commissions that doctor was guilty of malpractice and misconduct, criminal as well as civil law could be agitated against this felony.

1- **Civil Courts,** The cases of civil negligence like extraction of healthy tooth instead of diseased one, administration of wrong injections, use of expired drugs, wrong diagnosis and wrong treatment/medicine which leads to damage can be dealt in the civil courts for the claim of damages proportionate to the damage caused (Magistrate courts).

Clinical negligence can be remedied under civil liability, criminal prosecution and disciplinary action by the regulatory body, which today is the Pakistan Medical Commission (PMC), or the provincial healthcare commissions established after the 18th amendment.

A civil action can be initiated at a consumer court or a high court to claim damages for the losses suffered owing to negligent healthcare services. To prove one's negligence claim, the victim is required to prove, first, that the doctor owed him a duty of care; second, the doctor breached that duty; and, third, that the breach resulted in damage/injury.

It is easy to prove the first of this three-stage liability test. However, the second and third stages are where most negligence claims fail and doctors escape liability. It is practically impossible for a layman to prove with scientific evidence as to what the expected standards of care are, how a doctor deviated from that expected standard, and how it caused harm.

In civil litigation, a litigant has the right to acquire all information from the opponent. However, most patients are not given sufficient information by the doctors or hospitals after a case goes wrong. Patients in routine medical practice are never told about the medical condition they were in, what possible options or treatments they had, whether the healthcare service providers had the required equipment and expertise, and what drugs were administered and why.

2- **Criminal Courts**, Where there is death of the patient due to reckless action of the doctor, the said cases falling within the purview of criminal negligence can be dealt in the criminal courts (district & session Judge).

Relevant Statutory Sections In This Regard Are Mentioned Infra:

i- Section 318 of the Pakistan Penal Code 1860 which states the following:

"Whoever, without any intention to cause the death of or cause harm to a person causes the death of such person, either by mistake of act or by mistake of fact, is said to have committed qatl-i-khata."

ii- Section 321 states the following:

"Whoever, without any intention to cause the death of, or cause harm to, any person, does any unlawful act which becomes a cause for the death of another person, is said to have committed qatl-bis-sabab."

iii- Section 304(A) of the PPC 1860 specifically provides the following:

"Whoever causes the death of any person by doing any rash or negligent act not amounting to culpable homicide, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both."

There is a general principle of criminal law that "every sane is presumed to intend the natural consequences of his act". Doctors who have attained their MBBS degrees and have had practical experience in their field are also presumed to have the knowledge of what the consequences/side-effects of their prescribed medicine may be. Therefore, doctors cannot pin liability solely on the hospital, as the primary responsibility is with the doctors themselves while hospitals may be held liable under the principle of vicarious liability in this regard.

Conclusion

There is need of hour to look into the healthcare system of Pakistan. The ambiguities, confusions and bottle necks within and among the various legal frameworks are existed. There is no close monitoring on conduct (professionalism, i.e., cognitive, psychomotor domains and attitude) of medical practitioners. The medical institutes and hospitals have no uniform criteria, policy, framework and body to deal with cases of medical negligence and malpractice.

Recommendations and Suggestions

The intra and inter ambiguities within various legal framework must be removed.

It should be made mandatory to conduct close monitoring of medical training, regulation of duty hours and work commitment by medical professionals, legal protection for patients and doctors, adequate salaries for doctors, and assessment of professional competence at regular intervals. These measures will hopefully help control medical malpractice at a larger scale. PMDC and other regulatory bodies should also pledge to preclude cases of medical negligence and grasp doctors liable through criminal or civil penalties, depending upon nature & magnitude of medical negligence or malpractice.

The universally accepted norms of medical practice must be introduced and implemented within the framework of our health system (Jalal & Haq, 2014). All medical practitioners must be given proper training and equip with skills to meet the standard of care expected from them. It has always been a highly privileged, respectful, and highly rewarding profession. A very high level of implied trust, empathy, care, kindness, morality, and professional proficiency is expected from a doctor. Exclusive law must be made which clearly defines the provisions regarding medical negligence and medical malpractice and the liabilities in case of breach of such obligations. The measure to award monetary compensation must be clearly stated. There should be an accountability mechanism of regulatory bodies as well. The bureaucratic hurdles should be removed, and this area must be effectively separated from the beaucratic shackles and control. The law must ensure the enforcement of the rights of patient as well as healthcare provider. A doctor cannot overlook nor disregard the celestial role he is expected to have in the discharge of his duties and the standards a doctor must adhere to or is morally connected with regardless of any law watching over their deeds (Sher, 2006). The oath' the undertaking' which a doctor swears on the very first day of his medical profession casts a heavy responsibility on his shoulder to uphold all the virtues associated with this profession the oath states will use those regimens which will benefit my patients according to my greatest ability and judgment, and I will do no harm or injustice to them (Shah & Sheahan, 2016). These aspirations when truly translated by the State legislature through efficacious enactments, by executive through viable policies and with opulent implementation by the judiciary, the entire healthcare regime can be progressed and revamped for addressing the concerns, for serving the mandate of laws and for enforcing the fundamental rights guaranteed by the Constitution.

Reference

1. Jalal, S., & Haq, I. U. (2014). Revisiting the three different tiers of the health system of Pakistan and their implications for the achievement of MDGs by Pakistan. J Pak Med Assoc, Vol.64 Issue 2, 195-200.
2. Khowaja, K. (2009). Healthcare systems and care delivery in Pakistan. JONA: The Journal of Nursing Administration, Vol 39 Issue 6, 263-265.
3. Muhammad H, (2017). Legal Position of Medical Malpractice in Indonesia. The Social Sciences, Vol 12 Issue 8, 1473-1481.
4. Sher, N. (2006). New Differences between Negligence and Strict Liability and Their Implications on Medical Malpractice Reform. S. Cal. Interdisc. LJ, Vol.16, p.335. Pakistan Social Sciences Review (PSSR) March, 2021 Volume 5, Issue I 481
5. Waraich, S. (2018). Healthcare System and Medical Malpractice Law in Pakistan. Policy Perspectives, Vol.15 Issue 3, p.85-98.

The Association Between Rheumatoid Arthritis and Serum Levels of Vitamin D

Maria Hameed,[1] Mudassar Zia,[2] Muniza Qayyum,[3] Hijab Hameed,[4] RiffatYasmin,[5] Shabab Zahra,[6]

Abstract

Objective: To find out the status of vitamin D in patients with Rheumatoid Arthritis.

Material and Methods: This comparative study was conducted in Govt Kot Khawaja Saeed Teaching Hospital. Duration of study was from June 2017 to June 2018. A case control study was carried out on 60 patients with Rheumatoid arthritis (age range 25 to 60 years fulfils the criteria of 2010 Rheumatoid arthritis classification. Duration of study was from June 2017 to June 2018. Patients/controls were comprised as group A (30 patients with mild arthritis), group B (30 patients with moderate form of arthritis) and group C (20 age, sex matched healthy controls).

Results: Mean age of patients was 36.50 years. Majority of women were house wives with average health status with normal pulse rate and blood pressure. Clinical variables of patients showed the small joint involvement, swelling, tenderness with moderate to severity of disease. It is observed that the level of vitamin D was significantly low in group of patients presented with severe form of arthritis as compared to group of patient who has mild to moderate arthritis. Study also observed that both group of patient has significantly low levels of vitamin D as compared to controls.

Conclusions: Vitamin D deficiency is observed in patients with rheumatoid arthritis, and may be linked to severity in RA. It is therefore a need of supplementation of Vitamin D for the pain relief in RA patients.

Keywords: rheumatoid arthritis, Women, Vitamin D deficiency

How to cite: Hameed M, Zia M, Qayyum M, Hameed H, Yasmin R, Zahra S. *The Association Between Rheumatoid Arthritis and Serum Levels of Vitamin D. Esculapio - JSIMS 2023;19(03):269-272*

DOI: https://doi.org/10.51273/esc23.25131931

Introduction

Rheumatoid arthritis (RA) is an inflammatory ailment typified by flares & remissions. The flares described by pain. Deficiency of Vitamin D is related with diffuse musculoskeletal pain. The prevalence of RA in southern region of Pakistan is low (0.14%) and in Northern region is high (0.55%).[1,2] On the other hand the prevalence rate of RA in European countries is 0.5 - 1.0%.[3] Risk factors of RA are obesity, family history, and environmental pollutants. Sign and symptoms of RA are swollen joints, stiffness of joints especially in morning, Early RA initially affects small joint (joint of finger and toes).[4] With the passage of time, the disease spread to knees, elbow, wrist, hip, ankles and shoulder.[5] DAS-28 (Disease Activity Score-28 joint) given by European League against Rheumatism to calculate the severity of RA. The scale of score is from 0-10 showing the severity of disease. According to DAS > 5.1 indicate the high severity of disease, DAS between 5.1 & 3.2 shows moderate level of disease and value <3.2 shows low level of severity.[6] Vitamin D is believed to have an anti-inflammatory and immunomodulatory role and its lack has been related to several autoimmune disarrays, including RA.[7] Role of vitamin D in immune system is very important. It is proposed vitamin D stimulate a strong anti-microbial response, to activate the body to immediately remove micro-organism before they cause any infection.[8] In addition the supplement of vitamin D in primary stage of RA may inhibit the progress of RA from moderate to severe form.[9,10] However a study found no clear link between serum vitamin D and severity. The affiliation between the levels of vitamin D and

1,2. Department of Biochemistry, Amirudin Medical College Lahore
3. Pharmacology and Therapeutics, Fatima Jinnah Medical University Lahore
4. Abu Amara Medical College Lahore
5. Department of Biochemistry, Rehbar Medical College Lahore
6. Shalamar Medical and Dental College Lahore

Correspondence:
Dr Maria Hameed, *Department of Biochemistry, Ameerudin Medical College Lahore. E-mail. mariahameed569@gmail.com*

Submission Date: 04-05-2023
1st Revision Date: 24-05-2023
Acceptance Date: 04-08-2023

severity of RA is of gigantic interest and therapeutic proposal. A cross sectional study was designed to find out the status of vitamin D in patients with Rheumatoid Arthritis. Study was considered as cross sectional (to find the relation between RA and vitamin D status).

Material and Methods

A case sectional study was carried out on 60 patients with Rheumatoid arthritis fulfils the criteria of 2010 rheumatoid arthritisclassification[12]. Sample size was calculated as 61 with 90% confidence Interval. Female with age range 20-60 year were taken from Govt Kot Khawaja Saeed Teaching Hospital. Duration of study was from June 2017 to June 2018. Patients/controls were comprised as group A (20 patients with mild arthritis), group B(20 patients with moderate form of arthritis) and group C (20 age ,sex matched healthy controls). DAS scoring system for sample selection was used for inclusion criteria. The patients newly diagnosed, using vitamin D supplement, or with any serious morbidity were excluded from the study. Data was analyzed by SPSS 20. Demographic variables were expressed in percentages. One way Anova was applied to find the

Table 1: *Demographics of female patients (group A & B) and controls (group C)*

Variables	Group A	Group B	Group C
Age	36.4±10.1	37.4±10.2	32.7±11.0
Profession			
Job	45%	55%	60%
House wife	50%	45%	40%
Socioeconomic status			
Middle	18(90%)	19(95%)	17(85%)
Upper	2(10%)	1(5%)	3(15%)
General health status			
Good			
Average	5(25%)	2(10%)	4(20%)
Poor	15(75%)	16(20 %)	16(80%)

Table 2: *Clinical variables of patients*

	Group B Frequency and percentages	Group C Frequency and percentages
Small joint pain	11(55%)	15(75%)
Swelling	3(15%)	16(80%)
Tenderness	16(80%)	0(0%)
Pain status		
Mild	0(0%)	19(95%)
Moderate	15(75%)	1(5%)

Table 3: *Group wise comparison of vitamin D levels among female patients and controls*

Groups		Mean difference	Standard error	P-value
Group 3	Group 1	51.20	3.17	<0.001
	Group 2	33.75	3.22	
Group 2	Group 1	18.56	3.37	<0.001

significant difference among female patients groups and female control subjects. P<0.05 showed significance.

Results

The Demographics of patients and control were presented as table 1. Mean age of patients in group A and B was 36 and 37 years respectively. Most of the patients belong to middle class and professional whereas majority of women were house wives with average health status with normal pulse rate and blood pressure. Clinical variables of patients and controls were tabulated as table 2. Clinical variables of group B and group C showed that in group C, the small joint involvement, swelling, tenderness mild to moderate to severity was presented as high frequency and percentages as compared to in group B. Group wise comparison of vitamin D levels among patients and controls was tabulated as table 3. By using One way ANOVAs, it is observed that mean difference and standard error of vitamin D among group A and group B was significantly higher (P<0.001) as compared to control group C. On the other hand, the mean difference and standard error of vitamin D among group B was significantly higher (P<0.001) as compared to control group C.

Discussion

According to our study patients with mild to moderate severity of RA or patients with severe form of RA have age range 36-38 years. However, a study was carried out in 80 patients with RA and found the mean age of patients was 44.7 (range 40-45 years). Study demonstrated that as compared to early age, the onset of disease late age might cause worse outcome. It is suggested age at the onset of disease have an impact on severity of disease and clinical results.[13,14] Another study stated that patients with later onset of disease had higher DAS 28 and this may be possible in age of 40 to 60 years. It is demonstrated that in the age of 40 years, there is a high score of DAS 28 with activation of immunological change of patients with RA.[15] Our study observed that

RA patients with high severity of disease present with more involvement of small, swelling, tenderness and mild to moderate to severity. We agreed with a study that also observed the problems of joint pain including swelling and difficulty to move in patients. It is suggested that early judgment is help to decreased damage of joint, reduce disability, and usage of anti-rheumatic drugs help to reduce the severity of problem.[16] There is also a need of physical examination of patients, imaging and blood test to confirm RA.[17] We observed that level of vitamin D was significantly low in group of patients presented with severe form of arthritis as compared to group of patient who has mild arthritis. Study also observed that both group of patient with RA has significantly low levels of vitamin D as compared to age matched controls. We agreed with a study that was carried out on 44 RA patients admitted in Red Cross hospital of Greece. Their levels of vitamin D, parathyroid hormone and inflammatory marker were noted. Study found that deficiency of vitamin D is prevalent in RA patients and deficiency of vitamin D may be associated with severity of disease and musculoskeletal pain. It is stated that deficiency of vitamin D may have a role in progression of autoimmune inflammatory states generally and especially in RA.[18] According to a case control study carried out in 300 patients in 2021found significantly reduced level of vitamin D in patients as compared to normal subjects. Study demonstrated high incidence of deficiency of vitamin D in patients with RA and may be linked with severity of disease.[19] It is proposed that both RA and vitamin D are distinguished by flares which are typified by pain.[20]

However a cross-sectional study was carried on 100 admitted patients with mean age 45 years to find the association between level of serum vitamin D and activity index of RA. Study found 45 % of RA patients had low level of vitamin D and 55 % had normal level of vitamin D. Study concluded that there was an in-significant association between severity of disease and levels of circulating vitamin D.[21] Limitation of study: Sample size is small and limited to age 35 years. Role of vitamin D should also be find in age group 50-70 years of RA patients. There is a need of follow-up studies of RA with supplement of vitamin D.

Conclusions

Vitamin D deficiency is prevalent in patients with rheumatoid arthritis, and may be linked to severity in RA. It is therefore a need of supplementation of Vitamin D for the pain relief in RA patients.

Conflict of Interest *None*

Funding Source *None*

Reference

1. Alam SM, Kidwa, AA, Jafri SR, Qureshi BM, Sami A, Qureshi HH et al. Epidemiology of Rheumatoid Arthritis: tertiary care unit. JPMA 2011; 61(2):50
2. Bullock J, Rizvi SAA, Saleh AM, Ahmed SA, Do DP, Ansari RA et al. Rheumatoid Arthritis: A Brief Overview of the Treatment. Med PrincPract.2018;27 (6):501-507. doi:10.1159/000493390.
3. Dargham SR, Zahirovic S, Hammoudeh M, et al. Epidemiology and treatment patterns of rheumatoid arthritis in a large cohort of Arab patients. PLoS One. 2018; 13(12):e0208240. doi:10.1371/journal. pone. 0208240
4. Novella-Navarro M, Plasencia-Rodríguez C, Nuño L, Balsa A. Risk Factors for Developing Rheumatoid Arthritis in Patients With Undifferentiated Arthritis and Inflammatory Arthralgia. Front Med (Lausanne). 2021; 8:668898. doi:10.3389/fmed.2021.668898.
5. Tanaka Y. Rheumatoid arthritis. Inflamm Regener 2020; 40: 20. doi.org/10.1186/s41232-020-00133-8.
6. van Riel PL, Renskers L. The Disease Activity Score (DAS) and the Disease Activity Score using 28 joint counts (DAS28) in the management of rheumatoid arthritis. Clin Exp Rheumatol. 2016; 34(5 Suppl 101): S40-S44.
7. Meena N, Singh Chawla SP, Garg R, Batta A, Kaur S . Assessment of Vitamin D in Rheumatoid Arthritis and Its Correlation with Disease Activity. J Nat Sci Biol Med. 2018; 9(1):54-58. doi: 10.4103/ jnsbm. JNSBM_ 128_17
8. Cecchetti S, Tatar Z, Galan P, Pereira B, Lambert C, Mouterde G. et al. Prevalence of vitamin D deficiency in rheumatoid arthritis and association with disease activity and cardiovascular risk factors: data from the COMEDRA study. ClinExpRheumatol. 2016; 34(6): 984-990.
9. Chandrashekara S, Patted A. Role of vitamin D supplementation in improving disease activity in rheumatoid arthritis: an exploratory study. Int J Rheum Dis. 2017; 20 (7):825–31.
10. Charoenngam N, Holick M.F. Immunologic Effects of Vitamin D on Human Health and Disease. Nutrients. 2020;12(7):2097. doi:10.3390/nu12072097
11. Harrison SR, Jutley G, Li D. et al. Vitamin D and early rheumatoid arthritis. BMC Rheumatol 2020; 4:38. doi.org/10.1186/s41927-020-00134-7

12. Aletaha D, Neogi T, Silman AJ, Funovits J, Felson DT, Bingham CO et al. Rheumatoid arthritis classification criteria: an American College of Rheumatology/ European League Against Rheumatism collaborative initiative. Arthritis Rheum. 2010; 62(9):2569-81. doi: 10. 1002/ art.27584.
13. Nilsson J, Andersson MLE, Hafstrom I, Svensson B, Forslind K, Ajeganova S. Influence of Age and Sex on Disease Course and Treatment in Rheumatoid Arthritis. Open Access Rheumatol. 2021;13:123-138 doi. org/ 10.2147/OARRR.S306378
14. Muhammad A, Aslam Z, and Umair A. The Relationship Between Rheumatoid Arthritis and Serum Vitamin D Concentrations. P J M H S 2022;16(05):1083-1085
15. Pawłowska J, Smoleńska Z, Daca A, Witkowski JM, Bryl E. Older age of rheumatoid arthritis onset is associated with higher activation status of peripheral blood Cd4(+) T cells and disease activity. ClinExpImmunol. 2011;163(2):157-164. doi:10.1111/j.1365-2249. 2010. 04294.x
16. van der Linden MP, le Cessie S, Raza K, van der Woude D, Knevel R, et al. Long-term impact of delay in assessment of patients with early arthritis. Arthritis Rheum 2010;. 62:3537–3546.
17. Moura CS, Abrahamowicz M, Beauchamp M, Lacaille D, Wang Y, Boire G, et al. Early medication use in new-onset rheumatoid arthritis may delay joint replacement: results of a large population-based study. Arthritis Res. Ther. 2015;17:197
18. Guo Q, Wang Y, Xu D, Nossent J, Pavlos NJ, Xu, J. Rheumatoid arthritis: pathological mechanisms and modern pharmacologic therapies. Bone Res.2018; 6: 15. doi:10.1038/s41413-018-0016-9
19. Sukharani N, Dev K, Rahul F, et al. Association Between Rheumatoid Arthritis and Serum Vitamin D Levels. Cureus 2021, 13(9): e18255. doi:10.7759/ cureus. 18255
20. Kostoglou-Athanassiou I, Athanassiou P, Lyraki A, Raftakis I, Antoniadis C. Vitamin D and rheumatoid arthritis. TherAdvEndocrinolMetab.2012; 3(6):181-187. doi:10.1177/2042018812471070
21. de la Torre LP, Álvarez MM, Guzmán MC, Martínez RL Acosta CR. Vitamin D is not useful as a biomarker for disease activity in rheumatoid arthritis. ReumatolClin. 2020;16(2):110–115 DOI: 10.1016/j.reumae.2018. 02. 014

Authors Contribution

MH: Conceptualization of Project
MZ: Data Collection
MQ: Literature Search
MQ: Statistical Analysis
HH: Drafting, Revision
SZ, MQ: Writing of Manuscript

Assessment of Oral Health and Oral Hygiene Practices of Transgender Community in Lahore

Muhammad Suleman,[1] Zakia Qasim,[2] Sohail Akram,[3] Faisal Shafiq Malik,[4] Maryam Aabdi,[5] Shaheer Tehami,[6] Faisal Izhar[7]

Abstract

Objective: The objective of the current study was to assess the oral health of Trans-genders in Lahore City.

Material and Methods: This study was designed as a descriptive cross-sectional study to assess the oral health statuses and oral hygiene practices of trans-genders in Lahore city. The data was collected using a validated questionnaire. Prior to participating in the study, all participants signed a consent form.

Results: The study included 149 participants who were all trans-genders residing in Lahore city. Each participant was assessed and examined individually during the survey.

The age of the participants ranged from 19 to 60 years, with a mean age of 36.49 years (SD=10.036). The mean number of decayed teeth (D) was 3.4 (SD=1.531), while the mean number of missing teeth (M) was 2.94 (SD=1.497). On average, participants had 0.52 filled teeth (F) (SD=0.15), and the total DMFT score (T) ranged from 1 to 18, with a mean of 6.86 (SD=2.99).

Conclusion: Through this study, It was observed that caries experience among trans-gender community of Lahore is at high levels. Therefore, it is recommended that they undergo regular oral health checkups and take necessary preventive measures. This includes adopting proper brushing techniques and using other oral health aids to promote overall oral health.

Keywords: Oral Health, Oral Hygiene, Trans-genders.

How to cite: *Suleman M. Qasim Z, Akram S, Malik FS, Aabdi M. Tehami S, Izhar F. Assessment of Oral Health and Oral Hygiene Practices of Trans-gender Community in Lahore. Esculapio - JSIMS 2023;19(03):273-277*

DOI: https://doi.org/10.51273/esc23.25131932

Introduction

Health is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". The programs for the prevention of oral complications concern education about oral hygiene and healthy eating, fluoride prophylaxis, periodic check-ups, sessions of professional oral hygiene, and secondary prevention programs.[1] Cultures have diverse gender presentations and social categories, and there are numerous terms used to describe individuals who do not fit within a male-female binary.[2] The term "Transgender" typically refers to individuals whose gender identity or expression does not align with their assigned sex at birth.[3] The marginalized communities of transgender and cisgender individuals in Pakistan are at significant risk of diminished quality of life that eventuate into poor oral hygiene practices in the population.[4]

There is a well-established link between oral health and overall health, meaning that poor oral hygiene can lead to various diseases and complications. Among transgender individuals, a common oral disease is Human Papilloma-virus, which may even lead to cancer.[5] Maintaining good oral health is vital for overall health and quality of life. The connection between oral health knowledge and behavior is essential in this regard.[6]

1,6,7. FMH College of Medicine & Dentistry
2. King Edward Medical University Lahore Pakistan
3. Allied Health Professional FMH College of Medicine and Dentistry
4. Department of Community & Preventive Dentistry, Riphah International University
5. Department Punjab Institute of Administration Sciences, Punjab University

Correspondence:
Muhammad Suleman, *Dental Hygienist, Allied Health, FMH College of Medicine & Dentistry . Email ID: dh.suleman@gmail.com*

Submission Date: 11-08-2023
1st Revision Date: 26-08-2023
Acceptance Date: 13-09-2023

One's oral health status is significantly influenced by their oral health behaviors, which include habits such as regular tooth brushing, flossing, and dental checkups[7]. The transgender population often faces difficulties in disclosing their sexual identity or orientation when seeking dental care, leading to a perception of invisibility within society. This reluctance to disclose their status has resulted in the transgender community being labeled as "the nation's invisible population".[8] Transgender are at a higher risk for engaging in various forms of addiction, such as tobacco, alcohol, and substance abuse, which can significantly impact both their general and oral health. Additionally, they may engage in unsafe oral sex and other harmful activities influenced by peers, which can further debilitate their health status.[9] As a population with distinct sexual identities and orientations, the transgender community requires specialized consideration and inclusion in dental care delivery.[10,11] In addition to facing barriers to accessing medical and dental care, the transgender community is also frequently denied general, oral health, and psychological assistance.[12] Research conducted in Pakistan indicates that stigma and discrimination against this population negatively impact their ability to access oral health care.[13] As key healthcare providers, oral health professionals are in a unique position to address substance abuse issues and refer their dental patients to appropriate resources. Given the particular needs and challenges faced by the transgender community, it is crucial that dental care includes monitoring and preventative measures to ensure optimal oral health.[14] Low Socioeconomic conditions, exposure to violence, prejudice and limited access to preventative healthcare services contribute to delays in the early detection and treatment of diseases. Transgender individuals are often marginalized in society, resulting in limited access to basic necessities, including oral healthcare. Dental education has been found to be effective in enhancing healthcare providers' comfort level, behavior, and communication skills when treating transgender patients.[15,16] Raising awareness and increasing knowledge related to the transgender population could decrease stigma and barriers to dental care delivery and increase dental care worker's confidence in treating transgender individuals.[17]

Understanding the concerns and dental care goals of transgender patients is very important in improving their quality of life. While discrimination in patient care for transgender individuals has been widely reported, there is a lack of literature on the attitudes and behaviors of dental care providers towards this population.

Methods

In this study, a descriptive cross-sectional design was utilized to assess the oral health of trans-genders residing in Lahore city. The sample size for the study was determined to be 149 participants using a statistical calculation with a 5% level of significance, an 8% margin of error, and an anticipated proportion of 10% trans-genders in the population. The data was collected using snowball sampling technique. The individuals established as transgender in their national identity cards were included in the study. We excluded the individuals with any kind of mental and physical disability. Data was collected by using Section-II questionnaire by M. Ovia, et al.[21] Data about various variables related to oral health status including DMFT Score, Bleeding gums, mobile teeth, Xerostomia, Gingivitis and Halitosis was collected. A consent form was also signed by the participants in Urdu and English. To ensure the confidentiality of the participants, their names were masked by numbers after collection of the data. The collected Data was then entered and analyzed in S.P.S.S version 23.0®.s. Descriptive statistic was performed on all the variables. Categorical variables were presented in the form of frequencies and percentages. Quantitative variables were presented in Mean ± SD. Bar charts and histograms were constructed for categorical and continuous variables respectively.

Results

The study had 149 individuals in total, all of whom were transgender residents of Lahore. Participants from rural origins made up 37 (24.8%) while those from urban backgrounds made up 112 (75.2%). They were evaluated and examined individually during the survey, and Table 1 provides the overall mean and standard deviation of their DMFT score. Out of 149 individuals, 146 (98%) did not clean their teeth, whereas 3 (2%) participants did brush their teeth after breakfast and dinner Out of 149 people in this research, 89 (59.8%) reported that they experienced frequent mouth aches and 60 (40.3%) had no or infrequent of mouth aches. Only 2 (1.3%) patients did show some concerns on it, while 147 (98.7%) patients did not consider their oral and dental ache concerns to be critical. It is pertinent to mention that a large number of participants (n=134. 89.93%) reported the unaffordability to get the dental treatment done.

Of 149 participants of the study, 140 people (94%) had not had a dental appointment in the preceding two years,

whereas 9(6%) had gone a dental set up for some dental treatment. Overall, 2 (1.3%) people had gone to the dental clinics to have their teeth cleaned, 3(66.6%) patients had gone for treatment of their previous checkup, and 4(44.4%) patients had gone for their cavity checkup. Following a full dental examination, it was determined that 127(85.23%) individuals required dental treatment, with 97(65.1%) requiring multiple dental treatment procedures. 66 (44.3%) patients had tooth decay, 64 (43%) suffered from bleeding gums, 72 (48.3%) had dry mouth, 15 (10.20%) patients had mobile teeth, 75 (50.3%) patients changed their paste in last 1 year multiple times, 61(40.9%) patients had swollen gums, 76 (51%) patients had bad breath, 6 (4%) patients had misplaced teeth, and 60 (40.3%) patients smoked. 80 (54%) of research participants indicated they couldn't afford dental procedures, and 147 (98.7%) said they didn't take any dental condition seriously. It was also observed that use of addictive substances including such as smoking, chewing tobacco, gutka, and pan in high quantities and frequencies was highly prevalent (40%) among trans-genders.

Table 1: *Mean Age & DMFT of Patients*

	N	Min.	Max.	Mean	Std deviation
Age	149	19	60	36.49	10.036
D	149	0	15	3.4	1.53
M	149	0	18	2.94	1.497
F	149	0	4	0.52	0.15
Total DMFT	149	0	18	6.86	2.99

Table 2: *Oral Health Status and Oral Hygiene Practices Prevalent among Transgender Community.*

Variable	Categories	Frequency (N)	Percentage (%)
Place of Residence	Urban	37	24.8%
	Rural	112	75.2%
Mouth Aches Frequency	Very often	89	59.8
	No/Less Frequent	60	40.3%
Brushing After Breakfast and Dinner	Yes	146	98%
	No	3	2%
Dental Visits in Past 2 Years	Yes	9	6%
	No	140	94%
Need for Dental Care and Treatment	Yes	127	85%
	No	22	15%
Affordability of the dental treatment	Can Afford	15	10%
	Cannot Afford	134	90%
Dental Examination			
Bleeding Gums		64	43%
Dry Mouth (Xerostomia)		72	48%
Mobile Teeth		15	10%
Gingivitis		61	40%
Paste Change		75	50%
Halitosis		76	51%
Misplaced Teeth		6	4%
Habitual Smokers		60	40%

Discussion

The present study aimed to evaluate the oral health status and oral health care behaviors of transgender people living in Lahore, Pakistan. The study's findings give important insights into the oral health status and challenges that this marginalized community faces, as well as the necessity for specific dental care interventions to improve their overall quality of life. Findings of this study align with previous literature, which emphasizes the importance of dental health in sustaining overall well-being and quality of life in all groups, including transgender people. However, transgender people frequently encounter specific difficulties to their oral health, such as prejudice, a lack of access to dental treatment, and participating in dangerous behaviors such as substance misuse. The results of our study on DMFT score among transgender individuals show that they have high prevalence of decayed, missing and filled teeth which is confirmed by another study done on oral health status in the same community in India[21]. Current study emphasizes the link between poor socioeconomic status and restricted access to preventative healthcare treatments among transgender people. Previous studies reports[23,24] backs up this conclusion, demonstrating that transgender people are more likely to face healthcare inequalities due to economic circumstances. This highlights the importance of tailored interventions to enhance oral health availability and affordability for transgender people in lower socioeconomic strata. Unfortunately, only 6% of participants had visited a dentist in the past two years, while 94% had not. These results were in coherent with other studies done on transgender communities in South Asia[22]. These findings highlight the need for greater awareness and education on oral health and the importance of regular dental checkups.

Our study reported a high prevalence of smoking (40.3%) among transgender community which was a high concern for a community largely ignored for oral health care. Previous studies not only reported high prevalence

of smoking but also of substance use.[25] A big proportion of our study individuals reported unaffordability of dental treatment. This was a big challenge for this community to report their dental problems and getting them treated. Another study supported our results which assessed the barriers for oral health care in transgender community.[18] The high prevalence of periodontal diseases e.g. Gingivitis, Bleeding Gums, Halitosis as deduced by our study was ascertained by previous study done on periodontal status among transgender individuals.[19]

Our recommendation for future research is that urgent research should be carried out to identify key differences between male, female, and the newly accepted third gender to improve their quality of life and access to quality healthcare. Additionally, regulations must be implemented to prevent discrimination in their treatments. Individuals who identify as transgender may face challenges in accessing healthcare due to lower socioeconomic status and inferior quality of life, leading to potential neglect of their physical and oral health[20]. This study was first of its kind in showing the oral health status and oral hygiene practices among the transgender community of Lahore. It also included the data on Smoking and other addictive substances. Our study didn't include soft tissue oral lesions in data collection. It is recommended for the future references to include the data on soft tissue lesions prevalent among transgender community in Pakistan and rest of the world as well.

Conclusion

Health is crucial for all individuals, including those who identify as transgender. Through this study, It was observed that caries experience among trans-gender community of Lahore is at high levels. Transgender community has high prevalence of missing and filled teeth because of past caries experiences. Regular oral health checkups are necessary for transgender individuals who may use smoking, chewing tobacco, gutka, pan, and other similar products. It is important to take proper oral health precautions, such as regular checkups and proper brushing techniques, along with the use of other oral health aids to maintain good oral health.

Source of Funding: *None*

Conflict of Interest: *None*

References

1- Mattia M, Biehler-Gomez L, Palamenghi A, Nichetti D, Caccia G, Sguazza E, De Angelis D, Galimberti PM, Fedeli AM, Slavazzi F, Cattaneo C. "Man is what he eats". Plant residues from dental calculus in the ancient population of Milano from Roman times to modern age. Journal of Archaeological Science: Reports. 2021 Oct 1;39:103180.

2- Shroff S. Operationalizing the "new" Pakistani transgender citizen: Legal gendered grammars and trans frames of feeling. InGender, Sexuality, Decolonization 2020 Dec 28 (pp. 260-282). Routledge India.

3- Nanda S. Gender diversity: cross cultural variations. IL: Waveland Press; 2000.

4- Batool S, Rowland DL. The Critical Role of Coping Strategies in Moderating Loneliness and Quality of Life: Parallel and Unique Processes among Transgender and Heterosexual Cisgender People in Pakistan. International Journal of Environmental Research and Public Health. 2021 Aug 29;18(17):9109.

5- Rehan N, Chaudhary I, Shah SK. Socio-sexual behaviour of hijras of Lahore. J Pak Med Assoc. June 2009; 59(6):380-4. PMID 19534373.

6- Marlecha R, Vinita M, Keshav A, Pradeep C, Nagavalli K, Salam H. Oral health status, dental awareness, and dental services utilization barriers among transgender population in Chennai. Drug Invention Today. 2020 Jul 15;14(7).

7- Elghazally NM, Aldeib AF, Saied SM. Oral Health Status among Medical Students: A Comparative Study between Egyptian and Malaysian Students. The Egyptian Family Medicine Journal. 2021 May 1;5(1):5-16.

8- Greene MZ, France K, Kreider EF, Wolfe-Roubatis E, Chen KD, Wu A, Yehia BR. Comparing medical, dental, and nursing students' preparedness to address lesbian, gay, bisexual, transgender, and queer health. PLoS One. 2018 Sep 20;13(9):e0204104.

9- Zeeman L, Sherriff N, Browne K, McGlynn N, Mirandola M, Gios L, Davis R, Sanchez-Lambert J, Aujean S, Pinto N, Farinella F. A review of lesbian, gay, bisexual, trans and intersex (LGBTI) health and healthcare inequalities. European journal of public health. 2019 Oct 1;29(5): 974-80.

10- Manpreet K, Ajmal MB, Raheel SA, Saleem MC, Mubeen K, Gaballah K, Faden A, Kujan O. Oral health status among transgender young adults: a cross-sectional study. BMC Oral Health. 2021 Nov 12;21(1):575.

11- Teti M, Kerr S, Bauerband LA, Koegler E, Graves R. A qualitative scoping review of transgender and gender non-conforming people's physical healthcare experiences and needs. Frontiers in Public Health. 2021 Feb 5; 9: 598455.

12- Raisin JA, Adkins D, Schwartz SB. Understanding and caring for LGBTQ+ youth by the oral health care provider. Dental Clinics. 2021 Oct 1;65(4):705-17.

13- Kalyan P, Dave B, Deshpande N, Panchal D. A study to assess the periodontal status of eunuchs residing in Central Gujarat, India: A cross-sectional study. Advances in Human Biology. 2020 Sep 1;10(3):162.

14- Nagarajan M, Srinivasan V, Ranganathan K. Prevalence of loss of teeth among Gay, Bisexuals and Transgenders populations in Karaikal, Puducherry, India. Acta Biomed Sci. 2017;4:82-4.

15- Bretherton I, Thrower E, Zwickl S, Wong A, Chetcuti D, Grossmann M, Zajac JD, Cheung AS. The health and well-being of transgender Australians: a national community survey. LGBT health. 2021 Jan 1;8(1): 42-9.

16- Arthur S, Jamieson A, Cross H, Nambiar K, Llewellyn CD. Medical students' awareness of health issues, attitudes, and confidence about caring for lesbian, gay, bisexual and transgender patients: a cross-sectional survey. BMC Medical Education. 2021 Dec;21(1):1-8.

17- Lindsay S, Rezai M, Kolne K, Osten V. Outcomes of gender-sensitivity educational interventions for healthcare providers: A systematic review. Health Education Journal. 2019 Dec;78(8):958-76.

18- Raisin JA, Keels MA, Roberts MW, Divaris K, Jain N, Adkins DW. Barriers to oral health care for transgender and gender nonbinary populations. The Journal of the American Dental Association. 2023 May 1;154(5): 384-92.

19- Gadhiraju T, Jalihal S, Ankola AV, Pai Khot AJ, Tom A, K RS. Prevalence of Dental Caries and Periodontal Disease among Transgenders in Belagavi District, Karnataka, India: A Cross-sectional Study. Special Care in Dentistry. 2022 Nov 26.

20- Ovia, D. Revathi, Dhanraj Ganapathy. "Oral hygiene in transgender of Chennai city".21-10-2018.

21- Kumar G, Rai S. Assessment of oral health status and treatment needs of HIV positive transgenders in Odisha-a cross-sectional study. Journal of Preventive Medicine and Hygiene. 2022 Jun;63(2):E320.

22- Marlecha R, Vinita M, Keshav A, Pradeep C, Nagavalli K, Salam H. Oral health status, dental awareness, and dental services utilization barriers among transgender population in Chennai. Drug Invention Today. 2020 Jul 15;14(7).

23- Scheim AI, Baker KE, Restar AJ, Sell RL. Health and health care among transgender adults in the United States. Annual review of public health. 2022 Apr 5; 43: 503-23.

24- Rodriguez A, Agardh A, Asamoah BO. Self-reported discrimination in health-care settings based on recognizability as transgender: a cross-sectional study among transgender US citizens. Archives of sexual behavior. 2018 May;47:973-85.

25- Ruppert R, Kattari SK, Sussman S. Prevalence of addictions among transgender and gender diverse subgroups. International journal of environmental research and public health. 2021 Aug 22;18(16):8843.

Authors Contribution

MS: Conceptualization of Project
ST: Data Collection
MA: Literature Search
FSM: Statistical Analysis
SA: Drafting, Revision
ZQ: Writing of Manuscript

Original Article

Measurement of Harris Hip Scoring During Early post-operative Period in Intertrochanteric Fractures Femur Treated with Dynamic Hip Screw

Muhammad Umar Khan,[1] Omer Khalid Farooq,[2] Asif Khan,[3] Tariq Aziz,[4] Waseem Akbar,[5] Faisal Nazeer Hussain[6]

Abstract

Objectives: Intertrochanteric fractures of femur are difficult fractures to reconstruct because of strong biomechanical forces leading to failure of many an implant designs in the past. After failure of many designs Dynamic Hip Screw (DHS) has stood the test of time. We have prospectively studied the functional recovery of these fractures in 60 patients for 24weeks using Harris Hip scores. Harris hip score was used to measure the outcome.

Material and Methods: It was a descriptive case series done between 15th March 2022 to 14th January2023 in Department of Orthopedics Surgery, Avicenna Hospital, Lahore. Sixty patients of intertrochanteric fractures within 2 weeks of injury of age ≥ 50 years were inducted in a descriptive study and Harris Hip Score was used to study the rehabilitation during 6 months after surgery. Patients with other fractures of same limb or multiple fractures, BMI >35.0kg/m2, or diabetic (BSR >200 mg/dl), patients with pre-existing symptomatic acetabular diseases, patient with previous stroke, hemiparesis or other neuromuscular disorder likely to interfere with uneventful rehabilitation were excluded. Patients were were followed-up in OPD after 12, 20 and 24 weeks of surgery. On each visit biplane X-rays were made, patient was interviewed and Harris hip score was calculated. In the end according to Harris hip score, functional outcome was categorized as excellent, good, fair and poor outcomes.

Results: Out of these 60 patients, 20 (33.33%) were male and 40 (66.67%) were female. Mean age was 61.40 ± 5.97 years. Mean duration of fracture was 8.05 ± 2.51 months. In our study, functional outcome was excellent in 63.33%, good in 26.67%, fair in 5.0% and poor in 5.0% cases. Mean Harris hip score was 88.40 ± 7.91.

Conclusion: Harris hip score can be used to assess rehabilitation of patients treated with DHS for intertrochanteric fractures in early post operative period.

Keywords: Intertrochanteric Fractures femur, Dynamic Hip Screw, Harris Hips Score.

How to cite: *Khan MU, Farooq OK, Khan A, Aziz T, Akbar W, Hussain FN. Measurement of Harris Hip Scoring During Early post-operative Period in Intertrochanteric Fractures Femur Treated with Dynamic Hip Screw. Esculapio - JSIMS 2023;19(03):278-282*

DOI: https://doi.org/10.51273/esc23.25131933

Introduction

Though reliable data for Pakistan is not available we do get intertrochanteric fractures every week in our departments. It is an everyday procedure that every orthopedic unit operates. Approximately 252,000 hip fractures occur each year in the United States. A stable and acceptably fixed intertrochanteric fracture can be expected to heal uneventfully. In elderly patients, the mobility level usually drops by one level after recovery from this injury. It has been seen that those walking without support may need to use a cane or those using a cane previously may need a walker or crutches later. The mortality is 20-80% during the first year after fracture for these patients. Hip fractures cause high morbidity in the elderly and are a major public health concern worldwide.[1] In our set up this burden is borne by the family. Approximately 50% of fractures in elderly people are

1-6. Department of Orthopedics, Avicenna Medical College Hospital, DHA9, Lahore

Correspondence:
Prof Faisal Nazeer Hussain, *498B Edencity, Air Avenue Road, Lahore.*
E-mail. fnhussain@hotmail.com

Submission Date: 05-08-2023
1st Revision Date: 15-08-2023
Acceptance Date: 09-09-2023

unstable intertrochanteric fractures of hip. Different studies have reported highest occurrence of hip fracture in older patients. Incidence of these fractures rises dramatically with increasing age.[2] In a Pakistani study by Adeel K et al in a recent publication (2020), it was revealed that the mean Harris hip score was 81.83±23.01, while functional outcome was excellent in 73.5%, good in 2.9%, fair in 0% and poor in 23.5% cases.[3-5,7] While another study by Mue D et al reported that the mean Harris hip score was 17±1 after 24 weeks of using dynamic hip screw for hip fracture and functional outcome was excellent in 65.4%, good in 15.4%, and fair in 11.5%.[5-7] It is common knowledge that our rehabilitation service & physiotherapy backup is not uniformly available to all patients along with lack of domiciliary care. Overall, patients managed with plate fixation had slightly less pain and deformity than those managed with intramedullary nailing, and no significant differences were identified with regards to function or patient satisfaction. In addition, the authors found that patients managed with intramedullary nailing had more procedure-related complications, particularly femoral shaft fracture. Present study was done to document level of functional rehabilitation of the patient with intertrochanteric fracture proximal femur treated with DHS, by using an internationally accepted method i.e Harris Hip Score. This study was planned to obtain the local data that can be analyzed in our setting for management of hip fractures in future and improve patient's outcome.

Material and Methods

It was a descriptive case series done between 15th March 2022 to 14th January2023 in Department of Orthopedics Surgery, Avicenna Hospital, Lahore. A sample size of 60 cases was calculated with 95% confidence level, d=0.30 and magnitude of mean Harris hip score i.e. 17±1 with dynamic hip screw for hip fractures. All subjects were included through a non-probability, consecutive sampling. All those patients of age 50 years and above, either gender with the diagnoses of Intertrochanteric fracture within 2 weeks of injury. Those excluded had fracture of same limb or multiple fractures BMI >35.0kg/m^2, or diabetic (BSR >200 mg/dl), acetabular diseases, previous stroke, hemiparesis or other neuromuscular disorder likely to interfere with uneventful rehabilitation patient substance abuse or mental retardation. All patients were operated using a DHS for internal fixation under image guidance. All patients were followed up in OPD at 2 weekly intervals in 1st month and later at monthly intervals. Harris hip scores were calculated at 12, 20 and 24 weeks of surgery. An earlier observations was not done as most patients at this stage do not show equal ability to walk. The data retrieved was analyzed with SPSS 20 segregating the hips fractures into stable or unstable configuration. Permission from IRB Avicenna Medical College Hospital was sought and all patients were operated after informed consent by the same surgeon.

Results

On tabulation of the data mean age was 61.40 ± 5.97 years. Trauma was the reason in 35(58.33%) and without history of falls in 25(41.67%). Out of these 60 patients, 20 (33.33%) were male and 40 (66.67%) were females with male to female ratio of 1:2. Thirty nine were stable in configuration (65.0%) and 21(35.0%)

Table 1: *Functional outcome of patient fixed with DHS screw (n=60)*

Functional outcome	No. of Patients	%age
Excellent	38	63.33
Good	16	26.67
Fair	03	5.0
Poor	03	5.0

Table 2: *Stratification of Harris hip score with respect to age, gender, duration of fracture, cause, and type of fracture, stability and ASA (American Society of Anesthesiologists).*

		Mean	SD	P-value
Age (years)	50-70	88.94	7.45	0.145
	>70	84.29	10.58	
Gender	Male	87.30	8.19	0.451
	Female	88.95	7.82	
Duration (days)	≤7	88.53	8.87	0.897
	>7	88.27	6.97	
Cause	Traumatic	89.23	8.53	0.341
	Non-traumatic	87.24	6.96	
Type	I	85.70	2.63	0.520
	II	87.89	10.44	
	III	90.0	6.25	
	IV	90.67	1.97	
Stability	Stable	90.10	7.38	0.022
	Unstable	85.24	8.06	
ASA status	I	86.0	8.12	0.046
	II	90.11	7.40	

Table 3: *Stratification of functional outcome with respect to age, gender, duration of fracture, cause, and type of fracture, stability and ASA (American Society of Anesthesiologists).*

		Excellent	Good	Fair	Poor	P-value
Age (years)	50-70	36 (67.92%)	12 (22.64%)	03 (5.66%)	02 (3.77%)	0.109
	>70	02 (28.57%)	04 (57.14%)	00 (0.0%)	01 (14.29%)	
Gender	Male	13 (65.0%)	04 (20.0%)	02 (10.0%)	01 (5.0%)	0.569
	Female	25 (62.50%)	12 (30.0%)	01 (2.50%)	02 (5.0%)	
Duration (days)	≤7	22 (73.33%)	04 (13.33%)	02 (6.67%)	02 (6.67%)	0.132
	>7	16 (53.33%)	12 (40.0%)	01 (3.33%)	01 (3.33%)	
Cause	Traumatic	28 (80.0%)	02 (5.71%)	03 (8.57%)	02 (5.71%)	0.0002
	Non-traumatic	10 (40.0%)	14 (56.0%)	00 (0.0%)	01 (4.0%)	
Type	I	01 (10.0%)	09 (90.0%)	00 (0.0%)	00 (0.0%)	0.0003
	II	21 (77.78%)	01 (3.70%)	02 (7.41%)	03 (11.11%)	
	III	11 (64.71%)	05 (29.41%)	01 (5.88%)	00 (0.0%)	
	IV	05 (83.33%)	01 (16.67%)	00 (0.0%)	00 (0.0%)	
Stability	Stable	32 (82.05%)	05 (12.82%)	00 (0.0%)	02 (5.13%)	0.0002
	Unstable	06 (28.57%)	11 (52.38%)	03 (14.29%)	01 (4.76%)	
ASA status	I	10 (40.0%)	13 (52.0%)	00 (0.0%)	02 (8.0%)	0.0007
	II	28 (80.0%)	03 (8.57%)	03 (8.57%)	01 (2.86%)	

were unstable. Mean duration of fracture was 8.05 ± 2.51 months. In our study, functional outcome was excellent in 63.33%, good in 26.67%, fair in 5.0% and poor in 5.0% cases as per. Mean Harris hip score was 88.40±7.91.

Discussion

Proximal femoral nail anti-rotation (PFNA) and Dynamic hip screw (DHS) fixation are both frequently used to treat intertrochanteric femoral fractures (IFFs).[9,12,11] Results of IFFS treatments in Chinese publications for cases between 2010 to 2015 have shown lower complication rates than fixation withimplants other than DHS[12,13]. A low Harris Hip Sscore and cut through of the implant from femoral head is seen in mostly in elderly and osteoporotic patients.[14]Many RCTs published to date have failed to prove superiority of one of the devices over the other in short-term functional and radiographic outcomes.[15,16] Similar is the enigma regarding treatment of type 31-A1 IFFs(two part fractures) among elderly patients with osteoporosis. We have conducted this study to determine the functional outcome of patient using Harris Hip Score with intertrochanteric fracture fixed with dynamic hip screw. Mean age was 61.40±5.97 years as shown in Table I. Our interest was to document the return to preoperative functional status of the subjects operated. First calculation of Harris Hip Score was done at 12 weeks when the patient had already been mobilized. Out of these 60 patients, 20 (33.33%) were male and 40 (66.67%) were females with male to female ratio of 1:2. In our study, functional outcome was excellent in 63.33%, good in 26.67%, fair in 5.0% and poor in 5.0% cases. Mean Harris hip score was 88.40±7.91. Generally hip fracture patients tend to stop coming to out patients clinics once they are mobile and independent. Pakistani society is lucky to have a family system that looks after the old parents thus no domiciliary care system has developed as yet because either the parents live with their married children or the children may still be living in the parents house. Most local studies have achieved very good results for the treatment of hip fractures in the elderly but return to preinjury status has not been probed as an outcome. Most reports are anecdotal or unscientific observations. Out of many a criteria available we choose HHS. Harris Hip Score is a very standard scoring method used to evaluate the functional status of the patient based upon the interview of the patient as per a standardized proforma. It tries to understand the presence or absence of deformity, pain, ability to perform daily chores and self-care. It has been accepted by most by now but it has mostly been in use to study hip arthroplasty results. As the joint is the same and activities in both intracapsular and extracapsular fractures both are the same we have attempted to use the same yardstick to study functional recovery in

DHS cases. People who have tried to evaluate hip scoring systems in detail have failed to make a consensus statement in the end and have avoided to selected one system over the 16 others currently in use world over.[10,13,16] Umeili GL et al in their exhaustive review have concluded that an ideal scoring system should be both patient and physician centered; which Harris Hips Scoring system is not.[10] Patient reported functional recovery is generally given more value than radiological measurements of union when it comes to assessment of an implant for fracture treatment. Harris hip score though used earlier on in evaluating arthroplasty cases has shown promise as a patient-reported outcome measure (PROMs) in such cases. Many workers have have modified the HHS to MHHS removing the clinical examination part by the physician thus reducing time consumed in filling the profroma. They conclude that the reliability and usage does not change with the modification.[11] In a Pakistani study by Adeel K et al in a recent publication (2020), it was revealed that the mean Harris hip score was 81.83±23.01, while functional outcome was excellent in 73.5%, good in 2.9%, fair in 0% and poor in 23.5% cases.[7] While another study reported that the mean Harris hip score was 17±1 after 24 weeks of using dynamic hip screw for hip fracture and functional outcome was excellent in 65.4%, good in 15.4%, and fair in 11.5%: reconfirming the practical applications of HHS.[7,10]There are many more studies which have achieved similar results like us. In another local study,[2] the mean age was 65.49±7 years. Male patients were 170(60.71%) and female 110(39.28%). Excellent outcome was documented in 151(53.92%), good in 90(32.14%), fair in 22(7.85%) and poor in 17(6.07%) with HHS score of 93.3±5, 88.7±7, 77.3±4 and 33.1±9 respectively. Chandy G and et al in 2021 found that with the use of dynamic hip screw, the mean Harris hip score was 36.21±5.078 after 4 weeks, 53.67±5.836 after 12 weeks while 71.48±6.934 after 24 weeks of surgery. The functional outcome was encouraging when scored using Harris hip score was 62.5% (good), 10.4% (fair) and 27.1% (poor). Gupta et.al and Kushal et al in their studies have also produced results similar to our findings. Another study reported that after 24 weeks, the mean Harris hip score was 58.95 after using dynamic hip screw for hip fracture.[5] Similarly, Shetty et al. and Barwar et al. also reported good functional and radiological outcomes of DHS fixation of unstable intertrochanteric fractures with excellent to a good outcome in most. Our patients have shown clear superiority of early functional recovery of the DHS when used in fixation of intertrochanteric fractures of femur. Although our study is over a very small group of patients and the follow up period is very short but the results merit further work on the subject so that solid recommendations can be based upon the findings thus obtained.

Conclusion

It can be presumed that patients of intertrochanteric fractures operated with internal fixation device dynamic hip screw get a good functional outcome when assessed with Harris Hip Score. We opine that Harris Hip Score shows promise as a surrogate measure of patient reported functional recovery in such cases.

Conflict of interest *None*

Funding source *None*

References

1. Koh DTS, Chen JY, Yew AKS, Chong HC, Hao Y, Pang HN, et al. Functional outcome and quality of life in patients with hip fracture after total knee arthroplasty. Journal of orthopaedic surgery (Hong Kong) 2019; 27(2):DIO: 2309499019852338.
2. Lakho MT, Jatoi AA, Azfar MK, Ali A, Javed S, Bhatti A, et al. Functional and Radiological Outcome of Unstable Intertrochanteric Fracture Post Dynamic Hip Screw Fixation. Cureus 2019;11(4):e4360-e
3. Fang C, Gudushauri P, Wong T-M, Lau T-W, Pun T, Leung F. Increased Fracture Collapse after Intertrochanteric Fractures Treated by the Dynamic Hip Screw Adversely Affects Walking Ability but Not Survival. BioMed Research International 2016 2016/02/03; 2016: 4175092.
4. Shivanna U, Rudrappa G. A comparative study of functional outcome between dynamic hip screw adn proximal femoral nail in surgical management of per-trochanteric fractures. J Evol Med Dent Sci 2015;4:7489-98.
5. Mue D, Salihu M, Awonusi F, Yongu W, Kortor J, Elachi I. Outcome of treatment of fracture neck of femur using hemiarthroplasty versus dynamic hip screw. J West Afr Coll Surg 2013;3(2):27-45.
6. Amaradeep G, Ravikumar HS, Manjappa CN, Shiva Kumar NH, Mahendra Kumar KL. Comparision of functional outcome in elderly patients with inter trochanteric fracture: Dynamic hip screw vs proximal femoral nail. Int J Orthop Sci 2017;3(3):151-5.

7. Adeel K, Nadeem RD, Akhtar M, Sah RK, Mohy-Ud-Din I. Comparison of proximal femoral nail (PFN) and dynamic hip screw (DHS) for the treatment of AO type A2 and A3 pertrochanteric fractures of femur. JPMA 2020 May;70(5):815-9.

8. Ramesh Senb, Sameer Aggarwal, Saurabh Agarwala, Rajesh Kumar Rajnisha, Prasoon Kumara; Reliability of Modified Harris Hip Score as a tool for outcome evaluation of Total Hip Replacements in Indian population.: Journal of Clinical Orthopaedics and Trauma 10 (2019) 128–130. https://doi.org/10.1016/j.jcot.2017.11.019

9 V Dubey, B Spiegelberg, S Shahane, A Samant, 386 Proximal Femoral Nail (PFN) Versus Dynamic Hip Screw (DHS) In Unstable Intertrochanteric Fractures of Femur -A Comparative Clinical Study, British Journal of Surgery, Volume 108, Issue Supplement_2, May 2021, znab134.267, https://doi.org/10.1093/bjs/znab134.267

10 Guerra MT, Pasqualin S, Souza MP, et al. Functional recovery of elderly patients with surgically-treated intertrochanteric fractures: preliminary results of a randomised trial comparing the dynamic hip screw and proximal femoral nail techniques. Injury 2014; 45: S26–S31.

11 Xu H, Liu Y, Sezgin EA, Tarasevičius Š, Christensen R, Raina DB, Tägil M, Lidgren L. Comparative effectiveness research on proximal femoral nail versus dynamic hip screw in patients with trochanteric fractures: a systematic review and meta-analysis of randomized trials. J Orthop Surg Res. 2022 Jun 3;17(1):292. doi: 10.1186/s13018-022-03189-z. PMID: 35658909; PMCID: PMC9164432.

12 Kanakaris NK, Tosounidis TH, Giannoudis PV. Nailing Intertrochanteric Hip Fractures: Short Versus Long; Locked Versus Nonlocked. J Orthop Trauma 2015; 29(Suppl 4): S10–S16.

Authors Contribution

MUK, FNH: Conceptualization of Project
MUK, OKF, FNH: Data Collection
MUK, AK, FNH: Literature Search
MUK, TA, FNH: Statistical Analysis
MUK, WA, FNH: Drafting, Revision
MUK, FNH, OKF, AK, TA, WA: Writing of Manuscript

Knowledge, Attitude, and Practice Towards Usage of Sunscreen and Prevention of Skin Cancer Among Doctors of a Tertiary Care Hospital: A Cross-Sectional Study

Yumna Asif,[1] Gulbaz Ali Nasir,[2] M Ali Rafique Mirza,[3] Ahmed Nouman,[4] Waheed Bhutto,[5] Maheen Tariq[6]

Abstract

Objective: Skin cancer is preventable but nowadays it is one of the fastest growing cancers, especially in South Asia. The purpose of this study is to assess knowledge, attitude, and practice towards usage of sunscreen and prevention of Skin Cancer among Doctors of a Tertiary care hospital.

Material and Methods: A cross-sectional study was conducted using a validated structured questionnaire covering the areas of knowledge, attitude, and practice of the study participants.

Results: A total of 150 Doctors participated in this study, 68 men and 82 women. Among the total participants, only 10 (6.66%) were aware that sunscreen reduces sunburns. In contrast, 16 (10.66%) of the candidates denied any sunscreen application as they found it to be useless. 10% of the participants always used sunscreen whereas the majority (21.33%), only used it sometimes. There was no re-application of Sunscreen by 83 individuals that participated in the survey; however, 20.66% of doctors re-applied it every hour. Protection against skin cancer was the second most common reason of using sunscreen. Majority of the doctors (n=52) avoided sunscreen as they simply forgot to use it.

Conclusion: This study has revealed that the knowledge and use of sunscreen among doctors in Lahore, Pakistan is suboptimal. Although 52.7% of participants reported using sunscreen, only 10% consistently used it, with 21.33% applying it occasionally. A substantial number of doctors in our study had poor attitudes and practices regarding sunscreen use, with many only using it during sunny months or citing reasons such as forgetfulness, greasiness, or cost as barriers.

Keywords: Sunscreen, skin cancer, prevention

How to cite: *Asif Y, Nasir GA, Mirza MAR, Nouman A, Bhutto W, Tariq M. Knowledge, Attitude, and Practice Towards Usage of Sunscreen and Prevention of Skin Cancer Among Doctors of a Tertiary Care Hospital: A Cross-Sectional Study. Esculapio - JSIMS 2023;19(03):283-287*

DOI: https://doi.org/10.51273/esc23.25131934

Introduction

Skin cancer is the most prevalent cancer in the United States, estimations predict that one in two people will develop some kind of cutaneous skin cancer in their lifetime.[1,2] The annual economic cost of skin cancer in the US is estimated to be $8.1 Billion,[3] which is dramatically higher when compared against other forms of cancer. This leads to the rise in significance of ways that may reduce the economic and health burden of skin cancer. An important strategy is to improve health education on skin cancer particularly by promoting sun-protection. To assist in reducing the incidence rate of skin cancer, behaviours such as limit the exposure to UV light, increased use of sunscreen with a high sun protection factor (SPF) and wearing sun protective clothing are essential.[4] Furthermore, timely diagnosis can be increased by performing regular self-assessment of the skin, and total body skin examinations performed by physicians.[5] Reports have revealed that limiting exposure to UV light can prevent more than 5 million cases

1-6. Department of Plastic surgery, Shaikh Zayed Hospital , Lahore

Correspondence:
Dr. Gulbaz Ali Nasir, *PGR, Department of Plastic Surgery Shaikh Zayed Hospital, Lahore, Pakistan. E-mail: gulbaz.a@yahoo.com*

Submission Date: 20-06-2023
1st Revision Date: 05-07-2023
Acceptance Date: 20-08-2023

of skin cancer annually,[6] and regular use of sunscreen with a SPF of 15 or higher can reduce the risk of melanoma by 50%, and squamous cell carcinoma by 40%.[7] Sunscreens are available in forms of lotion and creams with chemicals that absorb or reflect UV radiation. These chemical filters can be either organic or inorganic.[8] Cinnamates and Salicylates are organic filters that absorb UV radiation and convert the UV energy into heat energy. Inorganic filters such as titanium dioxide and zinc oxide on the other hand reflect and scatter UV radiation over a wider range of wavelengths.[9] A good broad-spectrum sunscreen either physical or chemical which absorbs or reflect both UVA and UVB radiation by combining filters of different UV absorption spectra. The purpose of this study is to assess Doctors' knowledge, attitude, and practice about sunscreen usage and skin cancer prevention.

Material and Methods

A cross-sectional study was conducted from June to November 2022, amongst postgraduate training doctors of multiple departments of Shaikh Zayed Hospital Lahore, chosen by random convenient sampling. Response from 150 doctors was recorded. Informed consent was taken, and participants were assured that anonymity would be maintained. The questionnaire was composed of three sections. The first section collected information on demographics: age, gender, and department. The second sector provided a set of questions investigating skin type using the Fitzpatrick scale, sun exposure and sun protection habits, knowledge regarding sun exposure, sunscreen, and skin cancer and whether this knowledge had any effect on their sun protection habits. The third section was designed to ask regarding sunscreen application and contained questions inquiring about the reason for use, the frequency of application, the type and sun protection factor (SPF) value of the sunscreen used, and on what basis it was chosen.

The data was entered and analysed using SPSS version 24.0. Basic descriptive analyses were done for all independent variables. The differences in personal preferences and habits regarding sun exposure as well as sun protection were studied using the chi-squared test. P-values were less than 0.05 judged as significant.

Results

A total of 150 Doctors participated in this study, 68 men and 82 women, with a mean age of 26.87 and 29.81, respectively. The most common Fitzpatrick Skin Type among participants was, type V, in 59 participants. Type 6 was the second most common type (30.7%). 13(8.7%) individuals had a family history of Skin cancer while 4(2.7%) individuals had suffered from it themselves. 52.7% of the participants reported the use of sunscreen, most commonly (20%) its use was attributed to prevent tanning. Only 19(12.66%) of the participants recognized that sunscreen prevents skin cancer, and only 15(10%) were aware that it does the same for skin ageing. Among the total participants, 10(6.66%) were aware that sunscreen reduces sunburns. In contrast, 16(10.66%) of the candidates denied any sunscreen application as they found it to be useless. 10% of the participants always used sunscreen whereas the majority (21.33%), only used it sometimes. It should be noted that, the greater number of doctors (52.66%), used sun protection only during sunny months. Most doctors (65.33%) applied sunscreen immediately before Sun-exposure whereas the second largest group (17.33%) applied it 30 mins before sun-exposure. There was no re-application of Sunscreen by 83 individuals that participated in the survey, however, 20.66% of doctors re-applied it every hour. The main prompt to use sunscreen among individuals (37.33%) was to avoid getting tanned as the majority

Table 1: *Information of Participants*

	Male	Female
Number	68	82
Mean Age (SD)	26.87(4.91)	29.81(6.46)
Department		
Dermatology or Plastic surgery	9	15
Surgery and Allied	36	41
Medicine and Allied	23	26

Table 2: *Use of sunscreen*

	Frequency	Percentage
People who use sun protection	79	52.7
People who do not use	71	47.3
Reason for using sun protection		
• For sun burn	10	6.66
• For avoidance of skin cancer	19	12.66
• Due to social pressure	5	3.33
• To avoid tanning	30	20
• To slow aging	15	10
• Do not use as it is useless	71	47.3%
How often do you use		
• Always	15	10
• Mostly	26	17.33
• Sometimes	32	21.33
• Rarely	06	4
• never	71	47.3

(56%) preferred themselves when they were not tanned, while protection against skin cancer was the second most common reason of using sunscreen. 18.66% of the participants also reported using sunscreen due to skin-sensitivity or a pre-existing skin condition. Majority of doctors (n=52) avoided sunscreen as they simply forgot to use it, while others felt that it made their skin look greasy (16%) or found it to be costly (16.66%).

Table 3: *Frequency of sunscreen use*

	Frequency	Percentage
Is your sun protection habit seasonal?		
• only during sunny months	79	52.66%
• all year round	23	15.33%
• rarely ever	58	38.66%
How often do you reapply it?		
• no reapplication	83	55.33%
• every hourly	31	20.66%
• every few hourly	36	24%
When do you apply sunscreen?		
• Immediately before sun exposure	98	65.33%
• 30 min before sun exposure	26	17.33%
• 1 hr before sun exposure	18	12%
• 2 hr before sun exposure	8	5.33%

Table 4: *Reasons for use/disuse of sunscreen*

	Male	Female	Total	Percentage
What prompts you to use sunscreen?				
• Skin sensitivity/ condition	15	13	28	18.66%
• Doctor prescription	8	9	17	11.33%
• Avoid tan	23	33	56	37.33%
• Protection against skin cancer	16	20	36	24%
• Avoid sunburn	4	5	9	6%
• Friends/family encourage use	2	2	4	2.66%
What prompts you to avoid using sunscreen?				
• Getting tanned	0	7	7	4.66%
• Forgetting to	27	25	52	34.66%
• Applying is a hassle	4	8	12	8%
• Skin looks greasy/oily	6	18	24	16%
• Costly	13	12	25	16.66%
• It feels hotter	2	12	14	9.33%
• It is not effective	10	6	16	10.66%
How do you like yourself most?				
• When I am tanned	5	1	6	4%
• When I am not tanned	21	63	84	56%
• I do not care about my tan	9	7	16	10.66%
• My skin is naturally dark	27	17	44	29.33%

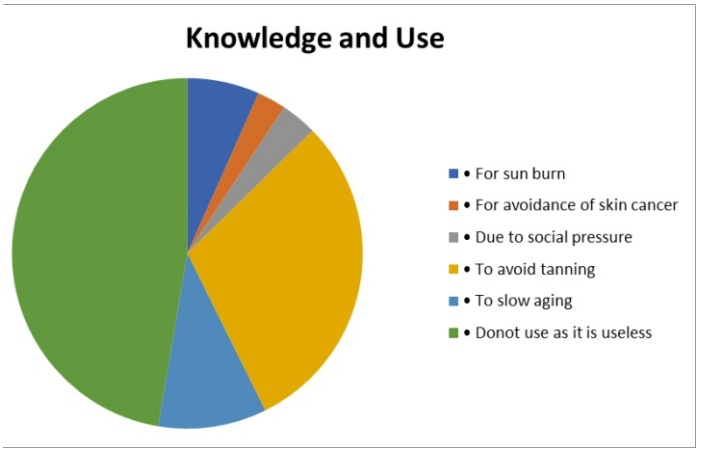


Fig-1: *Summary of Reasons for Sunscreen Use*

Discussion

As stated in the result, our findings show that 52.7% of individuals (n=79) use sunscreen on any given day, while 47.3% (n=71) do not. According to a study done by Qin Jian Low et al.[11] from 2021, only 27.9% of doctors used sunscreen, while 64.7% do not. He added that 7.4% of participants only use it sometimes.[11] Low included pharmacists in his study as well, but we solely focus on doctors in our observations. Among all the people in our survey who use sunscreen, only 10% constantly use them, 17.33% daily, 21.33% occasionally and only 45% use it infrequently. This demonstrates that 1 in 5 of the doctors in our research use sunscreen on a weekly basis. On the other hand, 31.9% of the medical professionals who took part in Low's study occasionally wear sunscreen. Further in-depth analysis and comparison of the two research allows us to draw the conclusion that doctors in Low's study apply sunscreen more frequently, with 37.8% of his participants doing so at least once per day. Sunscreen use as a benefit is another comparable factor. While just 2.66% of the doctors in this study use sunscreen to prevent malignancies, 93.5% of Low's participating doctors believe that it is used to prevent skin cancer. This could be attributed to education; In comparison to Pakistan, Malaysia is a more developed nation with higher levels of sunscreen usage awareness

and understanding. Doctors from a tertiary care hospital in Pakistan have comparatively little knowledge or, more likely, a poor perception of how sunscreen protects against skin cancer. Even if the doctors are aware, their attitude and practice show otherwise.

In another study conducted by Troya-Martin et al.[12] in Spain in 2015 it is reported that, of the 224 doctors who participated in the study, 22.9% applied creams before heading to the beach. The percentage of doctors who employed sun protection techniques rather than applying any cream was also mentioned, and it was 18.2%. Our study differs from Troya- Martin's in that our sample of doctors do not frequently visit beaches. Physicians from our research reside and work in the inland city of Lahore. Our study's 21.33% value of doctors who occasionally use sunscreen is equivalent to Troya-Martin's study value of 22.9% doctors who use sunscreen while at the beach. This means that regardless of location, doctors in both studies have the same knowledge and usage of sunscreen. In a Pakistani based study Muhammad Mustafa Memon et al.[13] reported that among the medical students of Karachi, 12.9% always use sunscreen while going out in daylight. This is similar to our value of 10% of doctors who always use sunscreen. 3.4% of Memon's participant use sunscreen as a protection against skin cancers, which is significantly less than 12.66% in our study. This is a significant difference as doctors in the similar geographic area were equally aware about risk of cancers due to sun exposures.

Conclusion

In conclusion, this study has revealed that the knowledge and use of sunscreen among doctors in Lahore, Pakistan, is suboptimal. Although 52.7% of participants reported using sunscreen, only 10% consistently used it, with 21.33% applying it occasionally. A substantial number of doctors in our study had poor attitudes and practices regarding sunscreen use, with many only using it during sunny months or citing reasons such as forgetfulness, greasiness, or cost as barriers. These findings highlight the need for increased awareness and education among doctors regarding the importance and benefits of sunscreen use. This can be achieved through targeted educational campaigns, continuous medical education, and greater emphasis on dermatology during medical training.

Conflict of Interest *None*

Source of Funding *None*

References

1. Melanoma of the Skin Statistics | CDC [Internet]. 2023 [cited 2023 Apr 25]. Available from: https://www.cdc. gov/cancer/skin/statistics/index.htm
2. Robinson JK. Sun exposure, sun protection, and vitamin D. JAMA. 2005 Sep 28;294(12):1541–3.
3. Guy GP, Machlin SR, Ekwueme DU, Yabroff KR. Prevalence and costs of skin cancer treatment in the U.S., 2002-2006 and 2007-2011. Am J Prev Med. 2015 Feb; 48(2):183–7.
4. US Department of Health and Human Services. The Surgeon General's Call to Action to Prevent Skin Cancer [Internet]. Washington (DC): Office of the Surgeon General (US); 2014 [cited 2023 Apr 25]. (Reports of the Surgeon General). Available from: http://www.ncbi.nlm.nih.gov/books/NBK247172/
5. Diao DY, Lee TK. Sun-protective behaviors in populations at high risk for skin cancer. Psychol Res Behav Manag. 2013 Dec 20;7:9–18.
6. WHO/IARC Expert Committee. Cancer Statistics [Internet]. World Health Organisation; 1979. Available from: http://apps.who.int/iris/bitstream/10665/ 75843/1/WHO_TRS_632.pdf
7. Green A, Williams G, Neale R, Hart V, Leslie D, Parsons P, et al. Daily sunscreen application and betacarotene supplementation in prevention of basal-cell and squamous-cell carcinomas of the skin: a randomised controlled trial. Lancet. 1999 Aug 28;354(9180):723–9.
8. Sander M, Sander M, Burbidge T, Beecker J. The efficacy and safety of sunscreen use for the prevention of skin cancer. CMAJ. 2020 Dec 14;192(50):E1802–8.
9. Gabros S, Nessel TA, Zito PM. Sunscreens And Photoprotection. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2023 Apr 25]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK537164/
10. IBM SPSS Statistics for Windows. Armonk, NY: IBM Corp.; 2016.
11. Low QJ, Teo KZ, Lim TH, Cheo SW, Yap WYE. Knowledge, attitude, practice and perception on sunscreen and skin cancer among doctors and pharmacists. Med J Malaysia. 2021 Mar;76(2):212–7.

12. de Troya-Martín M, Padilla-España L, Férnandez-Morano T, Delgado-Sánchez N, Blázquez Sánchez N, Rivas-Ruiz F, et al. Sun Protection Habits and Attitudes Among Healthcare Personnel in a Mediterranean Population. J Cancer Educ. 2016 Dec;31(4):789–95.
13. Memon MM, Manzoor M, Ashrafi MM, Kumar S, Ul Haq Z, Irfan S, et al. Prevalence and Predictors of the Use of Sunscreen Amongst Medical Students: A Multicenter Cross-sectional Study. Cureus. 2019 Jun 17;11(6): e4926.

Authors Contribution

YA, GAN: Conceptualization of Project
AN: Data Collection
YA, GAN, W: Literature Search
GAN, A: Statistical Analysis
GAN, MARM: Drafting, Revision
MT, YA, GAN: Writing of Manuscript

Challenging the Safety Profile of Bipolar TURP Regarding Dilutional Hyponatremia

Noman Ali Ghazanfar,[1] Sohail Hassan,[2] Shahid Niaz,[3] Muhammad Raheem Sajjad,[4] Rana Muhammad Umar,[5] Abdur Rasheed Khokhar[6]

Abstract

Objective: To measure the extent of Dilutional Hyponatremia after Transurethral resection of prostate using Bipolar Resection Technique.

Material and Methods: The study was conducted at Social Security Teaching Hospital Lahore. The study was carried out between 1st June 2022 to 30th November 2022. All patients who were candidates of surgical option and were planned TURP were included. They had pre-operative sodium levels done and this was compared to post operative levels on first post operative day. All patients included in the study had moderate prostate size and had resection time less than one hour.

Results: Total 45 patients having undergone bipolar TURP were included in the study. Among these 45 patients, 19 patients had a decrease in sodium levels postoperatively ,further in these 19 patients, 14 patients had a decrease of less than 5 mEq/L .In 2 out of total 45 patients the sodium levels remained same post operatively. In 24 patients out of total 45 there was an increase in sodium levels, further in these 24 patients ,19 patients had an increase of less than 5mEq/L . In all 45 patients no clinical symptoms of dilutional hyponatremia were observed.

Conclusion: There was no significant dilutional hyponatremia seen after bipolar TURP and wherever observed did not caused any clinical impact , proclaiming Bipolar TURP as a safe option for prevention of dilutional Hyponatremia during surgery for Benign prostate enlargement (BPE).

Key words: Surgery, Sodium, Glycine

How to cite: *Ghazanfar NA, Hassan S, Niaz S, Sajjad MR, Umar RM, Khokhar AR. Challenging the Safety Profile of Bipolar TURP Regarding Dilutional Hyponatremia . Esculapio - JSIMS 2023;19(03):288-291*

DOI: https://doi.org/10.51273/esc23.25131935

Introduction

Benign prostate enlargement (BPE) is one of the most common disease affecting men over the age of 60 years. Incidence of BPE is 70% in men over the age of 60 and 80% over the age of 70 years. Different management options are recommended for benign prostate enlargement such as conservative management, medical therapy, transurethral resection and open prostatectomy. Transurethral resection of prostate can either be done by monopolar resection in which 5% dextrose water or 1.5 % glycine is used as irrigant or bipolar resection where normal saline is used as irrigant. Transurethral resection of prostate using monopolar resection technique leads to absorption of fluid leading to dilutional hyponatremia.[1-3] The resultant lower levels of sodium can lead to fatigue, vomiting, confusion, visual loss, coma and death. In Bipolar TURP, normal saline is used as irrigation fluid which is supposed to be helpful in countering dilutional hyponatremia as compared to Monopolar TURP resection.[3-7]

Regarding safety of Bipolar resection of TURP in preventing dilutional hyponatremia, many studies have been conducted worldwide advocating it's superiority

1,2,4. Department of Urology, University College of Medicine and Dentistry, Lahore ,Pakistan
3- Department of Biochemistry, Sahara Medical College, Narowal, Pakistan
5- Department of Nephrology, National Institute of Kidney Disease, Shaikh Zayed Hospital Lahore, Pakistan
6- Department of Urology, Central Park medical college, Lahore

Correspondence:
Dr. Noman Ali Ghazanfar, *Senior Registrar , Department of Urology, University College of Medicine and dentistry, Lahore ,Pakistan*
Email: Nomijutt_2020@hotmil.com

Submission Date: 21-06-2023
1st Revision Date: 06-07-2023
Acceptance Date: 28-08-2023

over monopolar resection.[8] It is generally accepted by urologists all over the world ,that bipolar TURP has better safety profile than conventional monopolar TURP.[9,10] The data and studies however challenging the safety profile of bipolar TURP regarding hyponatremia, are very limited in Pakistan. There is a need to study the safety of bipolar TURP regarding prevention of hyponatremia as per claims by manufacturers and popular clinical belief. There is a need to critically analyze the safety of bipolar resection of prostate regarding dilutional hyponatremia .The purpose of this study is to measure and analyze the extent of dilutional hyponatremia after Bipolar TURP in Pakistani population thus establishing its safety regarding prevention of hyponatremia and resultant sinister consequences.

Material and Method

The study was conducted at Social Security Teaching Hospital Lahore. It was an observational study using convenient sampling technique. After approval from ethical review committee of hospital, all patients who were recommended surgical intervention were included in the study. The study was carried out between 1st June 2022 to 30th November 2022.The patients were aged between 50 and 90 years, with prostate size on ultra-sound between 40 to 80 grams and resection time less than an hour. Patient with monopolar resections were excluded from the study as were patients with recurrent disease. Patients with co-existent pathologies like bladder stones, bladder growths and patients with suspicion of carcinoma of prostate were also excluded from the study. They had pre operative measurement of sodium levels as well as sodium levels were measured after the resection on 1st post operative day.

Results

Total 45 patients were included in the study having undergone bipolar TURP. The mean age of patients was 68.5±7.75. The mean post operative sodium levels observed were 137.5±4.137. Among these 45 patients, 19 patients had a decrease in sodium levels postoperatively ,with a mean decrease of 3.89±3.541. Among these 19 patients with decreased sodium levels, 14 patients had a decrease of less than 5 mEq/L and remaining 4 had a decrease of more than 5mEq/L. In 2 out of total 45 patients the sodium levels remained same post operatively. In 24 patients out of total 45 there was an increase in sodium levels post operatively with a mean increase of 4.16±4.379. In these 24 patients who had an increased post operative sodium, 19 patients had an increase of less than 5mEq/L and 6 patients had an increase of more than 5 mEq/L. In all 45 patients no clinical symptoms of dilutional hyponatremia were observed post operatively.

Figure 1: *Pie Chart representation of Changes in Serum sodium levels after Bipolar TURP*

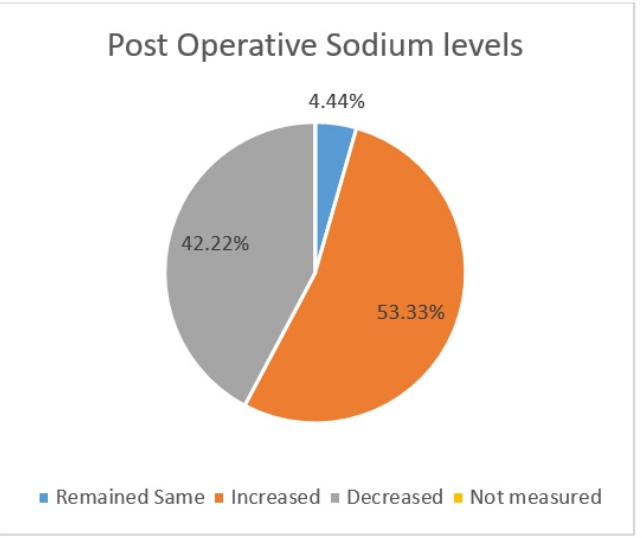


Table 1: *Startification of Patients according to post operative serum sodium levels after bipolar TURP*

Range of Post Operative Sodium	Number of Patients
125-130 mEq/L	03
131-135 mEq/L	15
136-140 mEq/L	20
141-145 mEq/L	06
146-150 mEq/L	01

Discussion

TURP syndrome is a nightmare for urologist while performing monopolar TURP. The stress being on pre-vention of dilutional hyponatremia rather than treatment. Bipolar resection using normal saline as irrigation should theoretically be a good alternative option for the same purpose as compared to monopolar resection technique.

Worldwide similar studies have been conducted analy-zing the safety of Bipolar TURP regarding dilutional hyponatremia.[11-12] In a study conducted in Atlanta veterans affairs hospital, USA similar small mean decrease in post operative sodium of 1.6 mEq/L was seen, as was seen in a study conducted in Singapore general

hospital Singapore where mean decrease was 3.2 mEq/L . This is very similar to our study where mean decrease in post operative sodium is 3.8 mEq/L. In many other studies conducted globally in Germany, USA , Belgium, Italy and Netherlands comparing bipolar resection with monopolar resection, the former was found superior in safety regarding prevention of hyponatremia.

In few other studies there was no difference seen in comparing monopolar and bipolar resections regarding occurrence of hyponatremia in moderate degree of prostate enlargement .[13] however difference was more marked dealing with larger prostates(>100grams) i.e. mean decrease of 10.7mEq/L with monopolar as compared to 3.2mEq/L with bipolar resection. The cost effectiveness profile of bipolar TURP was also found promising in a study conducted in Aberdeen, UK when post operative complications including hyponatremia and post operative stay were also taken into account.[14,15]

In an era of prevention rather than treatment of complications, our study has shown that bipolar TURP is the safer option regarding hyponatremia prevention in a moderate sized prostate with optimal resection time . The limitations of our study however is small sample size, lack of inclusion of very large sized prostate with resection times exceeding the generally accepted safer limits. We plan to address these shortcomings in future studies in our center.

Conclusion

It is concluded that there was no significant dilutional hyponatremia seen after bipolar TURP and wherever observed did not caused any clinical impact, proclaiming Bipolar TURP as a safe option in regards to prevention of dilutional Hyponatremia in patient requiring surgery for Benign prostate enlargement (BPE).

Conflict of interest: *None*

Source of Funding: *None*

References

1. Panovska Petrusheva A, Kuzmanovska B, Mojsova M, Kartalov A, Spirovska T, Shosholcheva M, Temelkovska Stevanoska M, Zdravkovska M, Dohchev S, Stankov O. Evaluation of changes in serum concentration of sodium in a transurethral resection of the prostate. Pril (Makedon Akad Nauk Umet Odd Med Nauki). 2015;36(1):117-27. PMID: 26076781.
2. Pasha MT, Khan MA, Jamal Y, Wahab F, Naeemullah. POSTOPERATIVE Complications With Glycine And Sterile Distilled Water After Transurethral Resection Of Prostate. J Ayub Med Coll Abbottabad. 2015 Jan-Mar;27(1):135-9. PMID: 26182759.
3. Al-Hajjaj M, Kanjo M, Tallaa M. TURP syndrome: A rare case report from Syria. Int J Surg Case Rep. 2022 Apr;93:107021. doi: 10.1016/j.ijscr.2022.107021. Epub 2022 Apr 4. PMID: 35477216; PMCID: PMC8991096.
4. Sinha MM, Pietropaolo A, Hameed BMZ, Gauhar V, Somani BK. Outcomes of bipolar TURP compared to monopolar TURP: A comprehensive literature review. Turk J Urol. 2022 Jan;48(1):1-10. doi: 10.5152/tud.2022.21250. PMID: 35118984; PMCID: PMC9612740.
5. Bruce A, Krishan A, Sadiq S, Ehsanullah SA, Khashaba S. Safety and Efficacy of Bipolar Transurethral Resection of the Prostate *vs* Monopolar Transurethral Resection of Prostate in the Treatment of Moderate-Large Volume Prostatic Hyperplasia: A Systematic Review and Meta-Analysis. J Endourol. 2021 May;35(5):663-673. doi: 10.1089/end.2020.0840. Epub 2020 Dec 28. PMID: 33198500.
6. Madduri VK, Bera MK, Pal DK. Monopolar versus bipolar transurethral resection of prostate for benign prostatic hyperplasia: Operative outcomes and surgeon preferences, a real-world scenario. Urol Ann. 2016 Jul-Sep;8(3):291-6. doi: 10.4103/0974-7796.184900. PMID: 27453650; PMCID: PMC4944621.
7. Al-Rawashdah SF, Pastore AL, Salhi YA, Fuschi A, Petrozza V, Maurizi A, Illiano E, Costantini E, Palleschi G, Carbone A. Prospective randomized study comparing monopolar with bipolar transurethral resection of prostate in benign prostatic obstruction: 36-month outcomes. World J Urol. 2017 Oct;35(10):1595-1601. doi: 10.1007/s00345-017-2023-7. Epub 2017 Feb 27. PMID: 28243790.
8. Alexander CE, Scullion MMF, Omar MI, Yuan Y, Mamoulakis C, N'Dow JMO, Chen C, Lam TBL. Reprint - Bipolar vs. monopolar transurethral resection of the prostate for lower urinary tract symptoms secondary to benign prostatic obstruction: A Cochrane review. Can Urol Assoc J. 2020 Dec;14(12):423-430. doi: 10.5489/cuaj.6464. PMID: 32569563; PMCID: PMC7704097.

9. Huang SW, Tsai CY, Tseng CS, Shih MC, Yeh YC, Chien KL, Pu YS, Tu YK. Comparative efficacy and safety of new surgical treatments for benign prostatic hyperplasia: systematic review and network meta-analysis. BMJ. 2019 Nov 14;367:l5919. doi: 10.1136/bmj.l5919. PMID: 31727627; PMCID: PMC7223639.
10. Ene C, Geavlete P, Geavlete B. What's New in Bipolar TURP for Surgical Management of BPH? Chirurgia (Bucur). 2020 May-Jun;115(3):307-313. doi: 10.21614/chirurgia.115.3.307. PMID: 32614285.
11. Ryang SH, Ly TH, Tran AV, Oh SJ, Cho SY. Bipolar enucleation of the prostate-step by step. Andrologia. 2020 Sep;52(8):e13631. doi: 10.1111/and.13631. Epub 2020 May 22. PMID: 32441397.
12. Gomes CM, Moromizato JK, Brandão TB. Bipolar and monopolar transurethral resection of the prostate are equally effective and safe in this high quality randomized controled trial. International braz j urol. 2020 Nov 18;47:145-8.. doi: 10.1590/S1677-5538.IBJU.2019.0766.1. PMID: 33047919; PMCID: PMC7712698.
13. Demirdag C, Citgez S, Tunc B, Simsekoglu F, Can G, Onal B. The Clinical Effect of Bipolar and Monopolar Transurethral Resection of the Prostate More Than 60 Milliliters. Urology. 2016 Dec;98:132-137. doi: 10.1016/j.urology.2016.08.008. Epub 2016 Aug 15. PMID: 27538799.
14. Treharne C, Crowe L, Booth D, Ihara Z. Economic value of the transurethral resection in saline system for treatment of benign prostatic hyperplasia in England and Wales: systematic review, meta-analysis, and cost–consequence model. Eur Urol Focus. 2018 Mar 1;4(2):270-9.. doi: 10.1016/j.euf.2016.03.002. Epub 2016 Mar 23. PMID: 28753756.
15. GiacomoMaria Pirola, Martina Maggi, Daniele Castellani, Alessandro Sciarra, Emanuele Rubilotta & Marilena Gubbiotti (2021) A Cost–Benefit Analysis of Bipolar TURP for the Treatment of Bladder Outflow Obstruction, Research and Reports in Urology, 13:, 487-494, DOI: 10.2147/RRU.S277480

Author's Contribution

NAG: Concept, Data Collection, Writing and Design

SH: Data Collection, Critical review

SN: Data Collection

MRS: Critical review

RMU: Critical review

ARK: Critical Review

Comparison of Diagnostic Accuracy of Modified Alvarado's Score Vs AIR Score in Acute Appendicitis

Muzaffar Aziz,[1] Abdul Hannan Javaid,[2] Muhammad Ayub,[3] Hajra Khan,[4] Umama Hayat Qureshi,[5] Khalid Hussain Qureshi[6]

Abstract

Objective: To determine the diagnostic accuracy of MASS Vs AIR score in patients with acute appendicitis taking histopathology as gold standard.

Material and Methods: Study design is cross sectional study (Validation). The study took place in the Department of General Surgery Nishtar Hospital Multan form 2nd august 2022 to 1st Feb 2023. The technique used for sampling is Non-Pro-bability consecutive sampling. Sample size is calculated using PASS 11, through formula for paired sensitivities (McNemar test). In total, 148 patients with diagnosis of acutely inflamed appendix, fulfilling the inclusion criteria, after taking informed consent, were enrolled. Baseline data including age, gender, MASS and AIRS was noted.

Results: patients were having a mean age of 32.91±9.06 years. There were 97(65.54%) male and 51(34.46%) female. Histopathology showed 114(77.03%) patients had acute appendicitis. Sensitivity, specificity, PPV, NPV& DA was 71.05%, 85.29%, 94.18%, 46.77%&74.23% respectively for MASS. Sensitivity, specificity, PPV, NPV& DAwas 94.49%, 88.23%, 96.49%, 88.23% &94.59% respectively for AIR.

Conclusion: AIR score is an improved diagnostic scoring system than MASS for acute appendicitis.AIR is more sensitive and more specific than MASS. In addition, the two scores can be easily computed through a detailed history and clinical exam and basic laboratory tests.

Keywords: Histopathology, AIR, MASS, Appendicitis

How to cite: *Aziz M, Javaid AH, Ayub M, Khan H, Qureshi UH, Qureshi KH. Comparison of Diagnostic Accuracy of Modified Alvarado's Score Vs AIR Score in Acute Appendicitis. Esculapio - JSIMS 2023;19(03):292-297*

DOI: https://doi.org/10.51273/esc23.25131936

Introduction

Appendicitis is defined as inflammation of appendix. It is common cause of pain in right iliac fossa. Acute appendicitis is an acute inflammation (lasting less than 4 days) of the vermiform appendix.[1] Chronic Appendicitis is defined by the following: (A) The patient has a history of pain in the right iliac fossa for a minimum of 3 weeks without an alternate diagnosis. (B) After the appendectomy, the patient is completely relieved of the symptoms. (C) Histopathology supports chronic active inflammation of the wall of the appendix or fibrosis of the appendix.

1-3, 5,6. Department Of General Surgery, Nishtar Hospital, Multan
4. Nishtar Institute Of Dentistry Multan.

Correspondence:
Dr.Muzaffar Aziz, *Associate Professor, Department Of General Surgery, NishtarHospital,Multan, Pakistan. E-mail: drmuzaffaraziz@gmail.com*

Submission Date: 11-08-2023
1st Revision Date: 27-08-2023
Acceptance Date: 11-09-2023

One of the most common surgeries in emergency is appendectomy for acute appendicitis and it poses a difficulty in accurate diagnosis as the symptoms are ambiguous and remains a diagnostic difficulty. It has great numbers of clinical imitators and confirmation is done mainly on clinical bases leading to the formation of the scoring system based on clinical imitators to identify the correct diagnosis.[2]

Modified Alvarado's scoring system (MASS) and Appendicitis Inflammatory Response (AIR) Score are scoring systems for diagnosis of acute appendicitis,[3] as there is approximately 15-20% of negative appendectomies done in most of the studies done using MASS.[4,5]

A study was conducted in Kerala, INDIA in 2018-19 showing MASS was found to have a sensitivity of 64.44%, specificity of 58.82 when cutoff value of score was set at 7 and sensitivity & specificity of AIR score was found 97.78% and 29.41% respectively When the cut-off value for the score has been set to 5.. Total number of

patients positive for acute appendicitis on histopathology were 90 (84.11%).[1] A study was conducted in Ayyub Teaching Hospital, Abbottabad in 2018 that showed the sensitivity of 63% and specificity of 83% of MASS when cut off value of score was set at 7 while diagnosing the case of acute appendicitis, which was less than other scoring systems mentioned in study. Histopathology showed acutely inflamed appendix in 81.6 % (102) patients & 18.4% (23) patients underwent negative appendectomy.[6] The present study aims to reduce the risk of a negative appendectomy. As few surgeons frequently and unne-cessarily rely on imaging studies to diagnose the case of acute appendicitis, it puts a burden on countries with limited resources & these imaging studies are also asso-ciated with increased radiation hazard which can be avoided. The present study was aimed to determine and compare the diagnostic accuracy of MASS Vs AIR score in acute appendicitis taking histopathology as gold standard.

Material & Methods

Study Design is Cross Sectional Study (Validation). The study took place in the Department of General Surgery Nishtar Hospital Multan form 2nd august 2022 to 1st Feb 2023. The technique used for sampling is Non-Probability consecutive sampling. Sample size is calculated using PASS 11, through formula for paired sensitivities (McNemar test). Where sensitivity of Modified Alvarado's score is 64.4% and sensitivity of appendicitis inflammatory response score is 97.7%, power of the study is 80%, significance level is 5% and prevalence of acutely inflamed appendix in patients presenting with acute abdomen is 40%. Sample size calculated is 148. All consenting patients (males and females) clinically suspected of acute appendicitis. Age range 18-50 years, pregnancy, patients with mass in right iliac fossa (assessed on clinical examination) and history of stone in urinary tract or pelvic inflammatory disease assessed on medical records.

It is defined as acute, non traumatic pain of <4 days in right lower quadrantin congruous with diagnosis of acutely inflamed appendix via clinical and USG findings.[1] Score of ≥ 7 will be taken as high likelihood for acutely inflamed Appendix as per literature available. Score of ≥ 9 will be taken as high likelihood foracutely inflamed Appendix as per literature available.[1] The acute inflammation of the microscopic examination of appendix specimen will show mucous erosions or scattered crypts abscess or collection of neutrophils or mural necrosis[7].

Following approval by the Hospital Ethical Board, all patients who met the inclusion criteria were registered for the study by the Department of General Surgery. (Emergency/OPD) Nishtar Hospital Multan. Written informed consent was obtained after the study subject matter was explained Patients were assessed and scores were calculated. Surgery was performed by a consultant surgeon having minimum 3 years of experience in surgery. Demographic data regarding age, gender, address were noted. A detailed history and a physical exam were conducted. Baseline labs including CBC, LFTs, RFTs, S/E (as a pre-requisite of surgery) and CRP were done. All post operation sample of appendix were sent to Histopathology Department, Nishtar Hospital Multan for Histopathology. The data was recorded in a specifically designed proforma. Data has been entered and analyzed through SPSS ver-sion 23.0. Mean and SD was determined for quantitative variables like age, MASS and AIR score. Frequency and %age was determined for qualitative variables like gender. Effect modifiers like age, gender were addressed through stratification of data. Chi square after stratifi-cation was applied and p-value ≤ 0.05 was considered significant. Diagnostic accuracy was assessed using 2×2 contingency table taking histopathology as gold standard for both Modified Alvarados score & appendicitis inflammatory response score.

Results

Mean age of the patients was 32.91 ± 9.06 having minimum age of 18 and maximum age of 50. There were

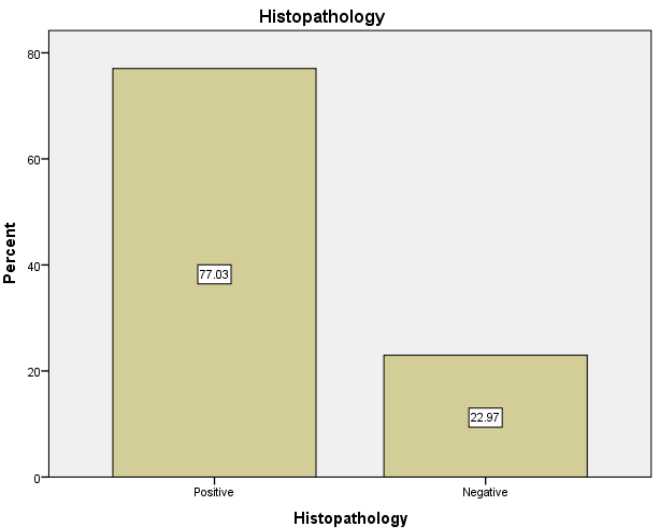


Fig-1: *Distribution of histopathology report of patients having surgical intervention on suspicion of acute appendicitis (n=148).*

97(65.54%) male and 51(34.46%) female. Histopathology showed 114(77.03%) patients had acute appendicitis and 34(22.97%) didn't have acute appendicitis. So rate of negative appendectomies was 22.97%. . Sensitivity, specificity, PPV, NPV and DA was 71.05%, 85.29%, 94.18%, 46.77%, 74.23% respectively for MASS. **(Table1)** Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy was 94.49%, 88.23%, 96.49%, 88.23%, 94.59% respectively for AIR. **(Table 2)**

Table 1: *Diagnostic Values of Modified Alvarado's Scoring system (MASS) using 2×2 contingency table taking histopathology as gold standard.*

MASS	Histopathology Positive	Histopathology Negative
MASS ≥7	81	5
MASS <7	33	29

Sensitivity: 71.05 % : Specificity: 85.29 %: PPV: 94.18 %: NPV: 46.77 %: DA: 74.23 %

Table 2: *Diagnostic Values of Appendicitis Inflammatory Response Score using 2×2 contingency table taking histopathology as gold standard.*

AIR Score	Histopathology Positive	Histopathology Negative
AIR Score ≥9	**110**	**4**
AIR Score <9	**4**	**30**

Sensitivity: 96.49 %: Specificity: 88.23 %: PPV: 96.49 %: NPV: 88.23 %: DA: 94.59%

Discussion

Surgical removal of the acutely inflamed appendix is one of the most common emergency surgical procedure done in general surgery. The risk of developing acute appendicitis throughout life is 8.6% for men and 6.7% for women. Lifetime risks of having surgical intervention for acutely inflamed appendix is approximately 12% for males and 23% for females.

It is very difficult to decide whether to go for appendectomy or conservative management in a suspected case of acute appendicitis as there is increase risk of perforation of acutely inflamed appendix and infection ultimately leading to increased morbidity and mortality if one avoids appendectomy to increase diagnostic accuracy, on the other hand if one doesn't go for diagnostic accuracy then there is increased risk of negative appendectomies.[8]

Since introduction of Alvarado scoring system in 1986 the correct diagnosis of acute appendicitis significantly improved and it became very famous due to its greater efficacy when applied to populations in the USA and Europe. Since last decade AIR, another scoring system has shown promising results even better than Alvarado scoring system in validation studies for diagnosis of acutely inflamed appendix.[9] Our study compared the sensitivities, the specificities, the PPVs, and the NPVs between the modified Alvarado score and AIR scoring systems. The PPVis the ratio of patients actually diagnosed as positive versus all those who tested positive. NPV is the ratio of patients actually diagnosed as negative to everyone who had negative test results.

A study was conducted in Kerala, INDIA in 2018-19 showing MASS was found to have a sensitivity of 64.44%, specificity of 58.82 when cutoff value of score was set at 7 and AIR score was found to have a sensitivity of 97.78%, specificity of 29.41% when cut off value of score was set at 5. Total number of patients positive for acute appendicitis on histopathology were 90 (84.11%).[1] A study was conducted in Ayyub Teaching Hospital, Abbottabad in 2018 that showed the sensitivity of 63% and specificity of 83% of MASS when cut off value of score was set at 7 while diagnosing the case of acute appendicitis, which was less than other scoring systems mentioned in study. Histopathology showed acutely inflamed appendix in 81.6 % (102) patients & 18.4% (23) patients underwent negative appendectomy.[6]

In our study, the sensitivity of AIR score was remarkably better than MASS. Sensitivity, specificity, PPV, NPV was 71.05%, 85.29%, 94.18%, 46.77 respectively for MASS. Sensitivity, specificity, PPV, NPV value was 94.49%, 88.23%, 96.49%, 88.23% respectively for AIR. As per our results it can be safely assumed that AIR scoring system can diagnose a case of acute appendicitis with better accuracy and also reduces the need of USG or other radiological studies.[10] AIR score of ≥ 9 in patient with Right iliac fossa pain indicate need of surgery. With the help of AIR scoring system, operating surgeon can make timely and quick decision.[11]

Conclusion

It can be safely assumed that AIR scoring system can diagnose a case of acute appendicitis with better accuracy and also reduces the need of USG or other radiological studies and it has high discriminating power than MASS. AIR score may help to select patients who require timely surgical intervention or those who need additional

imaging assessment and can be given a trial of medical management according to imaging reports. The AIR score has the potential to be a preferred scoring system. With the help of AIR scoring system, a timely decision can be made by operating surgeon, with a score ≥ 9 recommending a need for surgical intervention.

Conflict of Interest: *None*

Funding Source: *None*

References

1. Chisthi MM, Surendran A, Narayanan JT. RIPASA and air scoring systems are superior to alvarado scoring in acute appendicitis: Diagnostic accuracy study. Annals of medicine and surgery. 2020;59:138-42.
2. Andersson M, Kolodziej B, Andersson RE. Randomized clinical trial of Appendicitis Inflammatory Response score-based management of patients with suspected appendicitis. BJS. 2017; 104(11):1451-61.
3. Karami MY, Niakan H, Zadebagheri N, Mardani P, Shayan Z, Deilami I. Which One is Better? Comparison of the Acute Inflammatory Response, Raja Isteri Pengiran Anak Saleha Appendicitis and Alvarado Scoring Systems. Annals of coloproctology. 2017;33(6):227-31.
4. Yeşiltaş M, Karakaş D, Gökçek B, Hot S, Eğin S. Can Alvarado and Appendicitis Inflammatory Response scores evaluate the severity of acute appendicitis? Ulusal travma ve acil cerrahi dergisi = Turkish journal of trauma & emergency surgery : TJTES. 2018; 24(6): 557-62.
5. Chae MS, Hong CK, Ha YR, Chae MK, Kim YS, Shin TY, et al. Can clinical scoring systems improve the diagnostic accuracy in patients with suspected adult appendicitis and equivocal preoperative computed tomography findings? Clinical and experimental emergency medicine. 2017;4(4):214-21.
6. Khan S, Usama M, Basir Y, Muhammad S, Jawad M, Khan T, et al. Evaluation Of Modified Alvarado, Ripasa And Lintula Scoring System As Diagnostic Tools For Acute Appendicitis. : JAMC. 2020;32(1):46-50.
7. Mällinen J, Vaarala S, Mäkinen M, Lietzén E, Grönroos J, Ohtonen P, et al. Appendicolith appendicitis is clinically complicated acute appendicitis-is it histopathologically different from uncomplicated acute appendicitis. International journal of colorectal disease. 2019; 34(8):1393-400.
8. Andersson M, Kolodziej B, Andersson RE. Validation of the appendicitis inflammatory response (AIR) score. World Journal of Surgery. 2021 Jul;45:2081-91.
9. Vaziri M, Nafissi N, Jahangiri F, Nasiri M. Comparison of the appendicitis inflammatory response and Alvarado scoring systems in the diagnosis of acute appendicitis in children. JML. 2021 Jan; 14(1):75.
10. Deboni VS, Rosa MI, Lima AC, Graciano AJ, Garcia CE. The appendicitis inflammatory response score for acute appendicitis: is it important for early diagnosis?. ABCD. Arquivos Brasileiros de Cirurgia Digestiva (São Paulo). 2022 Sep 16;35.
11. Jose T, Rajesh PS. Appendicitis Inflammatory Response Score in Comparison to Alvarado Score in Acute Appendicitis. Surg J (N Y). 2021;07(03):e127-e31.

Authors Contribution

MA: Conceptualization of Project
AHJ: Data Collection
MY: Literature Search
HK: Statistical Analysis
UHQ: Drafting, Revision
KHQ: Writing of Manuscript

Current Status of Knowledge and Awareness of Doctors Regarding Medicolegal Work

Muhammad Asif,[1] Usman Shahid Butt,[2] Shaiqa Ramzan,[3] Rehana Mushtaq,[4] Zanib Ahsan,[5] Hadiqa Iftkhar[6]

Abstract

Objective: To get information about knowledge of doctors in the field of forensic medicine.

Method: It was a cross sectional study. Convenience sampling technique was adopted. Study duration was 2 months and 10 days i.e., 6th May to 16th July 2023. Sample size was 200. Study centre was Sialkot medical college, Sialkot. A questionnaire containing 18 questions from different parts of forensic medicine was distributed to 200 doctors through e mail. Data was analysed by using SPSS version 25. It was presented in table form.

Results: All doctors replied. Knowledge related to medical ethics was 100%. Law related issues had least knowledge. Eagerness to go in this field was only 22%.

Conclusion: Most of the doctors are reluctant to choose forensic medicine as their future field. Overall knowledge was not good enough. It needs to be motivated and induce eagerness in this field by explaining the importance of this subject to the students and graduates of medicine.

Keywords: Medical ethics, consent,Isqat i hammal, Isqat i janien, Postmortem Lividity.

How to cite: *Asif M, Butt US, Ramzan S, Mushtaq R, Ahsan Z, Iftkhar H. Current Status of Knowledge and Awareness of Doctors Regarding Medicolegal Work. Esculapio - JSIMS 2023;19(03):296-399*

DOI: https://doi.org/10.51273/esc23.25131937

Introduction

Doctor has long been deemed as very respectful and trusted person in the whole glob. Patient due to trust in doctor usually opens up secrets. Doctor under professional secrecy never discloses that information other than under privileged communication. During recent times the luxury of respect enjoyed by previous doctors is no more available to new ones.[1] Forensic or legal medicine is a branch of medicine in which scientific knowledge and skill is used to further justice and apply law. Medical jurisprudence is another branch which describes the interrelationship between doctor, community, state and patient. It deals with medical negligence cases.[2] Now a days cases of negligence against doctors has been increased. This has made the medical doctors prone to more anxious and depressed life.[3] As attitude of the patients towards doctor is changing, which has increased the need of laws for the protection of rights of patients and doctors. The opposing behaviour of various kinds of media has put oil on fire against doctors.[4] Doctors in government job usually perform medicolegal work. They present in the court of law for evidence in various cases. Many times the court passes negative remarks against doctors due to lack of forensic medicine knowledge.[5] It is an essential aspect of young doctor to have basic forensic medicine knowledge so that he could perform law related work without any difficulty and error. So that he could help the state in furthering justice.[6] Any case in which court wants to explore the truth about inflicted wound to hold responsible the person committing it under rules and regulations of the country is called a medicolegal case.[7] It includes different types of hurt, their manner of infliction. Reports about poisoning cases and transportation injuries.[8,9,10] Any wound may have to be described with respect to its nature, site, duration and direction.[11] In documentation it has to written that either a blunt weapon has been used

1. *Forensic Medicine & Toxicology, Sialkot medical college, Sialkot*
2. *Forensic Medicine & Toxicology, K.M.Safdar Medical College Sialkot.*
3. *Forensic Medicine & Toxicology, Central Park Medical College Lahore.*

4-6. Sialkot Medical College, Sialkot

Correspondence:
Dr Muhammad Asif ; *Assistant Professor Sialkot Medical College, Sialkot.*
E-mail. drasif_hameed@hotmail.com

Submission Date:	26-06-2023
1st Revision Date:	22-08-2023
Acceptance Date:	05-09-2023

or some sharp edge weapon has been used.[12]

Material and Method

It was a cross sectional study. Study centre was Sialkot medical college, Sialkot. Convenience sampling technique was adopted to collect the data. Any doctors who showed willingness to take part in the study was selected regardless of age, sex, experience and job place. Sample size was 200 doctors. Study duration was 2 months and 10 days. A questionnaire was prepared including 18 basic questions from forensic medicine and toxicology. The questionnaire was presented on 6th May 2023 through e mail. All responses were recollected till 16th of July 2023. A prior informed consent was taken from every participant. Questionnaire was prepared on google forms. Statistical analysis was carried out by using SPSS version 25. Percentages were calculated. Responses were presented in the form of table.

Results

200 doctors were sent the forms. All responded. A question regarding medical negligence was put. 75% of the doctors replied correctly. Response to question from identification was only 10% right in answer. 90% response to question from thanatology was right.75% knew the definition of Algor mortis. Regarding institute for performing autopsy was 87% right. Regarding response to questions from Qisas and Diyat act was 54% right about Qatal i khata, 54% knew about jhur,83 % knew rightly about itlaf e udw and 91% knew about isqat i hamal . 82% knew the definition of isqat i jenin. 70% knew the difference between fimbriated and torn hymen. Question from toxicology was responded rightly 73%. 56% knew about best sample for detection of heroin. Only 56% doctors showed willingness to work in forensic medicine department. Only 61% doctors knew the exact location of Punjab Forensic Lab. 74% gave the right definition of shajjah i munaqqila.

Table 1: *Response to different questions.*

	Right response	Don't know	Wrong response
Consent is necessary before IUCD	200	-	-
Do you know the term "RES IPSA LEQUITUR"	74%	26%	-
Ossification centre of lower end of femur and upper end of tibia occurs in	30%	-	70%
Do you know the putrefaction and marbling of skin	90%	10%	-
Do you know the difference between post-mortem staining and PM lividity	20%	43%	37%
Autopsy is performed in which institution	87%	-	13%
Section 319 PPC is related to	54%	31%	15%
JURH is under which section	56%	-	44%
Antidote for oxalic acid is	73%	-	27%
Following is the best sample for heroin detection	55%	-	45%
Do you like to work in forensic department at government sector	22%	22%	56%
Forensic science lab is located in	61%	-	39%
Do you know what is Itlaf i udw?	83%	-	17%
Do you know what is meant by the term "Isqat i Hamal"	91%	-	9%
What is meant by Algor Mortis	75%	5%	20%
Do you know what is meant by the term Isqat i Janin?	82%	-	18%
Do you know the difference fimbriated and torn hymen	70%	-	30%
Bone of skull is fractured and dislocated without touching membranes. It comes under	74%	-	26%

Discussion

The scope, roles, and tasks of forensic medicine and forensic medical experts currently vary widely between countries and legal systems, which has resulted in barriers to organization, standard setting, and quality assurance for practice in forensic medicine, including for reporting.[13] Forensic has been derived from forensic meaning presenting in front of public in order to find solutions of discrepancies. Many branches of medicine are interlinked with law under forensic medicine.[14] In current study, Only 22% of all samples showed eagerness for joining government institute in forensic medicine. The knowledge in personal identity was least. It was only 30%. In medical ethics they had reasonable knowledge. Law related knowledge was around 55%. It is in accordance with another study carried out in India where only 14.5 % showed willingness for forensic medicine in their future.[15] In another study carried out in Sargodha, only 21% of samples showed willingness for forensic medicine.[16] A survey was carried out in America, in which there was a huge percentage of unwillingness towards law related medicine.[17] A study performed in India, on postgraduate trainees concluded that basic knowledge about forensic medicine was much low.[18] Regarding autopsy conduction 87% participants knew about the institutes for conduction of autopsy. Lack of willingness for autopsy work was 81.3% in a study in India.[19] Likewise, Gebremariam and Hagos

said that health workers were deficient regarding law related knowledge.[20] In India Maharashtra, a study concluded that most of the residents were ignorant of medicolegal issues.[21] Over all in the whole world the importance and need of forensic medicine in sex related issues and in many other crimes has been emphasised and also enhancement of its knowledge.[22,23]

Conclusion

Overall knowledge in forensic medicine was not good. It needs to develop eagerness in this field. As it is essential part of our court system.

Conflict of Interest *None*

Funding Source *None*

References

1. Haripriya A, Haripriya V. Knowledge about medical law and its negligence among doctors: A cross-sectional study. Int J Sci Res Publ. 2014 May;4(5):1-3.
2. Reddy KN, Murty OP. The essentials of forensic medicine and toxicology. New Delhi, India: Jaypee Brothers Medical Publishers; 2014.
3. Baheti MJ. Medico Legal Awareness: Where are we? A Survey among Health Professionals in Maharashtra and Haryana. International Journal of Public Health Research. 2015 Mar 1;5(1):525-30.
4. Senthilkumar S, Reddy VC, Ingle NA. Awareness of medico-legal issues among medical and dental college health professionals. Journal of Indian Association of Public Health Dentistry. 2013 Jul 1;11(3):44-50.
5. Rao GV, Hari N. Medico-legal knowledge assessment of interns and post graduate students in a medical institution. International Archives of Integrated Medicine. 2016;3(10):105-10.
6. Sadasivan Sivasuthan et al. Awareness of 3rd semester mbbs students regarding the medicolegal Issues in our society and the need for training in forensic medicine-A Descriptive cross-sectional study. Journal of evolution of medical and dental sciences. 2018;7(36):4018-402.
7. Aktas N, Gulacti U, Lok U, Aydin İ, Borta T, Celik M. Characteristics of the traumatic forensic cases admitted to emergency department and errors in the forensic report writing. Bulletin of Emergency & Trauma. 2018 Jan;6(1):64.
8. Brahmankar TR, Sharma SK. A record based study of frequency and pattern of medico-legal cases reported at a tertiary care hospital in Miraj. International Journal of Community Medicine and Public Health. 2017 Apr; 4(4):1348-52.
9. Linares-González L, Rodríguez JS, Beltrán-Aroca CM, Girela-López E. Quality control of injury reports issued by primary health care and emergency medical services in the province of Cordoba. Spanish journal of legal medicine. 2019 Jan 1;45(1):12-7.
10. Siddappa SC, Datta A. A study pattern of medico-legal cases treated at a tertiary care hospital in central Karnataka. Indian J Forensic Comm Med. 2015;2(4):193-7.
11. Kotzé JM, Brits H, Botes BA. Part 1: Medico-legal documentation South African Police Services forms, Department of Justice forms and patient information. South African Family Practice. 2014;56(5):16-22.
12. Madadin M, Alqarzaie AA, Alzahrani RS, Alzahrani FF, Alqarzea SM, Alhajri KM, Al Jumaan MA. Characteristics of medico-legal cases and errors in medico-legal reports at a Teaching Hospital in Saudi Arabia. Open Access Emergency Medicine. 2021 Dec 2:521-6.
13. Meilia PD, Freeman MD, Herkutanto, Zeegers MP. A review of the diversity in taxonomy, definitions, scope, and roles in forensic medicine: implications for evidence-based practice. Forensic Science, Medicine and Pathology. 2018 Dec;14:460-8.
14. Hons ES. Medical Legal forensic reporting by industrial psychologists: a qualitative enquiry into required skills and knowledge (Doctoral dissertation, North-West University).
15. Bagga IS, Goyal V, Singh A, Chawla H, Goel S, Sharma S. Knowledge towards post-mortem examination and reasons for not specialising in morbid anatomy: study among medical undergraduate students. Int J Res Med Sci. 2016 Jul;4(7):2792-5.
16. Yaser A, Gul M, Abbasi S, Hussain AM, Liaquat WM. Medical Students' Perceptions regarding autopsy as an educational tool. Pakistan Journal of Medical and Health Sciences. 2019;13(2):361-4.
17. Evans A, Refrow-Rutala D. Medico-legal education: a pilot curriculum to fill the identified knowledge gap. Journal of Graduate Medical Education. 2010 Dec; 2(4): 595-9.
18. Kadu S, Lande S. Evaluation of Knowledge and Attitude about Postmortem Examination Among Post Graduate Residents. Call for Editorial Board Members. 2019 Jul;12(3):242.
19. Kasulkar AA, Wakde SD, Kanade HT, Gupta M. Knowledge and Attitude of Medical Students and Interns Towards Medicolegal Autopsy. Indian Journal of Forensic Medicine & Toxicology. 2017 Jul 1;11(2).
20. Gebremariam T, Hagos M. Situation analysis of medico-legal issues in Asmara, Eritrea, in 2008. Journal of the Eritrean Medical Association. 2009;4(1):31-6.

21. Giri Purushottam A, Chavan Kalidas D, Phalke Deepak B. Knowledge about Medicolegal Problems Amongst the Interns and Residents from a Rural Tertiary Care Teaching Hospital in Western Maharashtra-A cross sectional study. Indian Journal of Forensic Medicine and Pathology. 2010 Jul;3(3).
22. Kelty SF, Julian R, Bruenisholz E, Wilson-Wilde L. Dismantling the justice silos: Flowcharting the role and expertise of forensic science, forensic medicine and allied health in adult sexual assault investigations. Forensic science international. 2018 Apr 1;285:21-8.
23. Kanaparthy A, Kanaparthy R. The dental role in forensic medicine. Iosr J Pharm. 2013;3:14-7.

Authors Contribution

USB: Conceptualization of Project
MA, RM: Data Collection
ZA, HI: Literature Search
MA: Statistical Analysis
USB, SR: Drafting, Revision

Self Medication Practices in Medical Students of Nishter Medical University; A Cross Sectional Study

Noaman Ishaq,[1] Muhammad Usama Ilyas.[2] Maria,[3] Kamran Ahmed Malik,[2] Zainab Rahman,[4] Nausheen Ata,[5] Hafiz Bilal Murtaza[6]

Abstract

Objective: This study aims to evaluate how medical students perceive and use self-medication. We also intend to find how the prevalence varies between the pre-clinical (MBBS Year 1and 2) and clinical (MBBS Year 3,4 and 5) students.

Material and Method: The study was carried out in Nishtar Medical University from Aug 2022 to Oct 2022. A total of 400 students, 200 preclinical and 200 clinical, were chosen through non probability convenient sampling and were asked to fill a pre designed questionnaire form to complete this cross-sectional study.

Results: Comparison of the prevalence of self-medication in clinical and preclinical students exhibited a p value of 0.026, with 84.2 % clinical and 74.7% pre-clinical students practicing self-medications.

Conclusion: It has been observed that medical students frequently perform self-medication in both their pre-clinical and clinical groups.

Keywords: Self Medication, Clinical Students, Pre-clinical students,

How to cite: *Ishaq N, Ilyas MU, Maria, Malik KA, Rahman Z, Ata N, Murtaza HB. Self Medication Practices in Medical Students of Nishter Medical University; A Cross Sectional Study. Esculapio - JSIMS 2023;19(03):300-304*

DOI: https://doi.org/10.51273/esc23.25131938

Introduction

Taking medication without doctor's prescription, using previously sought clinical advice or written prescription and administering available medication at hand without proper instruction, all come under the umbrella of Self Medication (SM).[1] Self-Medication is defined as use of over-the-counter medications to treat self-diagnosed symptoms and disorders or for the continuation and reuse of prescribed medication for recurrent diseases.[2] The most frequent causes of SM include prior disease experience, a lack of knowledge about the condition, financial limitations to seek medical care, lack of time, and easy availability to drugs particularly in developing nations.[3] To prevent irrational drug usage, which can waste resources, develop pathogen resistance, and result in major health risks such extended pain, drug reactions, and drug dependence.[4] Lack of access to the necessary medication for the underlying illness, which could delay the detection and treatment of the real disease condition, is another risky consequence of SM.[5,6] Though responsible use of Self Medication may lessen the burden on governments and health-care systems by minimizing the time patients must wait to see doctors at the hospital and the total expense of medical services, when used improperly it can endanger human well-being and cause serious health-related consequences.[7,8] The rising prevalence of SM among medical students can be attributed to a variety of factors. Label of a medical student is the main cause of medication access.[9] The purpose of this study is to evaluate and compare the ratio of prevalence of SM in preclinical (1st and 2nd year) and clinical (3rd, 4th and final year) MBBS students of Public Medical University.

1. Pharmacology, Bakhtawar Amin Medical and Dental College, Multan
2. Nishtar Medical University, Multan
3. RHC Shehar Sultan , District Muzaffar Ghar
4. Army Medical College, Rawalpindi
5. Foundation University Medical College, Islamabad
6. University of Agriculture, Faisalabad

Correspondence:
Dr Noaman Ishaq, *Assistant Professor Pharmacology, Bakhtawar Amin Medical and Dental College, Multan. noamanishaq@yahoo.com*

Submission Date: 19-08-2023
1st Revision Date: 29-08-2023
Acceptance Date: 12-09-2023

Material and Method

The study was conducted from August 2022 to October 2022 in Nishtar Medical University. Non probability convenient sampling was used to select the students to

fill a pre designed questionnaire form to complete this cross-sectional study.[10] The questionnaire was of Multiple-choice format and had questions related to demographics, concept of Self Medication, reasons and caused of self-medication. Total number of participants were 400 out of which 200 were pre-clinical students (1st year and 2nd year MBBS) and 200 were clinical students (3rd year, 4th year, Final year MBBS). Informed consent was obtained from each of them. Students who had doctor parents were considered as non-self-medicating students. Prior permission from the ethical committee of Nishtar Medical University was obtained for conducting the study.[11,12] Inclusion criteria were Medical Students from MBBS Year 1 to Final year MBBS while Students of BDS and other allied disciplines were excluded. Data was analyzed using SPSS Version 25. Since it was quantified data, we used student t test.

Results

We had a total of 400 questionnaires distributed equally among preclinical and clinical students. Response was received from a total of 186 preclinical and 190 clinical students. Data of 6 students from the clinical group and data of 12 preclinical students was excluded as their questionnaires were incomplete. The total number of questionnaires analyzed for clinical and preclinical students were 184 and 174 respectively. Male participants were more from clinical years as compared to a majority of female responders from the preclinical students (Table 1). The mean age for self-medicating clinical students was 22.1 and the mean age of self-medicating preclinical students was 19.7. The major source of information for self-medication drugs for clinical students was previous prescription (54.3%), followed by textbook (13.6%), classroom teaching (9.2%) and advertisement

Table 1: *Comparison between demographics of preclinical and clinical students*

Variable		Clinical		Preclinical	
		Self-medicating N (%)	Non-self-medicating N (%)	Self-medicating N (%)	Non-self-medicating N (%)
Gender	Male	82 (44.6)	16 (8.7)	43 (24.7)	20 (11.5)
	Female	73 (39.7)	13 (7.1)	87 (50.0)	24 (13.8)
Age (years)	Mean	22.1	21.9	19.7	19.6
	17	-	-	1 (0.6)	-
	18	-	-	18 (10.3)	7 (4.0)
	19	-	-	30 (17.2)	15 (8.6)
	20	8 (4.3)	1 (0.5)	56 (32.2)	11 (6.3)
	21	44 (23.9)	10 (5.4)	20 (11.5)	11 (6.3)
	22	52 (28.3)	12 (6.5)	5 (2.9)	-
	23	32 (17.4)	2 (1.1)	-	-
	24	12 (6.5)	4 (2.2)	-	-
	25	6 (3.3)	-	-	-
	26	1 (0.5)	-	-	-

Table 2: *Comparison between Preclinical and Clinical students*

Variable		Clinical (%)	Preclinical (%)	P-Value
Self-Medication		84.2	74.7	***0.026***
Factors favouring Self Medication				
No need to visit doctor for minor illness		81.3	82.3	0.825
Quick relief		56.1	45.4	0.071
Time saving		65.2	57.7	0.199
Confidence about your medical knowledge		34.2	29.2	0.373
Economical		40.0	28.5	**0.042**
Ease and Convenience		65.2	55.4	0.094
Learning opportunity		14.8	14.6	0.958
Crowd avoidance		29.0	25.4	0.493
Drugs used				
Analgesics		89.7	64.8	**<0.001**
Antimicrobials		47.7	50.0	0.803
Multivitamins		56.8	57.0	0.917
Antispasmodics		18.1	7.0	**0.005**
Decongestants		27.1	6.3	**<0.001**
Lozenges		24.5	24.2	0.896
Antiallergics		0	1.6	0.122
CNS (Antidepressants, Antianxiety)		1.3	2.3	0.516
Factor Opposing use of Self Medication				
Lack of medical knowledge		57.1	57.5	0.811
Risk of adverse effects		64.3	67.5	0.953
Risk of using wrong drugs		67.9	70.0	0.872
Risk of misdiagnosing		42.9	47.5	0.881
Risk of drug dependence		42.9	32.5	0.304
Strong Immune system/ Do not fall ill		10.7	0	0.083
Frequency of self-medication	Always	4.5	38.5	0.143
	Sometimes	60.6	57.7	
	Rarely	34.8	3.8	
Visit to qualified medical practitioner	Always	17.4	20.0	***0.033***
	Sometimes	59.4	53.1	
	Rarely	23.2	26.9	

(7.1%). Self-medication was not practiced by 15.8% students were not self medicating among which (8.2%) had doctor parents. The major source of drug was medical store (64.7%) and home (19.6%). For preclinical students, previous prescription (64.9%) was also the major source of information for self-medication drugs, advertisement (6.3%) the second most major, textbook and classroom teaching being the most minor sources with (2.9%) and (0.6%) respectively. (25.3%) students did not self-medicate. The major drug sources for preclinical students were medical store (50.6%), home (24.1%) and doctor parents (12.6%). Students who did not self-medicate accounted for (12.6%) of the total preclinical responses. P values were obtained by doing individual t test on all variables except frequency of self-medication and visit to qualified medical practitioner which were analyzed through chi square test. Comparing p value, we can see that clinical students practiced self-medication more than their preclinical peers (Table 2). Clinical students were also more likely to visit a qualified medical practitioner. Further examining Table 2, we can see that the only reason for self-medication which showed significant differences between clinical students and preclinical students was self-medication being economical. Clinical students also used significantly higher analgesics, antispasmodics and decongestants for their general presentations.

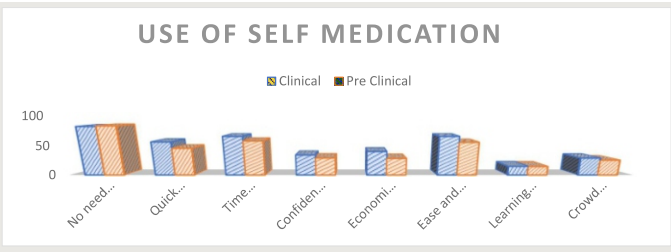


Figure 1: *Comparison of factors favoring use of self-medication in pre-clinical and clinical students*

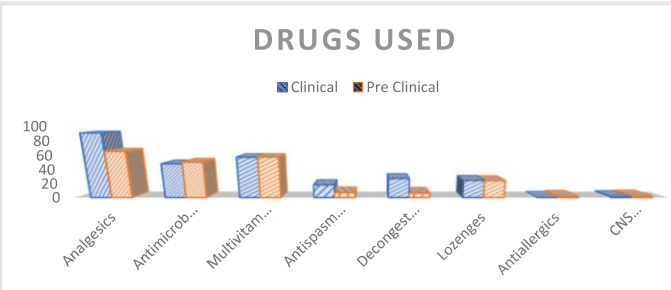


Figure 2: *Drugs used for self-medication in pre-clinical and clinical students*

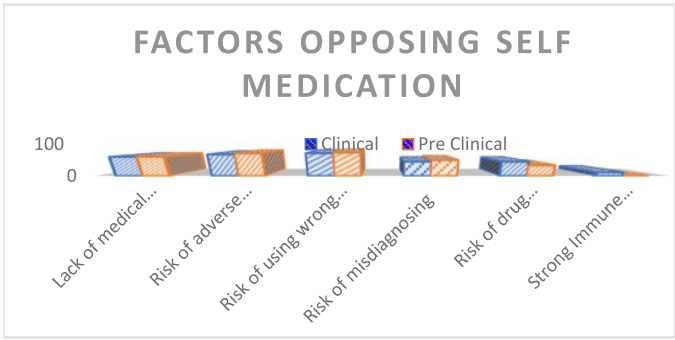


Fig-3: *Comparison of factors favoring use of self-medication in pre-clinical and clinical students*

Preclinical students also used more antimicrobials, antiallergics and CNS drugs, but the differences between the two groups- clinical and preclinical- are not significant.

Discussion

Self-Medication (SM) is the practice of using drugs without properly seeking medical advice of physician. SM is emerging at an alarming rate in developing countries but is a general global issue. The purpose of this study was to evaluate the prevalence of SM and to compare the incidence between clinical and preclinical students of Nishtar medical university, Multan. Our findings were that 84.2% of clinical students practiced SM while the percentage was 74.7% for pre-clinical students. In similar national studies conducted in Abbottabad the prevalence of SM was 99%, 34.5% of which were 4th year medical students.[5] Internationally study conducted in Alexandria faculty of medicine showed the prevalence to be much lower at an average of 52.7%, 67.3% reported in those who have completed their medical school and 40.4% in those in 2nd year; another study conducted in India showed the prevalence to be 65%.[13] In Nepal, the prevalence was found to be 81.9%[14]. The factor which influences students highest to practice SM in this study is that there is no need to visit doctor for minor illness, this thought is shared by both clinical – 81.3% and preclinical – 82.3% students. This is followed by students saving time clinical - 65.2%, pre-clinical 57.7%. However the study in Abbottabad and Ahmedabad showed that majority did it because it was time saving (19.7%) and (41.2%) respectively. 33.85 % of students from Faisalabad said that previous good experience of self-medication prompted them to use self-medication again. In a study from Saudi Arabia, the health problem not really being significant was the most common answer of students practicing SM (63.9%).[15] A Serbian study showed SM was done by students because

the symptoms of their disease were not serious (60.1%). The most popular drug group used for self-medication by students in our study was Analgesics (89.7%) that was supported by Serbian study with the most common finding at 55.4% were students using Analgesics as SM[16]. Unlike the results from our study, Students from Gulbarga, India (63.91%)and West Bengal (31.09%) used Antibiotics most commonly. In Ethiopia, Antipyretics (46.3%) were used majorly.[17] It was noted that previous prescriptions are the most widely cited resource for knowledge on self-medication, the same applied to both clinical (54.3%) and pre-clinical students (64.9%). However, it was followed by textbook (13.6%) for clinical students and advertisement (6.3%) for preclinical students. This is due to the fact that Pharmacology is a subject taught to clinical students and not to preclinical students.[18] Clinical students can also confirm and rationalize previous prescriptions from their textbook based on their symptoms and this adds to the fact that lesser percentage of students use previous prescriptions as major source of information in clinical group as compared to preclinical group.[19] Student's sources of drugs in the study, medical stores and homes accounted for 64.7% and 19.6%, respectively in clinical students and 50.6%, 24.1% respectively in pre-clinical students. This is was in accordance to Saudi and Sri Lankan study where 94.3% and 83% students respectively got the medications from pharmacies.[20] When asked about the reason why the students preferred not to Self-Medicate, 67.9% Clinical and 70 % Pre-Clinical Students answered that they thought of the risk of using wrong medication. It was also concluded in Saudi Arabia that very few participants anticipated the side effects.[13,21] The uniqueness of our study lies in the fact that participants had never before been equally split between the clinical and pre-clinical student groups and the results from the data analyzed has not been compared previously. The results are more trustworthy when the participation rates from both groups of pupils are under control. There were some limitations in the conduction of the study, because the study relied on self-reported information on self-medication, memory bias is a possibility and it was not completely possible to rule out the likelihood of student influence on one another while answering questionnaire.

Conclusion

It is a common tendency in medical students both in Pre-Clinical and Clinical group to practice Self-medication.

Conflict of Interest *None*

Funding Source *None*

References

1. Pandya RN, Jhaveri KS, Vyas FI, Patel VJ. Prevalence, pattern and perceptions of self medication in medical students. Int J Basic Clin Pharma. 2013; 2(3):275-80.
2. Montastruc JL, Bondon-Guitton E, Abadie D, Lacroix I, Berreni A, Pugnet G, et al. Pharmacovigilance, risks and adverse effects of self-medication. Therapies. 2016; 71(2):257-62.
3. Abdi A, Faraji A, Dehghan F, Khatony A. Prevalence of self medication practice among health science students] in Kermanshah, Iran. BMC pharm Toxicol. 2018, 19 (1): 1-7
4. Kasulkar AA, Gupta M. Self medication practices among med students of a private institute. Ind J pharm sci. 2015; 77(2):178-182.
5. Kanwal ZG, Fatima N, Azhar S, Chohan O, Jabeen M, Yameen MA. Implications of self medication among medical students - A dilemma.. J Pak Med Assoc. 2018; 68(9):1363-7.
6. Nepal G, Bhatta S. Self-medication with antibiotics in WHO Southeast Asian Region: a systematic review. Cureus. 2018; 10(4): 1-17.
7. Alshahrani SM, Alavudeen SS, Alakhali KM, Al-Worafi YM, Bahamdan AK, Vigneshwaran E. Self-medication among King Khalid University students, Saudi Arabia. Risk management and healthcare policy, Dove Press J. 2019; 12:243-249.
8. Alshogran OY, Alzoubi KH, Khabour OF, Farah S. Patterns of self-medication among medical and non medical University students in Jordan. Risk management and healthcare policy. 2018; 11(1):169-176
9. Badiger S, Kundapur R, Jain A, Kumar A, Pattanshetty S, Thakolkaran N et al. Self-medication patterns among medical students in South India. Aus med J. 2012; 5(4): 217-220
10. Khalid z, Asim S, Zubair A. Perceptions and practices of self-medication among medical students of Lahore Medical and Dental College, Lahore, Pakistan. Pak J Med Health Sci, 2020; 14(1): 141-144
11. Pal J, Ahmad S, Pal P, Chatterjee D. Prevalence and pattern of self-medication among undergraduate students in a medical college of Kolkata. Int J Com Med Pub Health. 2017; 4(10):3619-24.
12. Gyawali S, Shankar PR, Poudel PP, Saha A. Knowledge, attitude and practice of SM among basic sci undergrad med stud in med school in West. Nepal. J clin diag res. 2015; 9(12): 17-22

13. Alduraibi RK, Altowayan WM. A cross-sectional survey: knowledge, attitudes, and practices of SM in med and phar stu. BMC Heal Serv Res. 2022; 22(1):1-10.
14. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, Aleksic D et al. SM practices and risk factors for SM among med stu in Belgrade, Serbia. PloS one. 2014; 9(12) 1-14
15. Patil SB, Vardhamane SH, Patil BV, Santoshkumar J, Binjawadgi AS, Kanaki AR. SM practice and perceptions among undergrad med stud: a cross-sectional study: Int J Com Med Pub Health. 2014; 8(12): 17-22
16. Banerjee I, Bhadury T. SM practice among undergrad med stud in a tert. care med collg., West Bengal. J per med. 2012; 58(2): 127.
17. Abay SM, Amelo W. Asset. of SM practices among med, pharm, health sci stu in Gondar University, Ethiopia. J Young Pharm. 2010;2(3):306-10.
18. Sankdia RK, Agrawal M, Rekha PB, Kothari N. A questionnaire-based study regarding the knowledge, attitude and practice SM among second yr. undergrad med stu. Int J Pharm Clini Sci. 2017: 6(1)1-5.
19. Qasim AP, Alam MM, Maqbool R, Qasim JA, Zaib N, Ain N. Rising Trend of SM Among Undergraduate medical students. Ann Punjab Med Coll. 2017; 11(1): 68-75
20. Klemenc-Ketis Z, Hladnik Z, Kersnik J. SM among healthcare and non-healthcare students at Uni of Ljubljana, Slovenia. Med Princ Pract. 2010;19(5):395-401.
21. Rathish D, Wijerathne B, Bandara S, Piumanthi S, Senevirathna C, Jayasumana C et al. Pharma edu and antibiotic SM among med students: a cross-sectional study. BMC Res Notes. 2017;10(1):1-5.

Authors Contribution

NI: Conceptualization of Project
MUI, M, KAM, NA: Data Collection
ZR, NA: Literature Search
HBM: Statistical Analysis
NI, M, MUI: Drafting, Revision
ZR, KAM: Writing of Manuscript

Prevalence of Different Serotypes of Uro-Pathogenic Escherichia Coli (UPEC) causing Recurrent Urinary Tract Infections and the Effect of Cranberry Extract on them

Zahid Zia,[1] Safwa Mahmood,[2] Fatima Salam[3]

Abstract

Objective: To determine the prevalence of different serotypes of Uro-Pathogenic Escherichia coli (UPEC) causing recurrent urinary tract infections and to assess the effect of Cranberry extract on them.

Material and Methods: It is cross sectional retrospective study conducted in Mayo Hospital Lahore. A total of 60 samples of urine were collected from patients admitted in from Urology Department with history of recurrent urinary tract infections. Urine studies were performed including: Urine microscopy, urine culture on CLED medium, biochemical isolation and serotyping of Uro-Pathogenic Escherichia coli. The patients were given Cranberry Extract x 500mg once daily for 3 months, after which a follow-up urine study was performed.

Results: A total of 60 urine samples were collected, out of which 15 strains of Uro-Pathogenic Escherichia coli were isolated. 53% of strains tested positive for E.Coli-26 serotype, and 47% tested positive for E.Coli-45 serotype. After taking Cranberry extract for 3 months, 67% of E.coli positive urine samples turned negative. Cranberry extract was 100% effective at eliminating E.Coli-45 serotype infection, but only 38% effective at eliminating E.Coli-26 serotype infection.

Conclusion: Findings of this study show promising results of Cranberry extract in mitigating the severity of recurrent urinary tract infections especially those caused by Uro-Pathogenic Escherichia coli-45 serotype.

Keywords: Uro-Pathogenic Escherichia coli, E. coli Serotypes, Recurrent Urinary tract infection, Cranberry extract

How to cite: *Zia Z, Mahmood S, Salam F. Prevalence of Different Serotypes of Uro-Pathogenic Escherichia Coli (UPEC) causing Recurrent Urinary Tract Infections and the Effect of Cranberry Extract on them. Esculapio - JSIMS 2023;19(03):305-308*

DOI: https://doi.org/10.51273/esc23.25131939

Introduction

Urinary tract infections (UTI) are frequently acquired through community and hospitals. According to a Systematic Review done by American University of Beirut, Lebanon in 2021: Urinary infections are twice more likely to occur in females compared to males and its prevalence increases with increasing age. In young women, spermicide use and frequency of sexual intercourse are the main risk factors evidenced by increased urethral and vaginal colonization. In contrast, older women's predisposing risk factors are high urinary residue, atrophic vaginitis, and cystocele.[1] Men can also get repeated attacks of UTIs due to enlarged prostate. Moreover, cancer, diabetes and stress are also common factors that increase the risk. Among the uropathogens, Escherichia coli is a major contributor agent of UTI in both indoor and outdoor patients, followed by Pseudomonas, Proteus, Klebsiella, Staphylococcus saprophyticus and Enterococcus species presenting clinically with symptoms of dysuria, frequency of micturition and/or urgency.[2] Most common serotypes of E.coli causing UTI are O4,O6,O7,O20,O25, O26,045 O50 and O51. Furthermore, in a recent study done by the Institute of Biotechnology, Brazil in 2022: Phylogenomic analyses have consistently demonstrated that the E. coli species is very complex and structured in eight distinct

1-3. Department of Pathology, KEMU/Mayo Hospital, Lahore.

Correspondence:
Dr. Safwa Mahmood, *Postgraduate Resident, Department of Pathology, KEMU/Mayo Hospital, Lahore, Pakistan E-mail: wenjingsaf@gmail.com*

Submission Date:	05-06-2023
1st Revision Date:	17-07-2023
Acceptance Date:	04-09-2023

phylogroups, as follows: A, B1, B2, C, D, E, F, and the newly described G. The large majority of the UPEC isolates have been assigned into phylogroup B2, in addition to isolates observed in other E. coli phylogroups. Regarding somatic antigen (O) typing, which defines the E. coli serogroups the serogroups O6 (12.5%, 14/112) and O25 (8.9%,10/112) were the most frequently detected.[3]

Pathogenic E-coli strains causing UTI are due to a range of virulent determinants which include adhesins (Type I fimbriae–P fimbriae and EPEC adherence factor), motility/chemotaxis factors(Flagella) and toxins (LPS and cytotoxins). Indeed, according to Khauli R. et al: One of the main bacterial virulence features is the binding of the uropathogen to the mucosal cellular layer. It has been well studied that Escherichia coli type 1 fimbria is heavily associated with cystitis, and other pathogenic-fimbriated strains are associated with pyelonephritis. Furthermore, these pathogenic fimbriae are associated with persistent colonization of the urothelium and eliciting an inflammatory response. It has been also theorized that these bacteria can mature into biofilms in the urothelial barrier to cause recurrence of infections and elude the host immune system.[1] In the current strategy of treating UTI, For acute uncomplicated UTI, the Infectious Diseases Society of America (IDSA) advocates the use of nitrofurantoin, trimethoprim-sulfamethoxazole (TMP-SMX), or fosfomycin for 3–5 days.[1] However, in the case of recurrent or chronic UTI, according to Dr. Ron Golan and his team at Columbia University Medical Center, New York in an article published in 2020: "Patients who present with repeat infections may also be initially treated as per their previous urine culture results until new cultures are available. Imaging to identify a source of infection, such as an abscess or stone, should be done with relapsing infections that involve the same organisms. Patients who presented initially with hematuria should be checked for urinary blood again after the infection has been successfully treated."[4] In other words, if patient is suffering from repeated attacks of UTI, as clinicians we should focus on reversing the cause while treating the UTI. On another note, with regards to CAUTI or Catheter-associated urinary tract infection, a study done in 2017 at Weill Cornell shows that Cranberry was effective in reducing the number of symptomatic CA-UTIs in all patients (n=22). Resistance to antibiotics was reduced by 28%. Furthermore, colony counts were reduced by 58.65%. No subjects had adverse events while taking cranberry.[11] As can be seen, cranberry plays a promising role in UTI treatment without harboring any ill effects. Furthermore, according to a study published in 2019, it is important to note that "Increasing antimicrobial resistance with its expenditure and health consequences has raised interest in applying different non-antibiotic ways of preventing and treating uncomplicated lower UTIs.[5] As we know from history that antimicrobial resistance adversely affects the normal flora and may cause super infection with Clostridium difficile or Fungi. Therefore, safe and effective non-antimicrobial strategies are needed. Cranberry has been used in both food and medicine industries for centuries. It contains Anthocyanidins and Proanthocyanidins (PAC) which inhibit lectin mediated adherence of type I fimbriated (mannose specific receptors) and type P fimbriated (α and β-D-Gal specific receptors) of E.Coli to uroepithelial cells.[5] In order to expand on this, the purpose of this study is to determine which serotypes of E.coli are prevalent among patients with recurrent UTI from Urology Department, Mayo Hospital, and to provide a cheaper and safer option like Cranberry extract in prophylaxis of recurrent UTI caused by Escherichia coli. This is important in order to avoid the serious hazards of imprudent usage of antibiotics especially in a developing country like Pakistan.

Material and Methods

It is cross sectional retrospective study conducted in Mayo Hospital Lahore. A total of 60 samples of urine were collected from patients admitted in Urology Department with history of recurrent urinary tract infections. Urine studies were performed including: Urine microscopy, urine culture on Cystine Lactose Electrolyte Deficient (CLED) medium, biochemical isolation and serotyping of Uro-Pathogenic Escherichia coli. The patients were given Cranberry Extract x 500mg once daily for 3 months, after which a follow-up urine study was performed.

Results

A total of 60 urine samples were collected from patients with history of repeating urinary tract infections, out of which 15 strains of Uro-Pathogenic E.Coli were isolated. 53% of strains tested positive for E.Coli-26 serotype, and 47% tested positive for E.Coli-45 serotype. After taking Cranberry extract for 3 months, 67% of E.coli positive urine samples turned negative due to the prevention of bacterial adhesion to the uroepithelium, but not necessarily due to killing of bacteria. Cranberry extract was 100% effective at eliminating E.Coli-45

serotype, but only 38% effective at eliminating E.Coli-26 serotype.

Table 1: *UPEC Serotype frequencies*

Sero Types	Frequency	Percent
E.Coli-26 serotype	8	53%
E.Coli-45 serotype	7	47%
Total	**15**	**100**

Table 2: *3-month Cranberry effect on different UPEC serotyopes*

3-Month Cranberry Effect	Positive Urine Culture	Negative Urine Culture	Total
E.Coli-26 serotype	5 (62%)	3 (38%)	100%
E.Coli-45 serotype	0 (0%)	7 (100%)	100%
Total	5	10	15

Discussion

As can be seen by the findings of our study, Cranberry extract given in patients suffering from chronic UTI helps to decrease the severity and symptoms of UTI, mainly due to the prevention of bacterial adhesion to uroepithelium but not necessarily due to killing of bacteria. As there are minimal studies in Pakistan which have tested the sole effect of Cranberry in patients with chronic UTI, this study provides a very helpful insight into safe and affordable treatment options for a very common but life-threatening illness. Chronic UTI is life-threatening because if it becomes complicated, meaning: urinary tract infections in immune compromised patients, males, and those associated with fevers, stones, sepsis, urinary obstruction, catheters, or involving the kidneys[6] this may lead to a fatal condition called florid urosepsis, in which if the urine accumulates in the urinary tract and is not expelled due to post-renal obstruction, this can cause local bacterial overgrowth, which may enter the bloodstream directly or via lymphatics causing septic shock, MODS (Multi-organ dysfunction syndrome), and eventually death.[7] According to a 2021 epidemiological report from Critical Care Department of Aga Khan University, Karachi, mortality rate from septic shock was around 22.8%, with one of the major causes being renal disease.[8] As can be seen, much attention needs to be paid to make sure we as clinicians do test every avenue in preventing and treating chronic UTI which unfortunately may lead to the loss of life. In a study from Quebec, Canada done by Roussel et.al in 2022: We demonstrated that PAC (Proanthocyanidin)-rich cranberry extract microbial metabolites significantly blunt activation of UPEC virulence genes at an early stage in the gut reservoir. We also showed that altered virulence in the gut affects infectivity on the urothelium in a microbiota-dependent manner. Among the possible mechanisms, we surmise that specific microbial PAC metabolites may attenuate UPEC virulence, thereby explaining the preventative, yet contentious properties of cranberry against UTI.[9] Cranberry plays a vital role in prevention of bacterial adhesion to uroepithelium, this can reduce symptoms and/or prevent attack of recurrent UTI. In a Systematic Review done by Gonzalez et. al at the Institute of Food Science Research, Madrid, Spain in 2020, it is stated that: "At present, cranberry supplementation can safely be suggested as complementary therapy in women with recurrent UTIs.[10] In addition, in a 2017 Meta-Analysis conducted at Tufts University School Of Medicine, Boston, it was shown that; Results of the meta-analysis showed that cranberry reduced the risk of UTI by 26% in otherwise healthy women.[12] With regards to the findings in this study, similar results have been obtained through conducting urine studies on 60 patients suffering from recurrent urinary tract infections admitted in Urology Department of Mayo Hospital Lahore. Of the 60, 15 samples tested positive for Uro-Pathogenic E.coli, of which 7(47%) were E.coli Serotype-45, and 8 (53%) were E.coli Serotype-26, after 3-month intake of Cranberry extract, 10 (67%) out of 15 Uro-Pathogenic E.coli positive urine cultures became negative. Of the 10 (67%), 7 (70%) were E.coli Serotype-45, and only 3 (30%) were E.coli Serotype-26. As can be seen by our data, cranberry extract was less than half as effective at eliminating UTI caused by E.coli Serotype-26. This indicates that even though cranberry extract plays an important role in the reduction of recurrent attacks of UTI and the severity of its symptoms, more studies are needed to be carried out to consider its role as a prophylactic or therapeutic measure. This is especially important since cranberry provides a safer and cheaper option compared to antibiotics whose misuse can cause grave side effects in a developing country like Pakistan.

Conclusion

Results of this study show promising results of Cranberry extract in mitigating the severity of recurrent urinary tract infections especially those caused by Uro-Pathogenic Escherichia coli-45 serotype; however, further studies need to be done to assess the role of Cranberry extract as a prophylactic and/or therapeutic measure in patients with recurrent urinary tract infections.

Conflict of Interest *None*

Funding Source *None*

References

1. Khauli R, Abou Heidar N, Degheili J, Yacoubian A. Management of urinary tract infection in women: A practical approach for everyday practice. Urology Annals. 2019;11(4):339.
2. Ahmed SS, Shariq A, Alsalloom AA, Babikir IH, Alhomoud BN. Uropathogens and their antimicrobial resistance patterns: Relationship with urinary tract infections. International Journal of Health Sciences [Internet]. 2019;13(2):48–55. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6436442/
3. Tanabe RHS, Dias RCB, Orsi H, de Lira DRP, Vieira MA, dos Santos LF, et al. Characterization of Uropathogenic Escherichia coli Reveals Hybrid Isolates of Uropathogenic and Diarrheagenic (UPEC/DEC) E. coli. Microorganisms. 2022 Mar 17;10(3):645.
4. Golan R, Cooper KL, Shah O. Management of Small, Non-obstructing Renal Stones in Adults With Recurrent Urinary Tract Infections. Reviews in Urology [Internet]. 2020;22(2):52–6. Available from: https://www.ncbi.nlm. nih.gov/pmc/articles/PMC7393687/
5. Wawrysiuk S, Naber K, Rechberger T, Miotla P. Prevention and treatment of uncomplicated lower urinary tract infections in the era of increasing antimicrobial resistance—non-antibiotic approaches: a systemic review. Archives of Gynecology and Obstetrics [Internet]. 2019 Jul 26;300(4):821–8. Available from: https:// link.springer.com/article/10.1007/s00404-019-05256-z
6. Sabih A, Leslie SW. Complicated Urinary Tract Infections [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK436013/#:~:text=A%20complicated%20UTI%20is%20any
7. Porat A, Kesler S. Urosepsis [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2022. Available from: https://www.ncbi.nlm.nih.gov/books/ NBK482344/
8. Ahmed AS, Hussain E, Haleem S, Ahmed N, Latif A. Epidemiology of sepsis, based on ICD-9 coding, a tertiary care experience from Pakistan. Trends in Anaesthesia and Critical Care. 2021 Dec;41:37–46.
9. Roussel C, Stéphane Chabaud, Lessard-Lord J, Cattero V, Pellerin F, Perrine Feutry, et al. UPEC Colonic-Virulence and Urovirulence Are Blunted by Proanthocyanidins-Rich Cranberry Extract Microbial Metabolites in a Gut Model and a 3D Tissue-Engineered Urothelium. 2022 Aug 16;10(5).
10. González de Llano D, Moreno-Arribas MV, Bartolomé B. Cranberry Polyphenols and Prevention against Urinary Tract Infections: Relevant Considerations. Molecules [Internet]. 2020 Aug 1;25(15):3523. Available from: https://www.mdpi.com/1420-3049/25/15/3523
11. Thomas D, Rutman M, Cooper K, Abrams A, Finkelstein J, Chughtai B. Does cranberry have a role in catheter-associated urinary tract infections? Canadian Urological Association Journal. 2017;11(11):E421.
12. Fu Z, Liska D, Talan D, Chung M. Cranberry Reduces the Risk of Urinary Tract Infection Recurrence in Otherwise Healthy Women: A Systematic Review and Meta-Analysis. The Journal of nutrition.2017;147(12): 2282-8.

Authors Contribution

ZZ: Conceptualization of Project
ZZ: Data Collection
ZZ, SM: Literature Search
ZZ, SM: Statistical Analysis
SM, FS: Drafting, Revision
ZZ, SM: Writing of Manuscript

Risk of Diabetes and Renal Dysfunctions in Postmenopausal Women using Antidepressants for Short Term

Mohammad Yousaf,[1] Laila Akber,[2] Adil Yousaf,[3] Javeria Imtiaz[4]

Abstract

Objective: To study the use of antidepressants for a short period and the risk of diabetes and kidney functions in postmenopausal women of Peshawar city Khyber Pakhtunkhwa.

Material and Methods: The patient group (PG) consisted of 140 postmenopausal women taking various antidepressants drugs for ≥ 3 and <6 months, and 140 postmenopausal women from the Khyber Pakhtunkhwa general population as controls. Serum urea was measured using the UV kinetic method, serum creatinine was measured using the modified Jaffe method, and glycated hemoglobin (HbA1c) was measured using the rapid ion-exchange resin separation method.

Results: Mean age was 51.65 ± 5.81 years in the control group (CG), 43.09 ± 6.28 years in the selective serotonin reuptake inhibitor (SSRI) group, and 45.33 ± 5.15 years in the PG tricyclic antidepressant (TCA) group. Mean BMI for the CG, SSRI, and TCA groups was 25.42 ± 5.04, 30.49 ± 7.25, and 28.71 ± 7.78 kg/m^2, respectively. Mean serum urea in the CG, SSRI and TCA groups was 27.07 ± 7.78, 30.17 ± 30.39 and 21.40 ± 3.56 mg/dl, respectively. Mean serum creatinine in the CG, SSRI and TCA groups was 0.85 ± 0.21, 0.70±0.28 and 0.67±0.09 mg/dl, respectively. Mean HbA1c in the CG, SSRI, and TCA groups were 6.06±0.59, 5.67±0.56, and 5.45 ± 0.49%, respectively. Mean fasting blood glucose levels in the CG, SSRI, and TCA groups was 85.37 ± 8.34, 79.96 ± 7.85, and 76.96 ± 7.04 mg/ld., respectively.

Conclusion: The result of this study showed that short term use of SSRIs, and TCAs may lower the risk of diabetes and renal dysfunctions in postmenopausal women

Keywords: Urea, Creatinine, Anti-depressant, post-menopausal.

How to cite: *Yousaf M, Akber L, Yousaf A, Imtiaz J. Risk of Diabetes and Renal Dysfunctions in Postmenopausal Women using Antidepressants for Short Term. Esculapio - JSIMS 2023;19(03):309-312*

DOI: https://doi.org/10.51273/esc23.251319310

Introduction

Antidepressants are used to treat various manifestations of depressive syndrome by correcting imbalances in chemical messengers in the brain. Chemical disorders can also cause mood and behavior changes.[1] For the treatment of patients with mild or simple depression, the major antidepressants given to patients in the early stages of treatment are intended to cure the symptoms of the disorder, but they can cause a range of side effects in patients if they do not alleviate the symptoms of depression.[2] There is a need that while prescribing an antidepressant health condition of the patient should be taken into consideration to avoid the unwanted side effects.[3] Antidepressants can have a variety of adverse effects in certain people.[6] Recognition of the side effects profile of advanced antidepressants, particularly selective serotonin reuptake inhibitors (SSRIs), compared to older drugs such as tricyclic antidepressants (TCAs), has increased awareness among prescribers and patients. It may have contributed to its popularity.[7] A number of recent publications indicate that antidepressants are not safe for long-term use and may increase the risk of

1. *Department of Chemistry Islamia College KPK Peshawar Pakistan*
2. *Department of Oral and Maxillo Facial Surgery Lady Reading Hospital Peshawar*
2. *Department of Oral Pathology Bacha Khan College of Dentistry Mardan*

Correspondence:
Dr. Mohammad Yousaf, *Department of Chemistry Islamia College KPK Peshawar Pakistan. Email: yousaf672010@hotmail.com*

Submission Date: 23-06-2023
1st Revision Date: 07-07-2023
Acceptance Date: 29-08-2023

diabetes.[8] Longer durations of 24 months or more increase the risk of diabetes[9]. Other studies found a less significant and a weaker link between risk of diabetes and antidepressant use. In 2012, the National Center for Health Statistics found that adults taking antidepressants for depressive symptoms were not at risk of diabetes. In addition, this study used improved blood test frequency variability in the general population to assess blood glucose levels in antidepressant users who had not recently a blood glucose test and thus could not have been detected.[10] Kivimaki and Batty proposed two approaches to address the limitations of the previous studies, first to look for the potential risk of diabetes in antidepressant users; and Second, to study the association between antidepressant use and blood glucose levels in normal subjects.[11] Shulman KI et al observed the adverse effect of lithium therapy on renal functions. Rej S et al reported a very little evidence to support the risk of renal dysfunctions in elderly patients using antidepressant lithium.[12] This bio analytical cross sectional study was conducted to study the effects of the use of various antidepressants on HbA1c levels and biochemical serum markers of renal functions in postmenopausal women in Peshawar city from Khyber Pakhtunkhwa Province of Pakistan.

Materials and Methods

The study was conducted in Khyber Teaching Hospital (KTH) and Shafique psychiatric clinic Peshawar from February 19, 2016 to May 15, 2019. Approval of the study was given by the ethical committee of KTH vid no 766/KTH/E-111. Data of 140 patients (PG) fulfilling the inclusion criteria of the study and age matched control group (CG) was collected using random sampling technique on informed consent. The patient in the PG were further divided into SSRIs and TCAs groups. Anthropherometric data was collected from the study population on their well keeping the human dignity in accordance with standard protocol. Exclusion criteria were followed in letter and spirit. Fasting blood samples were taken from all patients and were analyzed for the required bio chemical markers using standard kits and protocols. Kinetic UV method 13 was used for the determination of serum urea while modified Jaffe method 14 was used for the quantification of serum creatinine on Autoanalyser (Erbamannhein chemistry autoanalyser, Germany) using standard Erba kits. Normal serum levels for Urea = 05-45 mg/dl and Creatinine= 0.5-1.5 mg/dl HbA1c test. Fast ion-exchange resin separation method was used for the determination of HbA1c.[15] SPSS windows 21.0 software (SPSS Inc. Chicago, IL, USA) was used for Statistical analysis. The obtained values were reported as Mean ± Standard Deviation (SD). Pearson's bivariate correlation analysis was used for variable of interest. A two-tailed p value<0.05 was considered statistically significant.

Results

The mean age of CG, SSR and TCA groups was 51.65 ±5.81, 43.09±6.28 and 45.33± 5.15 years respectively. The mean BMI of CG, SSR and TCA group was 25.42 ± 5.04, 30.49±7.25 and 28.71±7.78 Kg/m^2 respectively. The serum urea of SSRI group (30.17±30.39mg/dL) was higher than both the TCA (21.40±3.56mg/dL) and CG (27.07±7.78mg/dL) The serum Creatinine of SSRI group (0.70±0.28 mg/dL) was higher than the TCA (0.67±0.09 mg/dL) and lower than CG (0.85±0.21 mg/dL).The mean HbA1c level of SSRI was higher (5.67 ± 0.56) than TCA (5.45 ± 0.49 %), while lower than CG (6.06 ± 0.59%). The mean fasting glucose level of SSRI (79.96 ± 7.85 mg/dl) was higher than TCA (76.97± 7.04 mg/dl) while lower than control

Table 1: *Base line characteristics of control and patient groups*

S.No	Group ID		Age(years)		BMI(Kg/m^2)	
1	CG (n= 140)		Mean	S.D	Mean	S.D
			51.65	5.81	25.42	5.04
2	PG (n= 140)	SSRI n=71	43.09	6.28	30.49	7.25
		TCA n=69	45.33	5.15	28.71	7.78

Table 2: *Comparison biochemical markers in the study population*

S.No	Group ID		S.U (mg/dL)		S.Cr (mg/dL)		HbA1c %		Average Glucose Level (mg/dL)	
1	CG		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
	(n= 140)		27.07	7.78	0.85	0.21	6.06	0.59	85.37	8.34
	PG	SSRI n= 71	30.17	30.39	0.70	0.28	5.67	0.56	79.96	7.85
2	(n=140)	TCA n=69	21.40	3.56	0.67	0.09	5.45	0.49	76.97	7.04

Serum Urea (mg/dL): S.U: Serum Creatinine (mg/dL): S.Cr

group (85.37 ± 8.34 mg/dl). The results of Pearson bivariate correlation analysis of both SSRI and TCS group of patients is shown in the table3. A highly significant correlation of serum urea (ρ=0.001) and creatinine (ρ= 0.01) was found with age in SSRI group while no significant relation was found in TCA group for urea. A negative significant correlation was found for Serum creatinine (ρ= 0.03) in TCA group. No association of HbA1C and mean glucose level was observed in any of the patients group.

Table 3: *Pearson's bivariate correlation analysis of renal and diabetic markers in PG*

S. No	Group ID PG n =140	Parameters	Renal Markers		Diabetic Markers	
			S. U r (p)	S.Cret r (p)	HbA1c % r(p)	Average Glucose Level (mg/dl) r(ρ)
1	SSRI group n= 71	Age	0.86** (0.001)	0.73*(0.01)	-0.02(0.94)	-0.02(0.94)
		BMI	-0.25 (0.45)	-0.04 (0.90)	0.25(0.42)	0.25(0.42)
		Duration in months	-0.25 (0.46)	-0.34 (0.31)	0.34(0.25)	-0.34(0.25)
		Dosage in mg	-0.13 (0.71)	-0.01 (0.98)	-0.21(0.49)	-0.21(0.49)
2	TCA group n= 69	Age	0.02 (0.95)	-0.72* (0.03)	-0.56(0.19)	-0.56(0.19)
		BMI	-0.01 (0.98)	0.33 (0.39)	0.70(0.08)	0.70(0.08)
		Duration in months	-0.34 (0.38)	-0.14 (0.71)	-0.20(0.66)	-0.20(0.66)
		Dosage in mg	0.17 (0.66)	0.48 (0.20)	0.10(0.83)	0.10(0.82)

Discussion

Pakistani society is facing many problems due to a number of factors including social, economic, political, law and order situation due to which a large no of people are suffering from mental health issues and are rising day by day.[16,17] WHO report show that almost 20% of the world population are suffering from mental health issues and is believed to be the main cause of disability in future.[18] In Pakistan according to some reports the prevalence rate of mental disorder is from 10 to 50 %.[19] The health care providers prescribe various medications for the treatment of mental illness in Pakistan. It is reported that 1/3 of the total patients are taking Monoamine Oxidase Inhibitors (MAOIs) SSRI and TCAs.[20] A number of research publications show that the long term use of these drugs may have a role in the onset of diabetes and may cause renal dysfunctions in certain patients.[21] We conducted this cross sectional study in postmenopausal women of Peshawar city in Khyber Pakhtunkhwa whose population is more affected by terrorism than the other regions of Pakistan on the hypothesis whether the use of these drugs may affect the sugar metabolism or have effect on renal health in our study population or otherwise. We found that the level of HbA1c is lower in the PG as compared to CG which is in agreement with the finding of Lust man et al. 2006.[22] A study conducted by Pyykkonen et al found no effects of antidepressants medications on glucose level in adults.[23] A UK General Practice Research Database study reported that long term use of more than 24 months increase the risk of diabetes.[24] The serum urea in SSRI group was found higher than both the TCA and CG. The serum Creatinine of SSRI group was higher than the TCA and lower than CG group. Al Jurdi etal, Rej S etal, Hendrie H etal[12] found no effect of antidepressants medication on renal health in elderly patients while Van Wyck Fleet J et al reported polyuria (2-5%), urinary urgency (< 2%), urinary incontinence (< 1%) and urinary retention (< 1%)[25] in his study subjects. The limitations of the study include small sample size (280), short period and lack of finance. Thus it will not be sufficient for a megacity like Peshawar. Moreover the population of the city is heterogeneous in nature being the capital of the province and the influx of Afghan refugees. For better results large population size is required.

Conclusion

The result of this study showed that short term use of SSRIs and TCAs may lower the risk of diabetes and renal dysfunctions in postmenopausal women.

Conflict of Interest: *None*

Funding Source: *None*

References

1. http://www.rxlist.com/script/main/art.asp?articlekey=88888#tocb.(accessed on 2 March 2023)

2. http://www.mayoclinic.org/diseases-conditions/ depression/in-depth/ antidepressants/art-20046273 (accessed on 2 March 2023).
3. Jhansi K, Vanita P, Lavanya S, Satya V. A Review on Antidepressant Drugs. Adv. Pharmacoepidemiol Drug Saf. 2014; 3(1):1-2.
4. Anderson IM. Selective serotonin reuptake inhibitors versus tricyclic antidepressants: a meta-analysis of efficacy and tolerability. Journal of affective disorders. 2000 Apr 1; 58(1):19-36.
5. Mojtabai R. Increase in antidepressant medication in the US adult population between 1990 and 2003. Psychotherapy and psychosomatics. 2008; 77(2):83-92...
6. Ma Y, Balasubramanian R, Pagoto SL, Schneider KL, Culver AL, Olendzki B, Tinker L, Liu S, Safford M, Sepavich DM, Rosal MC. Elevated depressive symptoms, antidepressant use, and diabetes in a large multiethnic national sample of postmenopausal women. Diabetes Care. 2011 Nov 1; 34(11):2390-2...
7. Andersohn F, Schade R, Suissa S, Garbe E. Long-term use of antidepressants for depressive disorders and the risk of diabetes mellitus. American Journal of Psychiatry. 2009 May; 166(5):591-8.
8. Mindell J, Biddulph JP, Hirani V, Stamatakis E, Craig R, Nunn S, Shelton N. Cohort profile: the health survey for England. International journal of epidemiology. 2012 Dec 1; 41(6):1585-93.
9. Kivimäki M, Batty GD. Antidepressant drug use and future diabetes risk. Diabetologia. 2012 Jan 1; 55(1): 10-2.
10. Rej S, Herrmann N, Shulman K. The effects of lithium on renal function in older adults—a systematic review. Journal of geriatric psychiatry and neurology. 2012 Mar; 25(1):51-61.
11. Tietz NW. Fundamentals of clinical Chemistry, 3rd. Edition (1987); 676-679, W.B. Saunders Company Philadelphia.
12. Nuttal F.Q. Diabetes care 1998; 21:1475-1480.
13. Khalily MT. Developing an integrated approach to the mental health issues in Pakistan. Journal of Interprofessional Care2010; 24(2):168–72.
14. Gadit AA, Vahidy A. Mental health morbidity pattern in Pakistan. Journal of College of Physicians and Surgeons Pakistan. 1999;9:362-5
15. Kessler RC, Angermeyer M, Anthony JC, de Graaf R, Demyttenaere K, Gasquet I, et al. Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. World Psychiatry 2007; (6):168-76.
16. Murray CJ, Lopez AD. Evidence-based health policy — lessons from the global burden of disease study. Science 1996; (274):740-3.
17. Dodani S, Zuberi RW. Center-based prevalence of anxiety and depression in women of the northern areas of Pakistan. J Pak Med Assoc 2000; (50):138-40.
18. Rasheed S, Khan MA, Khan B, Khan MY. Depression in medical in-patients. Pak Armed Forces Med J 2003; (53):132-5.
19. Warden D, Rush AJ, Trivedi MH, Fava M, Wisniewski SR. The STAR*D Project results: a comprehensive review of findings. Curr Psychiatry Rep 2007; (9) :449-59.
20. Ma Y, Balasubramanian R, Pagoto SL, Schneider KL, Culver AL, Olendzki B, Tinker L, Liu S, Safford M, Sepavich DM, Rosalie MC, Ockene JK, Carnethon M, Zorn M, Hebert JR. Elevated depressive symptoms, antidepressant use, and diabetes in a large multi-ethnic national sample of postmenopausal women. Diabetes Care 2011; (34):2390–2392.
21. Lustman PJ, Clouse RE, Nix BD, et al: Sertraline for prevention of depression recurrence in diabetes mellitus: a randomized, double-blind, placebo controlled trial. Arch Gen Psychiatry 2006 May; 63(5): ss. 521-9.
22. Pyykkonen AJ, Raikkonen K, Tuomi T, Eriksson JG, Groop L, Isomaa B. Depressive symptoms, antidepressant medication use, and insulin resistance: the PPP-Botnia Study. Diabetes Care 2011; (34):2545–2547.
23. Andersohn F, Schade R, Suissa S, Garbe E. Long-term use of antidepressants for depressive disorders and the risk of diabetes mellitus. Am J Psychiatry 2009; (166): 591- 598.
24. Moore M, Yuen HM, Dunn N, Mullee MA, Maskell J, Kendrick T. Explaining the rise in antidepressant prescribing: a descriptive study using the general practice research database. Bmj. 2009 Oct 15; 339:b3999.
25. Van Wyck Fleet J, Manberg PJ, Miller LL, et al. Overview of clinically significant adverse reactions to bupropion. J Clin Psychiatry 1983; (44):191–6.

Authors Contribution

MY: Conceptualization of Project
LA: Data Collection
AY: Literature Search
AY: Statistical Analysis
JI: Drafting, Revision
MY: Writing of Manuscript

Response and Tolerability of Sofosbuvir Plus Velpatasvir in Patients With Hepatitis C Related Liver Cirrhosis

Muhammad Irfan,[1] Imran Anwar Khan,[2] Naveed Aslam,[3] Ahsen Naqvi,[4] Muhammad Haseeb Nawaz,[5] Muhammad Arif Nadeem[6]

Abstract

Objective: To determine the response and tolerability of Sofosbuvir plus Velpatasvir in patients with hepatitis C related liver cirrhosis in the studied Pakistani population. Our study also compared cirrhotic patients with non-cirrhotic ones in terms of treatment effectiveness as well as safety.

Material and Methods: This was a prospective observational study[11] performed at Department of Medicine, Hepatology and Gastroen-terology, SIMS/Services hospital, Lahore, from January 2022 to December 2022. The enrolled 100 patients were grouped into Group A (non-cirrhotic hepatitis C patients) and Group B (compensated cirrhotic hepatitis C patients). Sofosbuvir plus Velpatasvir was given to group A patients for 12 weeks & to group B patients for 24 weeks. Laboratory findings, response and adverse effects were recorded four weekly. The data was analysed using SPSS version 27. Comparisons were done between two studied patient's groups in terms of effectiveness and tolerability of the treatment. The p-values were significant if <0.05.

Results: ETR and SVR-12 were 98.1% and 94.3% in group A and 95.7% and 93.6% in group B. SVR-12 was comparable in two groups (p= 0.602). No adverse event leading to treatment withdrawal was reported in either group. However, mild worsening of abdominal was seen in one patient of group B (p= 0.470). Deterioration in blood indices was seen in 2 patients of group B while 3 patients of group A (P= 0.557). Mild ALT flare was seen in one patient of each group (p= 0.722).

Conclusion: Sofosbuvir plus Velpatasvir therapy was highly efficacious and safe in non-cirrhotic and compensated cirrhotic patients with chronic viral hepatitis C. The response and tolerability of treatment was comparable in both studied groups.

Keywords: Hepatitis C, Liver cirrhosis, Sofosbuvir, Velpatasvir, Sustained Virological Response.

How to cite: *Irfan M, Khan IA, Aslam N, Naqvi A, Nawaz MH, Nadeem MA. Response and Tolerability of Sofosbuvir Plus Velpatasvir in Patients With Hepatitis C Related Liver Cirrhosis. Esculapio - JSIMS 2023;19(03):313-317*

DOI: https://doi.org/10.51273/esc23.251319311

Introduction

Chronic hepatitis C is a major root-cause of liver cirrhosis in Pakistan[1], affecting about 3-13% people.[2] Without treatment, it leads to liver cirrhosis in upto 75% patients.[3] Sofosbuvir plus Velpatasvir is an excellent treatment modality for hepatitis C, with higher response and negligible adverse events as compared to previously available direct acting antiviral regimens especially ribavirin based.[4] The treatment duration of Sofosbuvir plus velapatasvir is 12 weeks for non-cirrhotic patients. The duration is extended to 24 weeks or ribavirin has to be added if patient has cirrhosis.[5] The response of treatment is checked at the end of treatemt (ETR) and 12 weeks after end of treatment (SVR-12)[6] using real time HCV-RNA Polymerase chain reaction (PCR) test.[7] In the era of interferons, cirrhotic patients were in great problem regarding active viremia eradication.[8] Now, oral medicines have emerged to a level where effectiveness and tolerability of treat-

2. *Department of Medicine & Gastroenterology, Airdale General Hospital, Keighley, UK*
3. *Department of Gastroenterology, Gujranwala Medical College, Gujranwala*
4. *Department of Medicine, RLM, Lahore*
1,5,6. *Department of Medicine & Gastroenterology, SIMS, Lahore*

Correspondence:
Dr. Muhammad Haseeb Nawaz, *Senior Registrar of Gastroenterology, SIMS, Lahore, Pakistan. dr.haseeb237@gmail.come*

Submission Date: 16-08-2023
1st Revision Date: 26-08-2023
Acceptance Date: 06-09-2023

ment is better. However, liver cirrhosis patients have many symptoms routinely.[9] Headache, nausea and fatige are the most commonly observed side effects with sofosbuvir use.[10] The knowledge about the efficacy of sofosvuvir plus velpatasvir therapy as well as its tolerability in cirrhotic patients is scarce in our people. This made the author keen to choose this topic for research. Hence, the objective of our study was to determine the response and tolerability of Sofosbuvir plus Velpatasvir in patients with hepatitis C related liver cirrhosis in the studied Pakistani population. Our study also compared cirrhotic patients with non-cirrhotic ones in terms of treatment effectiveness as well as safety.

Material and Methods

This was a prospective observational study[11] performed at Department of Medicine, Hepatology and Gastroenterology, SIMS/Services hospital, Lahore, from January 2022 to December 2022. A total of 100 patient of chronic hepatitis C aged 12 years and above, from both gender with positive HCV-RNA were enrolled in the study. The sample size was estimated using 90% confidence interval, 5% margin of error & expecting outcome of 90%. Both non-cirrhotic and compensated cirrhotic patients were included. The patients suffering decompensated liver disease, pregnancy, renal dysfunction with creatinine clearance <50 mL /minute, HIV or HBV co-infection, on anticonvulsant drugs and patients who had already used Sofosbuvir plus Velpatasvir were excluded from the study. Ultrasonographic findings (coarse liver, dilated portal vein, splenomegaly), AST to platelet ratio index with cut-off of 2.0 and METAVIR score F4 were used for detection of cirrhosis.[12] Liver cirrhosis with Child-Pugh A was taken as compensated while liver cirrhosis with Child-Pugh B or C was labelled as decompensated cirrhosis.[13] After ethical approval, written informed consent was taken from each patient. Demographic features and laboratory data were noted. The enrolled patients were grouped into Group A (non-cirrhotic hepatitis C patients) and Group B (compensated cirrhotic hepatitis C patients). Sofosbuvir plus Velpatasvir was given to group A patients for 12 weeks & to group B patients for 24 weeks. Laboratory findings, response and adverse events were recorded four weekly. Effectiveness of the treatment was defined by the end treatment response (ETR) and sustained viral response 12 weeks post-therapy (SVR-12) by finding undetected serum HCV-RNA by a PCR with a lower limit of detection < 15IU/ml.[14] Comparisons were done between two studied patient's groups in terms of effectiveness and tolerability of the treatment. The data was analysed using SPSS version 27. To find significant association with specified groups, qualitative variables were subjected to Chi-square test and quantitative ones to independent sample T-test. The p-values were significant if <0.05.

Results

Out of a total 100 patients, 54% were male and 46% were female. Amongst 53 patients of group A, 52 patients (98.1%) achieved ETR while 50 patients (94.3%) achieved SVR-12. Amongst 47 patients of group B, 45 patients (95.7%) achieved ETR, while 44 patients (93.6%) achieved SVR-12 (Figure 1). The mean age was 48.89 + 19.10 years in group A and 49.98 + 18.29 years in group B. Gender (p= 0.235), age (p= 0.558), weight (p= 0.318), initial haemoglobin (p= 0.747), ALT (P= 0.472) and viral load (p= 0.783) had no confounding effect on studied groups. However, thrombocytopenia in group B was due to defining feature of liver cirrhosis (Table 1). No adverse event leading to treatment withdrawal was reported in either group. However, worsening of abdominal ascites from mild to moderate was seen in one patient of group B (p= 0.470). Worsening blood cytopenia was seen in 2 patients of group B and three patients of group A (P= 0.557). ALT flare less than 15 times upper normal limit (UNL) was seen in one patient of each group (p= 0.722). Out of 53 patients of group A, 7 patients (13.2%) reported minor complaints including headache, nausea, vomiting, abdominal comfort, fatigue, while out of 47 patients of group B, 6 patients (12.8%) also reported similar minor complaints (p= 0.593). Overall tolerability of Sofosbuvir plus Velpatasvir was excellent and comparable in both groups of the patients (Table 2).

Table 1: *Demographic and clinical characteristics of the patients (n = 100) **

Qualitative variables	Group A (Non-cirrhotic patients) n=53	Group B (Cirrhotic patients) n=47	p-value
1. Age (years)	48.89 ± 19.10	49.98 ± 18.29	0.558
2. Weight (kg)	73.06 ± 1.60	73.74 ± 14.16	0.318
3. Hb (g/dl)	13.34 ± 1.81	12.14 ± 1.72	0.747
4. Platelet count ($x10^3$ /ml)	295.98±102.41	104.28± 28.63	<0.01
5. ALT (IU/ml)	84.47 ± 85.76	85.51 ± 84.46	0.472
6. Serum HCV load (IU/ml)	9283479 ± 21573112	9943458 ± 21186361	0.783

Table 2: *Associations of parameters of response and adverse events of therapy with presence and absence of liver cirrhosis in studied population (n = 100) **

Quantitative variables	Group A (Non-cirrhotic patients) n=53	Group B (Cirrhotic patients) n=53	p-value
Gender:			
Male	25 (47.2%)	28 (59.6%)	0.235
Female	28 (52.8%)	19 (40.4%)	
End treatment response:			
Achieved	52 (98.1%)	45 (95.7%)	0.599
Not-achieved	01 (1.9%)	02 (4.3%)	
Sustained viral response:			
Achieved	50 (94.3%)	44 (93.6%)	0.602
Not-achieved	03 (5.7%)	03 (6.4%)	
Liver disease decompensation during therapy:			
Yes	00 (0.0%)	1 (2.1%)	0.470
No	53 (100%)	46 (97.9%)	
Worsening of cytopenias during therapy:			
Yes	03 (5.7%)	02 (4.3%)	0.557
No	50 (94.3%)	45 (95.7%)	
ALT flare during therapy:			
Yes	01 (1.9%)	01 (2.1%)	0.722
No	52 (98.1%)	46 (97.9%)	
Minor complaints during therapy:			
Yes	07 (13.2%)	06 (12.8%)	0.593
No	46 (88.8%)	41 (87.2.4%)	

*Chi-square test for independence was used

Discussion

Direct-acting anti-viral drugs (DAAs) are a paradism shift in the management of the patients suffering chronic hepatitis C.[15] In the era of interferons, treatment of the patients with liver cirrhosis due to hepatitis C was problematic because it worsened the misery of the patients. Among DAAs, Sofosbuvir plus Velpatasvir is vastly used in Pakistan. Its efficacy and tolerability is time tested internationally.[16] In 2019, Russian and Swedish authors[17] found SVR-12 of this combination 100% I n cirrhotic and 99% in non-cirrhotic patients. Common adverse events were in 20.1% and included asthenia, headache, and fatigue. In our study, SVR-12 was comparable both in non-cirrhotic and compensated cirrhotic patients (94.3% vs 93.6%, p = 0.605). Similarly, minor complaints of headache, fatigue, nausea, abdominal discomfort were also mild and comparable in both groups of the patients (13.2% vs 12.8%, p = 0.593). With new drugs, it is always a risk of serious or fatal events, as in case of compensated cirrhosis (Child-Pugh A) like flare of ALT more than 15 times ULN, worsening cytopenia, or liver disease decompensation. These events may lead to discontinuation of the treatment regimen. No such adverse event occurred in our study. One patient of compensated liver cirrhosis (group A) suffered increase in ascitic fluid which was easily managed. ALT flare less than 15 times ULN was seen in one patient of each group (p = 0.722). Similarly, worsening cytopenias during treatment was not a problem in our studied population and it was also comparable in both groups of the patients (group A 5.7%, group B 4.3%, p = 0.557). In a similar study from Pakistan,18 SVR-12 was 100% among non-cirrhotic hepatitis C patients who took Sofosbuvir-Velpatasvir combination while it was only 92.1% among compensated cirrhotic hepatitis C patients. This study concluded that cirrhotic patients experienced more side effects of the treatment as compared to non-cirrhotic patients (31.5% vs 20.15%). Samia Pervaiz Khan and her colleagues[19] from Karachi tested Sofosbuvir and Velpatasvir combination showing 100% SVR-12 both in non-cirrhotic and compensated cirrhotic patients suffering chronic viral hepatitis C. Adverse events were negligible. Similar results were published in the studies of Jawad Khan[20] and Arif Qayyum Khan[21]. Hence, Sofosbuvir plus Velpatasvir is doing well in our patients suffering from chronic viral hepatitis C, both non-cirrhotic and compensated cirrhotics in terms of very high response and least negligible adverse effects.

Conclusion

Sofosbuvir plus Velpatasvir combination therapy was highly efficacious and safe in non-cirrhotic and compensated cirrhotic patients with chronic viral hepatitis C. The adverse effects of Velpatasvir plus Sofosbuvir in our population were mild and easily manageable so that treatment compliance was 100%. The response and tolerability of direct acting antiviral drugs was comparable in both studied groups.

Conflict of Interest *None*

Funding Source *None*

References

1. Abu-Freha N, Jacob BM, Elhoashla A, Afawi Z, Abu-Hammad T. et al. Chronic hepatitis C: Diagnosis and treatment made easy. Eur J Gen Pract. 2022; 28(1): 102-8. https://doi.org/10.1080/13814788.2022.2056161
2. Mahmud S, Kanaani ZA & Abu-Raddad LJ. Characterization of the hepatitis C virus epidemic in Pakistan. BMC Infect Dis. 2019; 19: 809. https://doi.org/ 10.1186/ s12879-019-4403-7
3. Butt AS. Epidemiology of Viral Hepatitis and Liver Diseases in Pakistan. Euroasian J Hepatogastroenterol. 2015; 5(1): 43-48. doi:10.5005/jp-journals-10018-1129.
4. Huang YT, Hsieh YY, Chen WM, Tung SY, Wei KL. et al. Sofosbuvir/velpatasvir is an effective treatment for patients with hepatitis C and advanced fibrosis or cirrhosis in a real-world setting in Taiwan. BMC Gastroenterol.2021; 21: 259. https://doi.org/ 10.1186/ s12876-021-01837-y
5. Awasthi A, Katiyar H, Rungta S, Deep A, Kumar V. et al. Eight versus twelve weeks of sofosbuvir-velpatasvir in treatment-naïve non-cirrhotic patients with chronic hepatitis C virus infection: Study protocol for a multicentric, open labelled, randomized, non-inferiority trial (RESOLVE trial). PLoS One. 2023; 18(5): e0285725. doi: 10.1371/journal.pone.0285725.
6. Rahman AS, Amir M, Jamal Q, Riaz M, Fareed K, Siddiqui M. End Treatment Response and Sustained Viral Response in Patients With Hepatitis C Virus Receiving Sofosbuvir and Daclatasvir. Cureus. 2023; 15(5): e38833. doi: 10.7759/cureus.38833.
7. Honegger J, Crim L, Gowda C, Sanchez PJ. Polymerase Chain Reaction (PCR) for Detection of Vertically Acquired Hepatitis C Virus (HCV) Infection in Early Infancy. Open Forum Infect Dis. 2018; 5(1): S654. doi: 10.1093/ofid/ofy210.1868.
8. Pradat P, Virlogeux V, Trépo E. Epidemiology and Elimination of HCV-Related Liver Disease. Viruses. 2018; 10(10): 545. https://doi.org/10.3390/v10100545.
9. Gu W, Hortlik H, Erasmus HP, Schaaf L, Zeleke Y. et al. Trends and the course of liver cirrhosis and its complications in Germany: Nationwide population-based study (2005 to 2018). Lancet Reg Health Eur. 2021; 12: 100240. doi: 10.1016/j.lanepe.2021.100240.
10. Ren XD, Fu X, He YQ, Li CY, Guo M. et al. Safety and efficacy of sofosbuvir-velpatasvir: A meta-analysis. Medicine (Baltimore). 2022; 101(42): e31183. doi: 10.1097/MD.0000000000031183.
11. Mehta CC, Hagen KS, Collins, LF, Moore RH and Ofotokun I. Nested and multipart prospective observational studies, flaming fiasco or efficiently economical?: The Brain, Bone, Heart case study. BMC Med Res Methodol 2022; 22: 203. https://doi.org/10.1186/s12874-022-01675-w
12. Ali FM, Kheshen AM and Naga AM. Role of Ultrasound and Transient Elastography in Diagnosis of Occult Cirrhosis in Chronic Liver Disease. Al-Azhar Med J 2021; 50(4): 3163-3180. doi: 10.21608/amj.2021.196455
13. Papatheodoridi M, Hall AR, Rodríguez-Perálvarez M, Pieri G, Germani G. et al. Histological sub-classification of cirrhosis using collagen proportionate area in patients with chronic hepatitis C. Liver Int. 2021; 41: 1608–1613. https://doi.org/10.1111/liv.14909
14. Morgan JR, Marsh E, Savinkina A, Shilton S, Shadaker S. et al. Determining the lower limit of detection required for HCV viral load assay for test of cure following direct-acting antiviral-based treatment regimens: Evidence from a global data set. J Viral Hepat. 2022; 29(6): 474-486. doi: 10.1111/jvh.13672.
15. Elbadry M, Moussa AM, Eltabbakh M, Balakosy AA, Abdalgaber M. et al. The art of managing hepatitis C virus in special population groups: a paradigm shift. Egypt Liver J. 2022; 12: 61. https://doi.org/ 10.1186/ s43066-022-00226-8
16. Shah I, Ahmad W, Qadir A, Muhammad I, Islam M. et al. Efficacy and Safety of Sofosbuvir and Velpatasvir Combination for the Treatment of Chronic Hepatitis C in Patients With or Without Cirrhosis. Cureus. 2021; 13(11): e19768. doi: 10.7759/cureus.19768.
17. Isakov V, Chulanov V, Abdurakhmanov D, Burnevich E, Nurmukhametova E. eta. Sofosbuvir/velpatasvir for the treatment of HCV: excellent results from a phase-3, open-label study in Russia and Sweden. Infectious Diseases 2019; 51(2): 131-139. https://doi.org/ 10. 1080/ 23744235.2018.1535186
18. Butt N, Muhammad I, Abou Bakr A, Akhtar Z, Ali M. et al. Efficacy and Safety of Sofosbuvir-Velpatasvir combination in Hepatitis C Virus-infected Pakistani Patients without Cirrhosis or with Compensated Cirrhosis: A Prospective, Open-label Interventional Trial. Cureus. 2020; 12(1): e6537. doi: 10.7759/cureus.6537.
19. Khan SP, Kumar A, Abbass M, Sohail FA, and Ghani R. Combination of Direct Antiviral Therapy in Hepatitis C patients, in Population of Karachi. Pak J med and Dent 2020; 9(01): 5-10. doi.org/10.36283/PJMD9-1/003

20. Khan J and Malik SN. Efficacy of Sofosbuvir Velpatsavir Combination in HCV Genotype 3 Infected Children of Age between 12 to 18 Years. Acta Scien Gastroint Disorders 2019; 2(10):2-7. Doi: 10.31080/ASGIS. 2019. 02.0093.
21. Khan A, Mansoor H, Fida S, Saif S, Iqbal J. et al. Sofosbuvir-Velpatasvir therapy in the treatment of chronic hepatitis C genotype 3. Pak Armed Forces Med J. 2021; 71(1): 122-28. https://doi.org/10.51253/pafmj.v71i1.4339

Authors Contribution

MI, IAK: Conceptualization of Project
MI, IAK, MHN: Data Collection
NA, AN: Literature Search
MI, NA, AN: Statistical Analysis
MI, MAN: Drafting, Revision
IAK, MHN: Writing of Manuscript

Factors Influencing the Outcome in Hepatic Encephalopathy Patients: Preventable Factors Worsen the Outcome

Imran Anwar Khan,[1] Muhammad Irfan,[2] Atif Masood,[3] Ahsen Naqvi,[4] Tabish Raza,[5] Atif Majeed Chaudry[6]

Abstract

Objective: To determine the factors that influence the outcome in terms of death or survival in patients who presented with hepatic encephalopathy in our tertiary care hospital.

Material and Methods: This was a prospective observational study[13] performed at Department of Medicine, Hepatology and Gastroen-terology, SIMS, Lahore, from June 2022 to May 2023. After written informed consents, patients who presented with hepatic encephalopathy were enrolled. Their demographic features and laboratory indices were noted. These patients were followed for the outcome in terms of death (group A) or no death (group B) during hospitalization. SPSS-27 was used for analysis. Independent sample T test and Chi-square test were used to compare two groups with quantitative and quantitative variables respectively. The p-values were labelled significant if <0.05. The regression analysis was also executed to find the likelihood of worse outcome.

Results: Amongst 325 hepatic encephalopathy patients, 80.3% recovered while 19.7% died during hospitalization. Age (p=0.924), weight (p=0.123), initial MELD score (p=0.943) and initial platelet count (p=0.977) were comparable in both groups. The occurrence of death had no significant association with gender (p=0.481), etiology of cirrhosis (p=0.592), HRS (p=0.592), and comorbidities (p=0.252). The death occurred 26.3 times more in patients who aspirated, 63.4 times more in who had no history of endoscopy, and 24.9 times more in who presented with upper GI bleed.

Conclusion: The inpatient mortality was significantly high in hepatic encephalopathy patients who got pulmonary aspiration, who presented with upper GI bleed, and who had no history of endoscopy. Age, gender, MELD score, etiology of cirrhosis, hepatorenal syndrome, and comorbidities did not significantly take part in the mortality of these patients.

Keywords: Liver cirrhosis, Hepatic encephalopathy, outcome, mortality.

How to cite: *Khan IA, Irfan M. Masood A, Naqvi A, Raza T, Chaudry AM. Factors Influencing the Outcome in Hepatic Encephalopathy Patients: Preventable Factors Worsen the Outcome. Esculapio - JSIMS 2023;19(03):318-322*

DOI: https://doi.org/10.51273/esc23.251319312

Introduction

Hepatic encephalopathy is a serious neurological complication of liver dysfunction.[1] It occurs in upto 40% of the patients with liver cirrhosis.[2] Hyperammonemia is thought the culprit neurotoxin, however exact pathogenesis is unknown.[3-5] Infection[6] and upper GI bleed[7] are the commonest precipitants leading to recurrent episodes of hepatic encephalopathy resulting repeated hospitalizations. Correction of precipitating factors usually reverses the encephalopathy; however, sometimes outcome is fatal.[8] Once hepatic encephalopathy has occurred, median survival of cirrhotic patients is foreshortened to one to two years.[9] A lot of work on precipitating factors of hepatic encephalopathy is available nationally and internationally.[10-12] However, knowledge about the factors contributing the mortality in patients with hepatic encephalopathy is scarce in our working setups. If some reversible factors are there,

1. *Department of Medicine & Gastroenterology, Airdale General Hospital, Keighley, UK*
2,5,6. *Department of Medicine & Gastroenterology, SIMS, Lahore*
3. *Department of Medicine, UCMD, Lahore*
4. *Department of Medicine, RLM, Lahore*

Correspondence:
Dr. Muhammad Irfan, *Associate Professor of Medicine, SIMS, Lahore, Pakistan. irfanmed3@yahoo.come*

Submission Date: 19-08-2023
1st Revision Date: 27-08-2023
Acceptance Date: 09-09-2023

then the outcome of these patients can be improved. This made the author keen to pick this subject as his research protcol. Hence, the objective of our study was to determine the factors that influence the outcome in terms of death or survival in patients who presented with hepatic encephalopathy in our tertiary care hospital.

Material and Method

This was a prospective observational study[13] performed at Department of Medicine, Hepatology and Gastroenterology, SIMS, Lahore, from June 2022 to May 2023. After ERC permission and written informed consents, 325 patients of age 12 years and above, from both genders who presented with hepatic encephalopathy were enrolled. Their demographic features and laboratory indices were noted. History was taken regarding etiology of cirrhosis, upper GI endoscopic procedure, and comorbidities, while examination was performed for the presence of pulmonary aspiration and upper GI bleed at presentation. Investigation data for MELD score, hepatorenal syndrome and platelet count was also collected at presentation. These patients were followed for the outcome in terms of death or discharge from the hospital. SPSS-27 was applied for analysis process, and the all enrolled patients were grouped into two batches: hepatic encephalopathy patients who died (Group A) and hepa-tic encephalopathy patients who did not die (Group B). Independent sample T testing was done to collate studied batches with quantitative variables including age, weight, MELD score and platelet count. While Chi-square testing was done to collate two batches with qualitative variables including gender, etiology of cirrhosis, pulmonary aspiration, history of upper GI endoscopy, upper GI bleed, HRS, and comorbidities. The p-values were labelled significant if <0.05. Regression was executed was applied to find out the impact of different prognosticators on the likelihood that the death would be the end-result of the hospitalized patients with hepatic encephalopathy.

Results

Amongst 325 hepatic encephalopathy patients, 19.7% (n=64) died during hospitalization while 80.3% (n=261) recovered from hepatic encephalopathy. Age (p=0.924), weight (p=0.123), MELD score at the time of hospitalization (p=0.943) and initial platelet count (p=0.977) were comparable in patients who died and who did not die during hospitalization **(Table 1)**.

Bivariate analysis showed that death was significantly

Table 1: *Comparison of quantitative variables with outcome of hepatic encephalopathy patients (n = 325) **

	Qualitative variables	Outcome of the patients		Mean difference	p-value
		Death (n=64)	No-death (n=261)		
1.	Age (years)	54.33 ± 18.99	54.07 ± 19.99	0.26	0.924
2.	Weight (kg)	65.58 ± 17.38	68.92 ± 15.03	3.35	0.123
3.	MELD score at presentation	19.23 ± 6.48	19.16 ± 7.60	0.07	0.943
4.	Platelet count ($x10^3$ /ml)	101.17 ± 56.79	101.34 ± 37.83	0.17	0.977

**Independent sample T-test was used*

Table 2: *Comparison of qualitative variables with outcome of hepatic encephalopathy patients (n = 325) **

Quantitative variables	Outcome of the patients		p-value	Odd Ratio with 95% CI
	Death (n=64)	No-death (n=261)		
Sex:				
Male	34 (53.1%)	153 (58.6%)	0.481	1.250(0.7
Female	30 (46.9%)	108 (41.4%)		22-2.165)
Etiology of cirrhosis:				
Viral	58 (90.6%)	243 (93.1%)	0.592	0.716(0.2
Non-viral	06 (9.4%)	18 (6.9%)		72-1.884)
Pulmonary aspiration:				
Yes	48 (75.0%)	04 (1.5%)	<0.01	192.750
No	16 (25.0%)	57 (98.5%)		(61.758-601.583)
Index or follow -up upper GI endoscopy:				
Yes	04 (6.3%)	246 (94.3%)	<0.01	0.004(0.0
No	60 (93.7%)	15 (5.7%)		01-0.013)
Upper GI bleed at presentation:				
Yes	54 (84.4%)	09 (3.4%)	<0.01	151.2(58.
No	10 (15.6%)	252 (96.6%)		634-389.901)
HRS at presentation:				
Yes	06 (9.4%)	18 (6.9%)	0.592	1.397(0.5
No	58 (90.6%)	243 (93.1%)		31-3.674)
Comorbidities:				
Yes	09 (14.1%)	24 (9.2%)	0.252	1.616(0.7
No	55 (85.9%)	237 (90.8%)		11-3.670)

**Chi-square analysis was used*

Table 3: *Binary Logistic Regression to find outcome of hepatic encephalopathy patients (n=325)*

Risk Factors	B	Wald-Statistic	p-value	S.E.	Odds Ratio	95% C.I. for EXP(B)	
						Lower	Upper
Age	0.038	3.554	0.059	0.020	1.038	0.999	1.080
Sex (Male/Female)	-0.079	0.011	0.917	0.758	0.924	0.209	4.086
Pulmonary aspiration (Yes/No)	3.271	12.467	<0.01	0.926	26.335	4.286	161.830
History of Upper GI endoscopy (No/Yes)	4.149	26.330	<0.01	0.809	63.359	12.989	309.057
Upper GI bleed at presentation (Yes/No)	3.216	15.784	<0.01	0.810	24.931	5.101	121.842
Constant	-3.253	4.059	0.044	1.615	0.039		

Nagelkerke R Square = 87.4% : Cox & Snell R Square = 55.0%

higher in batch of patients suffering from hepatic encephalopathy who had pulmonary aspiration (p<0.01), no history of upper GI endoscopy (p<0.01) and who had upper GI bleed at presentation (p<0.01). However, occurrence of death amongst hepatic encephalopathy patients had no significant connection with gender (p= 0.481), etiology of cirrhosis (p=0.592), presence of HRS at presentation (p=0.592), and presence of comorbidities (p=0.252) (Table-2). Regression analysis was accomplished to ascertain the impact of sex, age, presence of pulmonary aspiration, history of upper GI endoscopy and presence of upper GI bleeding on the likelihood that death might be the outcome among hospitalized patients stricken with hepatic encephalopathy. The logistic regression replica explained 87.4% (Nagelkerke R2) of the variance in the occurrence of death among hepatic encephalopathy patients and correctly classified 97.8% of cases. Patients with pulmonary aspiration were 26.3% times likely to expire than who had no pulmonary aspiration. Similarly, hepatic encephalopathy patients who had no history of index or prior upper GI endoscopy were 63.4% times more likely to die than who had underwent upper GI endoscopy. Patients who had upper GI bleed at presentation were 24.9% times more likely to die than who had no upper GI bleeding at presentation. It was also seen that age (p=0.059) and gender (p=0.917) had no confounding effect during regression analysis (Table 3).

Discussion

The saying "prevention is better than cure" is accurately applicable in case of hepatic encephalopathy because even if patient recovers from hepatic encephalopathy, lifespan of liver cirrhosis patients is limited.[9] Well-known precipitating factors of hepatic encephalopathy include infection, upper GI bleed, electrolyte imbalance and constipation.[14] Nandu S Poudyal and colleagues[15] from Nepal observed GI bleed as precipitating factor in 16% patients with hepatic encephalopathy. Similarly, Harshal Khobragade and colleagues[16] from India mentioned upper GI bleeding in 18.6% of patients with hepatic encephalopathy. On the other hand, Anarissoh LM Lawson and his team[17] from Togo said that 33.3% hepatic encephalopathy patients had GI bleeding as precipitating factor. In our study, upper GI bleeding was seen in 19.4% patients with hepatic encephalopathy, where mortality was also significantly higher among hepatic encephalopathy patient suffering upper GI bleeding (p<0.01). On the other hand, significant number of patients (n=75, 23%) had not underwent index or prior upper GI endoscopy in our studied population. Whereas index as well as annual or biannual follow-up upper GI endoscopies for variceal detection and management are recommended in liver cirrhosis patients.[18] This drawback of our hospitalization setups put our liver cirrhosis patients at risk of overt upper GI bleed as well as obscure or occult bleeding leading to hepatic encephalopathy as well as significant risk of death due to it. In our precious study that mortality was 63.359 times higher among patients with hepatic encephalopathy who had not underwent upper GI endoscopy. This is a preventable factor, consideration of which can reduce mortality among hepatic encephalopathy patients in our country. Pulmonary aspiration is also an important issue in comatosed patients which increases morbidity and mortality of these patients.[19] The risk of aspiration increases with the grade of comma; therefore, large trials suggest the need of tracheal intubation with worsening GCS score of comatosed patients.[20] This all data is from surgical floors especially in trauma patients. Such research from gastroenterology suites esp. in hepatic encephalopathy patients are scarce. Qamar Rafiq and colleagues[21] observed pulmonary aspiration in 31.9% patients with hepatic encephalopathy. They also mentioned that patients in which hepatic encephalopathy was associated with upper GI bleeding suffered significantly more pulmonary

aspiration ($p<0.01$). In our study, we found that death was the outcome of hepatic encephalopathy episode 26.3% times more in group of patients who had pulmonary aspiration. Hence, we can say that prevention from pulmonary aspiration using maneuvers like tracheal intubation can escape a large number of hepatic encephalopathy patients from death as the outcome of hospitalization.

Conclusion

The inpatient mortality was significantly high in hepatic encephalopathy patients who got pulmonary aspiration, who presented with upper GI bleed, and who had no history of upper GI endoscopy procedure. Age, gender, MELD score, etiology of cirrhosis, hepatorenal syndrome, and comorbidities did not significantly take part in the mortality of these patients. Prevention from aspiration using maneuvers like tracheal intubation, applying index and follow-up upper GI endoscopies in cirrhotic patients for variceal screening and management can effectively reduce the mortality by hepatic encephalopathy in our population.

Conflict of Interest *None*

Funding Source *None*

References

1. Nardelli S, Gioia S, Faccioli J, Riggio O, and Ridola L. Hepatic encephalopathy - recent advances in treatment and diagnosis. Expert Rev Gastroenterol Hepatol. 2023; 17(3): 225-235. doi: 10.1080/17474124.2023. 2183386.
2. Louissaint J, Deutsch-Link S, and Tapper EB. Changing Epidemiology of Cirrhosis and Hepatic Encephalopathy. Clin Gastroenterol Hepatol. 2022; 20(8S): S1-S8. doi: 10.1016/j.cgh.2022.04.036.
3. Lu K. Cellular Pathogenesis of Hepatic Encephalopathy: An Update. Biomolecules. 2023; 13(2): 396. doi: 10. 3390/ biom13020396.
4. Sepehrinezhad A, Shahbazi A, Negah SS, and Larsen F. New Insight Into Mechanisms of Hepatic Encephalopathy: An Integrative Analysis Approach to Identify Molecular Markers and Therapeutic Targets. Bioinform Biol Insights. 2023; 17: 1177. doi: 10.1177/1177932 2231155068.
5. Ochoa-Sanchez R, Rose CF. Pathogenesis of Hepatic Encephalopathy in Chronic Liver Disease. J Clin Exp Hepatol. 2018; 8(3): 262-271. doi: 10.1016/ j.jceh.2018. 08.001.
6. Bellafante D, Gioia S, Faccioli J, Riggio O, Ridola L. et al. Old and New Precipitants in Hepatic Encephalopathy: A New Look at a Field in Continuous Evolution. J. Clin. Med. 2023, 12, 1187. https://doi.org/10.3390/jcm120 31187.
7. Ali MH, Kabir MA, Islam MS, Rahim CM, Hasan MK, Islam MK, Hasan MR, Alam MS. Study on Precipitating Factor of Chronic Hepatic Encephalopathy. Mymensingh Med J. 2020; 29(4): 800-806.
8. Abbasy M, Zaghla H, Elhelbawy M, Ramadan M, and Zakareya T. Predicting in-hospital mortality of cirrhotic patients hospitalized with hepatic encephalopathy. Egypt Liver J 2022; 12: 13. https://doi.org/10.1186/ s43066-022-00178-z
9. Tapper EB, Aberasturi D, Zhao Z, Hsu CY, and Parkih ND. Outcomes after hepatic encephalopathy in population-based cohorts of patients with cirrhosis. Aliment Pharmacol Ther 2020; 51: 1397–1405. doi: 10.1111/ apt. 15749.
10. Abdaal M, Ghafoor N, Iqbal Z, Usman M, Hussain S. et al. Determine the Frequency of Factors Leading to Hepatic Encephalopathy in Patients with Liver Cirrhosis. Pak J Med & Health Sci. 2022; 16(12): 197-199. https:// doi.org/10.53350/pjmhs20221612197
11. Abro HA, Jalbani A, Lal C, Ali M, Raheem A, Ahmed S. Precipitating Factors of Hepatic Encephalopathy Experience at Shaheed Muhtarma Benazir Bhutto Medical University Larkana. Med Forum 2019; 30(6): 36-39.
12. García-Martínez R, Diaz-Ruiz R, and Poncela M. Management of Hepatic Encephalopathy Associated with Advanced Liver Disease. Clin Drug Investig. 2022; 42: 5-13. doi: 10.1007/s40261-022-01146-6.
13. Mehta CC, Hagen KS, Collins, LF, Moore RH and Ofotokun I. Nested and multipart prospective observational studies, flaming fiasco or efficiently economical?: The Brain, Bone, Heart case study. BMC Med Res Methodol 2022; 22: 203. https://doi.org/ 10. 1186/ s12874-022-01675-w
14. Hafez MZE, Abdallah HAM, and Hamad MAM. Assessment of Precipitating Factors and Outcomes of Hepatic Encephalopathy in Cirrhotic Patients. The Egyptian J Hosp Med 2020; 81 (3): 1718-1721.
15. NS, Chaudhary S, Sudhamshu KC, Paudel BN, Basnet BK. et al. Precipitating Factors and Treatment Outcomes of Hepatic Encephalopathy in Liver Cirrhosis. Cureus. 2019; 11(4): e4363. doi: 10.7759/cureus.4363.
16. Khobragade H. , Manohar T. , Sathawane A. Precipitating Factors and Clinico-Endoscopic Study of Patients with Hepatic Encephalopathy Type C. J Contemp Med. 2022; 12(4): 559-564. DOI:10.16899/jcm.979964.

17. Lawson ALM, Bagny A, Bouglouga, ElHadji Y, Kaaga L. et al. Hepatic encephalopathy: precipitating factors, clinical and evolutionary aspects at the university hospital campus of lome(Togo). J Liver Res Disord Ther. 2018; 4(4) : 141-143. DOI: 10.15406/jlrdt.2018.04.00117.
18. Cremers I and Ribeiro S. Management of variceal and nonvariceal upper gastrointestinal bleeding in patients with cirrhosis. Therap Adv Gastroenterol. 2014; 7(5): 206-16. doi: 10.1177/1756283X14538688.
19. Lidetu T, Muluneh EK, and Wassie GT. Incidence and Predictors of Aspiration Pneumonia Among Stroke Patients in Western Amhara Region, North-West Ethiopia: A Retrospective Follow Up Study. Int J Gen Med. 2023; 16: 1303-1315. doi: 10.2147/IJGM.S400420.
20. Orso D, Vetrugno L,0 Federici N, Andrea ND, and Bove T. Endotracheal intubation to reduce aspiration events in acutely comatose patients: a systematic review. Scand J Trauma Resusc Emerg Med. 2020; 28: 116. https:// doi.org/10.1186/s13049-020-00814-w
21. Rafiq Q, Zeeshan M, Mustafa G, Irfan M. Tracheobronchial aspiration affects the outcome of hospitalization among Hepatic Encephalopathy patients. Pak J Med Sci. 2022; 38: 928-932. doi: 10.12669/pjms.38.4.5114.

Authors Contribution

MI, IAK: Conceptualization of Project
MI, IAK, TR: Data Collection
AM, AN: Literature Search
IAK, AM, AN: Statistical Analysis
IAK, AMC: Drafting, Revision
MI, TR: Writing of Manuscript

Is Tramadol Better Than Bupivicane in Reducing Post Operative Pain after Lichtenstien Mesh Hernioplasty When Administered in Wound; A Comparative Study

Usman Ali Rahman,[1] Muhammad Adil Iftikhar,[2] Maliha Javaid Butt,[3] Mohammad Zia ul Miraj,[4] Khalil Ahmed,[5] Iftikhar Ahmed[6]

Abstract

Objective: To compared effect of bupivacaine with tramadol in reducing post-operative pain.

Material and Methods: This comparative study was conducted in General Surgery Department Gulab Devi Hospital Lahore from July 2021 to December 2021. A total of 50 patient diagnosed as case of inguinal hernia undergoing Lichtenstein mesh hernioplasty were recruited and divided into two equal groups (25 patients in each). In Group A injection tramadol 2mg/kg was injected in deep and superficial tissues of wound postoperatively while in Group B bupivacaine 0.25% (0.2ml/Kg) was injected. No analgesic was injected immediately post operatively. Visual analogue score(VAS) for pain intensity was calculated at 2,3,4,5 and 6 hours postoperatively. Analgesia injection paracetamol was given only when patiet demanded or VAS was of 6.

Results: Mean duration of time period between operation and first dose of analgesic in Group A and Group B was 4.60 ± 0.5 hours and 4.16 ± 0.37 hours respectively (p-value 0.001). The effect of locally administered tramadol was more as compared to bupivacaine.

Conclusion: Tramadol when infiltrated in wound post operatively had longer duration of action as compared to bupivacaine 4.60 ± 0.5 hours and 4.16 ± 0.37 hours respectively (p-value 0.001).

Keywords: Tramadol, Bupivacaine, Lichtenstein mesh hernioplasty, Postop wound infiltration, Local anaesthesia.

How to cite: *Rahman UA, Iftikhar MA, Butt MJ, Miraj MZU, Ahmed K, Ahmed I. Is Tramadol Better Than Bupivicane in Reducing Post Operative Pain After Lichtenstien Mesh Hernioplasty When Administered in Wound; A Randomized Control Trail. Esculapio - JSIMS 2023;19(03):323-327*

DOI: https://doi.org/10.51273/esc23.251319313

Introduction

A hernia is defined as protrusion of viscous or part of viscous from one cavity through weakness of wall.[1] The prevalence of hernia worldwide is 7.7% with most prevalence in Asia (12.7%) and minimum in America (4.7%). It more common in male as compared to female with prevalence of 9.6% in male and 1.3% in female.[2]

1,5,6. Department of Surgery, Al-Aleem Medical College Lahore.
2. Department of Pediatric Surgery, KEMU, Lahore.
3. Department of Surgery, Services Hospital, Lahore.
4. Department of Medical Education, Al-Aleem Medical College, Lahore.

Correspondence:
Dr. Usman Ali Rahman, *Associate Professor Surgery, Sakina Ward Gulab Devi Teaching Hospital Lahore, Gulab Devi Teaching Hospital Lahore/Al-Aleem Medical College, Lahore. Email Address: cool.lamcian@gmail.com*

Submission Date: 17-07-2023
1st Revision Date: 11-08-2023
Acceptance Date: 07-09-2023

Hernia can be internal or external. Internal hernia are usually congenital and rarely acquired after trauma. External hernia are usually acquired resulting from trauma, heavy weight lifting, chronic cough, constipation, benign prostrate hyperplasia or any other cause increasing intra-abdominal pressure.[3] External hernia can be epigastric, para umbilical, umbilical, inguinal, femoral, lumbar and spigellian hernia.[4] Inguinal hernia is the most common hernia occurring in males.[5] It can occur in any age group as it can be congenital or acquired. It can also be classified as direct or indirect inguinal hernia. In indirect inguinal hernia contents comes through deep inguinal ring to superficial inguinal ring while in direct inguinal hernia contents come directly through posterior wall of inguinal canal. Indirect inguinal hernia is common in young adults while direct inguinal hernia is more common among old adults.[6] Direct and indirect inguinal

hernia can be further classified into complete and incomplete inguinal hernia. An incomplete hernia is confined to the inguinal canal whereas a complete hernia comes out of the inguinal canal through the external or superficial ring into the scrotum.

Inguinal hernia are also classified as reducible inguinal hernia, irreducible inguinal hernia, obstructed inguinal hernia and strangulated inguinal hernia. In reducible hernia contents are reduced spontaneously on lying or by patient and physician. Intestine are difficult to reduce and they produce gurgling sounds. Omentum is doughy, and it is difficult to reduce the last portion. In irreducible inguinal hernia contents cannot be reduced. In obstructed hernia bowel get obstructed but its blood supply is patent. In strangulated hernia blood supply does not remain patent and results in ischemia of contents.[7]

The surgical procedure for hernia can be open or laparoscopic. In open surgery it usually depends upon the age of the patient.[8] In congenital inguinal hernia herniotomy is the procedure of choice in which sac is opened and contents are reduced followed by plication of hernia sac.[9] No muscle strengthening is required. In teenagers and patients with obstructed hernia hernioraphy can be performed after herniotomy.[10] In hernioraphy post wall of inguinal canal is plicated or strengthen using non absorbable sutures. In adults and old age group hernioplasty is done using non absorbable mesh after herniotomy and hernioraphy.[11] Laparoscopic procedures includes trans abdominal pre peritoneal mesh (TAPP) hernioplasty and total extra peritoneal mesh (TEP) hernioplasty.[12]

The complications of hernia repair include post operative pain, mesh infection, organ or tissue damage, recurrence of hernia, seroma formation, nerve damage, hematoma and fistula formation.[13] All surgical procedures are associated with certain level of postoperative pain. Fear of postoperative pain is one of the greatest concerns of patients undergoing surgery. There are different methods used for the control of postoperative pain. It can be achieved by administration of pain killer. There are two types of analgesic drug groups which are used to control the postoperative pain. These can be opioid or non-opioid analgesic groups.[14]

Other method of controlling Post-operative pain is administration of local anesthetics at wound site pre or post operatively. Postoperative pain management with locoregional anesthesia technique is much effective solution.[15] These methods are associated with lower the pain score after surgical procedure. Local anesthetics can be divided into two basic amino-amide and amino-ester groups. The amino-ester group include procaine, chloroprocaine, tetracaine and cocaine. While amino-amide group contain lidocaine, bupivacaine, ropivacaine, mepivacaine, prilocaine.[16] Among these local anesthetics bupivacaine and lignocaine are most commonly used for wound infiltration after surgical procedure.[17] They are mostly used in inguinal hernia wound infiltration to reduce postoperative pain to lower the pain score. Local anesthetics administers into the incision area reduces opioids requirements.[18] Local anesthetics used for wound infiltration after inguinal hernia proves very comfortable for patients. However the dose of local anesthetics should be monitored carefully as they have side effects on cardiovascular activity and cerebral toxicity.[19] Tramadol is an opioid analgesic which is now used as local anesthetic instead of bupivacaine or lignocaine in mesh hernioplasty in international studies.[20]

The rationale of this study is to compare the effect of bupivacaine and tramadol in management of postoperative pain in mesh hernioplasty in our setup. As no such data is present in our population and only limited data is present in international literature. This study will help us in effective postoperative pain management in hernioplasty patient. This postoperative pain management will result in early mobilization of patient and short hospital stay.

Materials and Methods

It was a comparative study, conducted in General Surgery Department Gulab Devi Hospital Lahore from July 2021 to December 2021. The study was conducted after approval from institutional review board and consent of the patients. A total of 50 patient diagnosed as case of inguinal hernia undergoing Lichtenstein mesh hernioplasty were recruited and divided into two equal groups (25 patients each). The sample size was calculated taking postoperative analgesia 6.9±0.9 hours in tramadol versus 3.7±0.7 hours from present international data. The exclusion criteria was patient of age less than 20 years having herniotomy or hernioraphy only, recurrent inguinal hernia, had any analgesia preoperatively, any neuropathy and patients having general anesthesia per operatively. In Group A injection tramadol 2mg/kg was injected in deep and superficial tissues of wound postoperatively while in Group B bupivacaine 0.25% (0.2ml/Kg) was injected. No analgesic was injected immediately post operatively. Visual analogue score (VAS) for pain intensity was calculated at 2,3,4,5 and 6 hours postoperatively. Analgesia injection paracetamol

was given only when patient demanded or VAS score was of 6. Data was collected on prescribed questionnaire and analyzed on SPSS 23. For qualitative data frequency tables and graph were used which in quantitative data means were taken and compared.

Result

Fifty patients with diagnosis of inguinal hernia and having mesh hernioplasty were included in this study. These patients were divided in two groups. In Group A Tramadol injection was injected while in Group B bupivacaine was injected. Mean age of patients in Group A and Group B were 38 ± 10.5 years and 36 ± 9.1 years respectively. Mean weight of patients in Group A and Group B were 73.7±10.4 Kg and 76.6±10.7 Kg respectively. All patients were male. Out of these 50 patients 22 (44%) were having right inguinal hernia while 28 (56%) had left sided inguinal hernia. All the patients included in this study had reducible inguinal hernia. In 40 (80%) patients hernia was complete while only in 10 (20%) had incomplete inguinal hernia. In 39(78%) patients had indirect inguinal hernia while 11(22%) patients had direct inguinal hernia.

Means of Visual analogue score of pain intensity at 2, 3, 4, 5 & 6 hours in Group A and Group B were 1.60 ± 0.76 vs 1.64±0.70, 2.12±0.66 vs 2. 4 ± 0.7, 3.08±0.64 vs 4.24±0.66, 4.8±0.7 vs 5.72±0.54, 5.90±0.25 vs 5.85± 0.50. Mean duration of time period between operation and first dose of analgesic in Group A and Group B was 4.60±0.5 hours and 4.16±0.37 hours respectively (p-value 0.001). The effect of locally administered tramadol was more as compared to bupivacaine. In Group A 10 (40%) had analgesic injection at 5 hours and 15 (60%) had analgesic injection at 6 hours postoperatively. In Group B 21 (84%) had analgesic injection at 5 hours while only 04 (16%) had injection at 6 hours postoperatively. No significant complication was documented in each group. All patients had spinal anesthesia during their operation.

Table 1: *Differences between variables among Tramadol and Bupivacaine group*

Variables		Local Administered		p-value
		Tramadol	Bupivacaine	
Duration		4.60 ± 0.5 hrs	4.16 ± 0.37 hrs	0.001
Visual Analogue Score for pain intensity	02 hrs	1.60 ± 0.76	1.64 ± 0.70	0.848
	03 hrs	2.12 ± 0.66	2. 4 ± 0.7	0.156
	04 hrs	3.08 ± 0.64	4.24 ± 0.66	0.001
	05 hrs	4.8 ± 0.7	5.72 ± 0.54	0.001
	06 hrs	5.90 ± 0.25	5.85 ± 0.50	0.315
Mean VAS		3.26 ± 0.60	3.59 ± 0.38	0.025

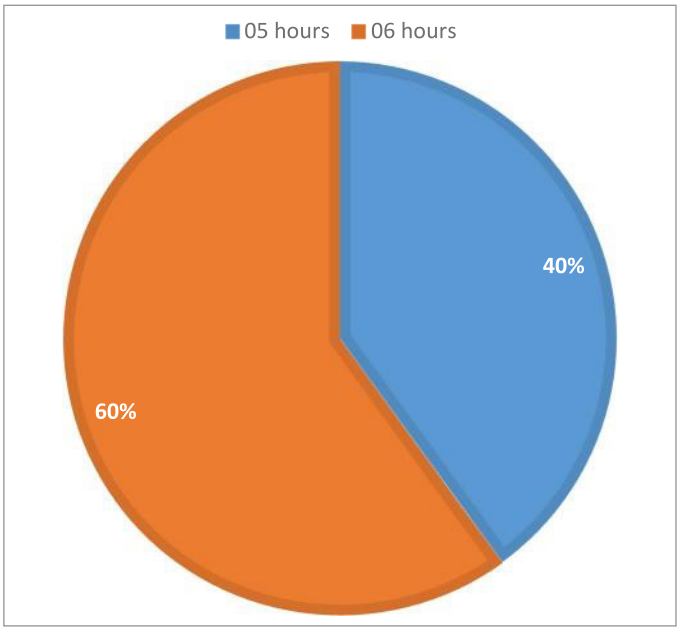


Fig-1: *Duration between Operation and 1st Analgesic In Group A (Tramadol)*

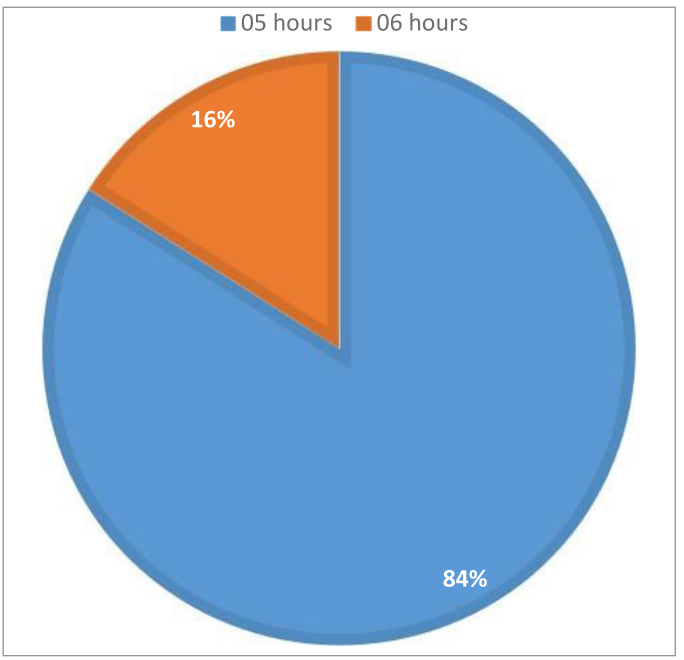


Fig-2: *Duration Between Operation And 1st Analgesic In Group B (Bupivacaine)*

Discussion

In our study diagnosed cases inguinal hernia undergoing Lichtenstein mesh hernioplasty were divided in two groups. In Group A tramadol was injected in wound area on completion of operation while in Group B bupivacaine was injected in wound postoperatively. According to our study effect of tramadol was prolonged as com-

pared to bupivacaine. In Group A patient 10 (40%) had analgesic injection at 5 hours postoperatively as compared to 21 (84%) in Group B. Mean duration of time period between operation and first dose of analgesic in Group A (tramadol) and Group B (Bupivacain) was 4.60 ± 0.5 hours and 4.16 ± 0.37 hours respectively (p-value 0.001) while in an international study VAS was significantly higher among patient in group B (Bupivacain) than group T (tramadol) (P<.05). Time for first analgesic requirement was earlier in group B patients than group T patients (3.7±0.745 vs 6.6± 0.992 hours, respectively (P<.05).(20) These findings are consistent with our study. In the study of Wahdan et al. Visual analogue score is statistically lower after six hours postoperatively in tramadol group compared to the bupivacaine groups.[22] Similarly in our study we found that individual mean visual analogue score for pain intensity at 2,3,4,5 and 6 hours postoperatively was better in those patients in which tramadol was injected in wound postoperatively compared to bupivacaine (p-value 0.001). Similarly mean VAS was also less in in Group A which was 3.26 ± 0.60 as compared to 3.59± 0.38 group B (p-value 0.025). This is according to national and international studies. No significant immediate postoperative complications like wound infection and wound infection were documented in both groups.

Conclusion

Tramadol when infiltrated in wound post operatively had longer duration of action as compared to bupivacaine 4.60 ± 0.5 hours and 4.16 ± 0.37 hours respectively (p-value 0.001).

Conflict of Interest *None*

Funding Sources *None*

References

1. Rance C, Jones A. Abdominal wall hernias. InnovAiT. 2021;14(6):379-85.
2. Abebe MS, Tareke AA, Alem A, Debebe W, Beyene A. Worldwide magnitude of inguinal hernia: Systematic review and meta-analysis of population-based studies. SAGE Open Medicine. 2022 Nov;10:20503121221139150.
3. Sharma S, Gupta R. Prevalence and Risk Factors of Inguinal Hernia: A Study in a Semi-Urban Area. Journal of Advanced Medical and Dental Sciences Research. 2020;8(10):83-6.
4. Hassan AHA, Sadek AH, Ibrahim IM, Zaitoun MA. Brief Overview about Ventral Hernias. Tobacco Regulatory Science (TRS). 2023:1783-97.
5. Burcharth J, Pedersen M, Bisgaard T, Pedersen C, Rosenberg J. Nationwide prevalence of groin hernia repair. PLoS One. 2013;8(1):e54367.
6. Shakil A, Aparicio K, Barta E, Munez K. Inguinal hernias: diagnosis and management. American family physician. 2020;102(8):487-92.
7. Sapkota S, Dangal B, Diwakar UP, Khadka H. Management of strangulated inguinal hernia with resection and anastomosis in a primary health care setting during COVID-19 crisis. Journal of General Practice and Emergency Medicine of Nepal. 2020;7(10):43-6.van
8. Veenendaal N, Simons M, Hope W, Tumtavitikul S, Bonjer J. Consensus on international guidelines for management of groin hernias. Surgical endoscopy. 2020;34:2359-77.
9. Svenningsson A, Wester T. Hernias. Pediatric Surgery: Diagnosis and Management: Springer; 2023. p. 1001-14.
10. Hori T, Yasukawa D. Fascinating history of groin hernias: Comprehensive recognition of anatomy, classic considerations for herniorrhaphy, and current controversies in hernioplasty. World Journal of Methodology. 2021; 11(4):160.
11. Sarkar S. A comparative study of mesh fixation with non-absorbable versus delayed-absorbable monofilament suture in Lichtenstein tension-free hernioplasty in a medical college. Asian Journal of Medical Sciences. 2022;13(7).
12. Gupta S, Krishna A, Jain M, Goyal A, Kumar A, Chaturvedi P, et al. A three-arm randomized study to compare sexual functions and fertility indices following open mesh hernioplasty (OMH), laparoscopic totally extra peritoneal (TEP) and transabdominal preperitoneal (TAPP) repair of groin hernia. Surgical Endoscopy. 2021;35:3077-84.
13. Bullen N, Massey L, Antoniou SA, Smart NJ, Fortelny RH. Open versus laparoscopic mesh repair of primary unilateral uncomplicated inguinal hernia: a systematic review with meta-analysis and trial sequential analysis. Hernia. 2019;23:461-72.
14. Feldman CA, Fredericks-Younger J, Lu S-E, Desjardins PJ, Malmstrom H, Miloro M, et al. The Opioid Analgesic Reduction Study (OARS)—a comparison of opioid vs. non-opioid combination analgesics for management of post-surgical pain: a double-blind randomized clinical trial. Trials. 2022;23(1):160.

15. Gessner DM, Horn J-L, Lowenberg DW. Pain management in the orthopaedic trauma patient: Non-opioid solutions. Injury. 2020;51:S28-S36.
16. Whizar-Lugo VM, Íñiguez-López KL, Cárdenas-Maytorena AC, Ramírez-Puerta CD. Local Anesthetics. Topics in Local Anesthetics. 2020:1.
17. Narendra P, Hegde HV, Chandrashekharappa K, Tore VV, Endigeri P, Boodadi M, et al. Survey of
18. Surgeons attitude to local anesthetics for postoperative pain relief. Anesthesia, essays and researches. 2019;13(3):452.
19. Schmidt B, Bhambhvani HP, Greenberg DR, Prado K, Shafer S, Thong A, et al., editors. Bupivacaine local anesthetic to decrease opioid requirements after radical cystectomy: Does formulation matter? Urologic Oncology: Seminars and Original Investigations; 2021: Elsevier.
20. Barletta M, Reed R. Local anesthetics: pharmacology and special preparations. Veterinary Clinics: Small Animal Practice. 2019;49(6):1109-25.
21. Stamenkovic DM, Bezmarevic M, Bojic S, Unic-Stojanovic D, Stojkovic D, Slavkovic DZ, et al. Updates on wound infiltration use for postoperative pain management: a narrative review. Journal of clinical medicine. 2021;10(20):4659.
22. Kaki AM, Al Marakbi W. Post-herniorrhaphy infiltration of tramadol versus bupivacaine for postoperative pain relief: a randomized study. Annals of Saudi medicine. 2008;28(3):165-8.
23. Wahdan AS, Seleem AAE. The effect of inguinal canal and intraincisional infiltration of tramadol versus bupivacaine 0.25% on postoperative pain relief in patients undergoing inguinal hernioplasty under general anesthesia. Anaesthesia, Pain & Intensive Care. 2019: 317-. 22.

Authors Contribution

UAR, MAI: Conceptualization of Project
MJB, MZM: Data Collection
KA, IA: Literature Search
UAR, MAI: Statistical Analysis
UAR, MAI: Drafting, Revision
UAR, MAI, MJB: Writing of Manuscript

Frequency, Reasons, and Determinants of Multivitamins Usage Among Undergraduate Medical Students

Muhammad Abdullah,[1] Syed Agha Zain Haider,[2] Samreen Waris,[3] Sher Afgan Ali Khan Burki,[4] Farhat Ijaz,[5] Bushra Amin,[6]

Abstract

Objective: To determine the prevalence, reasons, and determinants of multivitamin usage among medical students.

Material and Methods: A questionnaire-based cross-sectional study was conducted at CMH Medical, Medical and Dental College, Lahore. Duration was from1st January 2023 to 30 June, 2023 and sample size was N=267 calculated with 267 participants. The sample size was N=267 calculated from Cochran's formula. Nonprobability convenient sampling technique was used. All students currently enrolled in the medical college(MBBS, BDS) were offered to be part of study after taking informed consent. A self-designed online questionnaire, which included 11 validated questions, was employed to gather data from 267 participants through Google Forms. The data from the questionnaire was analyzed by using SPSS version 26.

Results: Mean age of participants was 20±2.9. The findings revealed that while a significant number of medical students reported using multivitamins (35.3%), there were variations in knowledge, beliefs, and attitudes towards their effectiveness. Most participants believed that multivitamins are effective (81.5%, p=0.806) and can improve energy levels (81.1%, p=0.209). Factors such as healthcare professional recommendations influenced usage (75.8%, p=0.788). However, no significant associations were found between demographic factors (gender, age, year of study) and multivitamin usage. Interestingly, a subset of students reported using multivitamins during periods of stress (11.2%, p=0.122).

Conclusion: These results highlight the complexity of multivitamin usage among medical students, with variations in usage patterns and beliefs regarding effectiveness.

Keywords: Multivitamins, Medical students, supplements

How to cite: *Abdullah M, Haider SAZ, Waris S, Burki SAAK, Ijaz F, Amin B. Frequency, Reasons, and Determinants of Multivitamins Usage Among Undergraduate Medical Students. Esculapio - JSIMS 2023;19(03):328-331*

DOI: https://doi.org/10.51273/esc23.251319314

Introduction:

Multivitamins are widely consumed dietary supplements that contain a combination of essential vitamins and minerals. They are marketed as a convenient solution to bridge potential nutrient gaps in our diets and support overall health. While multivitamins are extensively used by individuals seeking to optimize their nutritional intake, there is a need for rigorous scientific research to evaluate their efficacy, safety, and potential benefits. According to American Society of nutrition, there is a large proportion of population using dietary supplements (DS) in theirroutine life.[1] In recent years it has been noticed that the use of multivitamins is high in females, people with higher education and socioeconomic status as well as in medical students.[2] Evidence indicates that individuals may use a single or a combination of different dietary supplements as means to improve their nutrition intake, maintaining general health and well-being, as well as reduce risk of diseases. As excess of everything is bad, similarly the heavy use of multivitamins can cause many side effects in body and even toxicity. For example, the heavy dose of vitamin D can affect our kidneys.[3] Among the multiple reasons of misuse of multivitamins, one is the availability of these products over the counter without any prescription.[4]

1-4. CMH LMC & IOD(NUMS), Lahore
5. Department of Physiology, CMH LMC & IOD(NUMS),Lahore
6. Department of Community medicine, CMH LMC & IOD(NUMS),Lahore

Correspondence:
Dr. Farhat Ijaz, *Associate Professor, Department of Physiology, CMH Lahore Medical College & Institute of Dentistry (NUMS). Lahore, Pakistan.*
E-mail farhat_khurram_rana@cmhlahore.edu.pk

Submission Date: 16-08-2023
1st Revision Date: 26-08-2023
Acceptance Date: 10-09-2023

Excess use of multivitamins causes allergic reactions and interfere with drugs for cardiovascular diseases. These side effects can identify on clinical bases and should reported as soon as possible.[5] Furthermore, heavy use of multivitamins is also high in people with high income and ethnic origin.[6]

Medical students face high levels of stress and demanding schedules that may impact their dietary habits. Investigating multivitamin usage can provide insights into their nutritional strategies and help optimize their nutrient intake. Secondly, as future healthcare professionals, medical students' own multivitamin use and their reasons for using them can influence their future practices and patient education. Understanding their attitudes and beliefs towards supplementation can improve patient counseling on multivitamin usage.

We designed this study to determine the prevalence multivitamins usage among medical students and the reason for their usage. No such study has been done on medical students.

This research will provide valuable insights into the prevalence and motivations behind multivitamin usage among medical students. The findings can inform the development of targeted interventions, educational programs, and policy recommendations to promote informed decision-making regarding multivitamin usage among medical students and their future patients.

Material and Method

Questionnaire-based cross-sectional study conducted at CMH Medical, Medical and Dental College, Lahore after taking ethical approval from the institute (Letter no. 53 /ERC/CMHLMC) from1st January 2023 to 30 June, 2023. The sample size was N=267 calculated from Cochran's formula. Nonprobability convenient sampling technique was used. All students of MBBS currently enrolled in the college after taking informed consent. All students who have gra-duated from college and those refused to enroll in study. A self-designed online questionnaire, which included 11 validated questions, was employed to gather data from 267 participants through Google Forms. Initially, a pilot study was done on 30 participants to check questionnaire validity and reliability. Cronbach's alpha of this questionnaire was 0.80. The survey focused on obtaining information about the participants' socio-demographic characteristics, knowledge, prac-tices, attitudes, and factors related to the usage of multi-vitamins. The data from the questionnaire was analyzed by using SPSS version 26. Frequency percentages were calculated from descriptive data. Chi square was used for association between variables. P-value less than 0.05 will be considered significant.

Results

The study examined the knowledge and usage of multivitamins among medical students. In terms of knowledge, most participants (211 MBBS, 7 BDS) demonstrated awareness that multivitamins are a separate category from iron supplements and fish oil tablets. However, a significant proportion of participants (31 MBBS, 2 BDS) lacked this knowledge (p=0.624). Regarding current usage, a considerable number of participants reported using multivitamin capsules (94 MBBS, 5 BDS), while the majority did not use multivitamins (153 MBBS, 5 BDS) (p=0.618). Moreover, a significant proportion of participants reported having used multivitamins in the past (200 MBBS, 7 BDS) (p= 0.640).

Beliefs and Attitudes towards Multivitamins: The study explored participants' beliefs and attitudes towards multivitamins. Most participants (219 MBBS, 8 BDS) believed that multivitamins are effective (p=0.806). However, beliefs varied when it came to specific effects of multivitamins. For instance, a significant number of participants believed that multivitamins could improve energy levels (184 MBBS, 5 BDS), while a smaller proportion disagreed (18 MBBS, 2 BDS) (p=0.209). Similarly, opinions were divided regarding the use of multivitamins for stress relief, improvement of mood, and memory/cognitive functions during exam season.

Factors Influencing Multivitamin Usage: The study explored several factors influencing multivitamin usage among medical students. Participants reported receiving recommendations from healthcare professionals to take multivitamins (202 MBBS, 8 BDS) (p=0.788). Additionally, the study investigated the relationship between demographic factors and multivitamin usage. However, the analysis did not reveal any significant association between demographic factors such as gender, age, or year of study and multivitamin usage among medical students. Multivitamin Usage during Periods of Stress or Anxiety: A significant number of participants (30 MBBS) reported having taken multivitamins during periods of increased stress or anxiety (p=0.122). This finding suggests that some medical students resort to

Table 1: *Demographics of study participants*

Variables		Frequency (f)	Percentage (%)
Gender	Male	73	27.3
	Female	194	72.7
Class	1st year	43	16.1
	2nd year	10	3.7
	3rd year	26	9.7
	4th year	136	50.9
	5th year	51	19.1
Field	MBBS	257	96.3
	BDS	10	3.7

Table 2: *Prevalence of knowledge, attitude, and practice of multivitamin usage among students of MBBS and BDS*

Variables		Field		p-value
		MBBS	BDS	
Do you know that multivitamins are a separate category from iron supplements and fish oil tablets?	Yes	211	7	0.624
	No	31	2	
	May be	15	1	
Do you currently use multivitamins e.g., capsules?	Yes	94	5	0.618
	No	153	5	
	Maybe	9	0	
Have you ever used multivitamins in the past?	Yes	200	7	0.640
	No	49	3	
	Maybe	6	0	
Do you believe multivitamins are effective?	Yes	219	8	0.806
	No	3	0	
	Maybe	35	2	
Do you take multivitamin capsules daily?	Yes	45	3	0.412
	No	199	6	
	Maybe	12	1	
Have you(or anyone you know)received recommendations from a healthcare professional to take multivitamins ?	Yes	202	8	0.788
	No	44	2	
	Maybe	11	0	
Do you believe multivitamins can improve energy levels?	Yes	184	5	0.209
	No	18	2	
	Maybe	55	3	
Do you take multivitamins for stress relief?	Yes	14	0	0.599
	No	233	10	
	Maybe	10	0	
Have you taken multivitamins during the periods of increased stress or anxiety?	Yes	30	0	0.122
	No	212	8	
	Maybe	15	2	
Do you believe multivitamins can improve mood?	Yes	59	1	0.543
	No	93	5	
	Maybe	105	4	
Have you taken multivitamins to improve memory or cognitive functions e.g., during exam season?	Yes	58	2	0.966
	No	204	3	
	May be	0	0	

multivitamins as a coping mechanism during challenging periods. However, most participants (212 MBBS, 8 BDS) did not use multivitamins during such periods, indicating varied approaches to managing stress and anxiety among medical students.

Discussion

The study investigated the knowledge, beliefs, and usage of multivitamins among medical students. The results revealed that most participants demonstrated awareness that multivitamins are separate from other supplements. While a significant proportion reported current or past usage of multivitamins, there was variation in beliefs about their effectiveness for specific purposes. The study also explored factors influencing multivitamin usage and found that participants received recommendations from healthcare professionals. However, no significant associations were found between demographic factors and multivitamin usage among medical students. Interestingly, a significant number of participants reported using multivitamins during periods of increased stress or anxiety. Study by Mangione et al concluded that nutritional supplements boost the overall health and wellbeing and fill the nutrient gaps in diet, reducing the risk of cardiovascular disease and cancer.7 This is in accordance with our study. Majority of our participants (210; 202 MBBS, 8 BDS) used on recommendations from a healthcare professional. 189 participants believed that multivitamins can improve energy levels. Further research is reco-mmended to understand the reasons behind multivitamin usage and the impact of educational interventions on improving knowledge and practices among this popu-lation.

Another study on physicians' perception about multivitamins, particularly Vitamin B12 for the cure or prevention of diabetic neuropathy,[6] is consistent with our study as it says that multivitamin usage alleviates chronic diseases. Furthermore, supplementation with different micronutrients having immune supporting roles may modulate the immune functions and reduces

A significant proportion of female college students in the UAE used multivitamins and mineral supplements for medical needs (P=0.001).[8] This statement too aligns with the findings of our study. Comparing these findings with previous studies on multivitamin usage among different populations reveals some interesting insights. The study conducted by Naqvi et al. (2018)1 among pharmacy students reported a prevalence of 48.2% for dietary supplement use, with physician recommendation cited as a common reason for usage. This aligns with

our findings, where medical students also reported receiving recommendations from healthcare professionals to take multivitamins. Similarly, the study by Barnes et al. among an Australian university population found that 69% of participants reported using vitamin or mineral supplements, and general health reasons were commonly reported for their usage.[5]

Americans reported that a small number of multivitamins products have the potential to produce significant toxicity,[10] which confirms one of our study objectives that multivitamins overuse causes adverse effects. These findings collectively highlight the complex nature of multivitamin usage among medical students. While many students demonstrated awareness and utilized multivitamins, there were variations in usage patterns, beliefs, and attitudes regarding their effectiveness for specific purposes. Further research is needed to delve deeper into the reasons behind multivitamin usage, the impact of healthcare professional recommendations, and the role of education in shaping beliefs and behaviors.

Conclusion

This study explored multivitamin usage among medical students, revealing variations in knowledge, beliefs, and attitudes. Some participants used multivitamins during periods of stress, indicating a coping mechanism. Comparisons with previous studies highlight the contextual nature of multivitamin usage. Further research is needed to understand usage motivations and potential benefits and risks. Enhancing understanding of multivitamin usage will contribute to the well-being of medical students.

Conflict of Interest *None*

Funding Source *None*

References

1. Naqvi AA, Ahmad R, Zehra F, Yousuf R, Kachela B, Nehal Nadir M. Dietary supplement use among students of pharmacy colleges in the city of Karachi, Pakistan: Prevalence, opinions, and attitudes. J Diet Suppl [Internet]. 2019;16(2):166–78. Available from: http://dx. doi.org/10.1080/19390211.2018.1443191
2. Foote JA, Murphy SP, Wilkens LR, Hankin JH, Henderson BE, Kolonel LN. Factors associated with dietary supplement use among healthy adults of five ethnicities: the Multiethnic Cohort Study. Am J Epidemiol [Internet]. 2003 [cited 2023 Jul 24];157(10):888–97. Available from: https://pubmed.ncbi.nlm.nih.gov/12746241/
3. Vatistas TJ, Samuels JG. The regulation of dietary supplements in the United States: advocating for a reasonable approach, protecting patient safety, and the role of nursing: Advocating for a reasonable approach, protecting patient safety, and the role of nursing. Policy Polit Nurs Pract [Internet]. 2012 [cited 2023 Jul 24]; 13 (2):113–6. Available from: https://pubmed.ncbi.nlm.nih.gov/23044485/
4. Tachjian A, Maria V, Jahangir A. Use of herbal products and potential interactions in patients with cardiovascular diseases. J Am Coll Cardiol [Internet]. 2010; 55(6): 515 – 25. Available from: http://dx.doi.org/ 10.1016/ j. jacc. 2009.07.074
5. Barnes K, Ball L, Desbrow B, Alsharairi N, Ahmed F. Consumption and reasons for use of dietary supplements in an Australian university population. Nutrition [Internet]. 2016 [cited 2023 Jul 24];32(5):524–30. Available from: https://pubmed.ncbi.nlm.nih.gov/26819063/
6. Aldossari KK, Al-Ghamdi S, Alzahrani J, Al Turki MS, Almuhareb M, Alanazi ZG, et al. Physicians' perception about use of vitamin B12 in the treatment or prevention of diabetic neuropathy: A cross-sectional survey in Saudi Arabia. Curr Diabetes Rev [Internet]. 2022 [cited 2023 Jul 24];18(2):e021021191310. Available from: https://pubmed.ncbi.nlm.nih.gov/33573558/
7. Mangione CM, Barry MJ, Nicholson WK, Cabana M, Chelmow D, et al. Vitamin, mineral, and multivitamin supplementation to prevent cardiovascular disease and cancer: US Preventive Services Task Force recommendation statement. JAMA [Internet]. 2022 [cited 2023 Jul 25];327(23):2326–33. Available from: https://pubmed.ncbi. nlm.nih.gov/35727271/
8. Radwan H, Hasan HA, Ghanem L, Alnajjar G, Shabir A, Alshamsi A, et al. Prevalence of dietary supplement use and associated factors among college students in the United Arab Emirates. J Community Health [Internet]. 2019 [cited 2023 Jul 25];44(6):1135–40. Available from: https://pubmed.ncbi.nlm.nih.gov/31273622/
9. Ronis MJJ, Pedersen KB, Watt J. Adverse effects of nutraceuticals and dietary supplements. Annu Rev Pharmacol Toxicol [Internet]. 2018 [cited 2023 Jul 25]; 58:583–601. Available from: https://pubmed. ncbi. nlm. nih.gov/28992429/
10. Gombart AF, Pierre A, Maggini S. A review of micronutrients and the immune system-working in Harmony to reduce the risk of infection. Nutrients [Internet]. 2020 [cited 2023 Jul 25];12(1):236. Available from: https:// pubmed.ncbi.nlm.nih.gov/31963293/

Authors Contribution

MA: Conceptualization of Project

MA, SAZH : Data Collection

MA, SAZH, SW, SAAKB: Literature Search

MA: Statistical Analysis

FI: Drafting, Revision

FI, BA: Writing of Manuscript

Improved Outcomes of Upper Gastrointestinal Endoscopy with Intensive Counselling and Videotapes; A Randomized Controlled Trial

Shahzad Latif,[1] Hafiza Qaria Bushra Saleem,[2] Mehreen Nasir,[3] Iram Manzoor[4]

Abstract

Objective: The purpose of the study that we are currently conducting is to advise patients, implement various measures (such as videotapes), and permit patients' family members to accompany them inside the endoscopy room for the duration of the process in order to improve patients' levels of compliance.

Material and Methods: A randomized control trial study was conducted in tertiary care private hospital from March to August 2022. Each group has 125 participants. Consecutive sampling was done in study period and participants were randomly allocated to intervention or control groups. Group A, the intervention group, received counselling about EGD's safety and comfort and saw videotapes. Patients' family member was allowed to stay in the endo-scopic room during the procedure. Group B received simply standard protocol counselling. The self-developed questionnaire included socio-demographic characteristics, and an endoscopist assessed procedure difficulty and compliance. Data were entered into SPSS version 20. Compliance, endoscopist evaluation, and esophago-gastroduodenoscopy duration were compared between groups.

Results: A total of 250 study participants were included in the study. 125 were randomized in Group A and 125 were randomized in Group B. The most common comorbidities in study participants were diabetes, hypertension and ischemic heart disease. The chi-square test was used to access the time of the procedure, tolerated procedure, and endoscopist assessment between group A and group B. There was a statistically significant improvement in terms of these outcomes with the intervention.

Conclusion: Extensive counselling, videotapes, and allowing family members to stay in the endoscopy room improves the outcomes of patients in terms of the time of the procedure, tolerated procedure, and endoscopist assessment.

Keywords: Endoscopy, time of the procedure, counselling

How to cite: *Latif S, Saleem HQB, Nasir M, Manzoor I. Improved Outcomes of Upper Gastrointestinal Endoscopy with Intensive Counselling and Videotapes; A Randomized Controlled Trial. Esculapio - JSIMS 2023;19(03):332-336*

DOI: https://doi.org/10.51273/esc23.251319315

Introduction

The frequency of illnesses affecting the upper gastrointestinal (GI) tract is extremely high among the population as a whole, and this is true not only in industrialized countries but also in less developed nations. An esophagogastroduodenoscopy, often known as an EGD, is a diagnostic endoscopic technique that involves visualization of the oropharynx, the esophagus, the stomach, and the proximal part of the duodenum.[1,2] It is one of the procedures that a gastroenterologist does on a regular basis and is considered to be very common. 10% of patients coming to OPD come with gastrointestinal symptoms and of which half of them present with dyspepsia.[3] EGD is a daycare, safe, and easy invasive procedure without any sedation but throat anesthesia by local 4% Xylocaine gargle or spray is enough to complete the procedure safely.[4] However, in some cases, it provo-

1. *Department of Gastroenterology, Akhtar Saeed Medical and Dental College.*
2. *Nawaz Sharif Social Security Hospital, Lahore*
3. *Community Medicine, Akhtar Saeed Medical and Dental College, Lahore*
4. *Department of Community Medicine, Akhtar Saeed Medical and Dental College, Lahore.*

Correspondence:
Dr. Mehreen Nasir, *Assistant Professor, Department of Community Medicine, Akhtar Saeed Medical and Dental College, Lahore.*
E-mail fabia.nasir@gmail.com

Submission Date: 25-07-2023
1st Revision Date: 05-08-2023
Acceptance Date: 07-09-2023

ked some fears, anxiety, the feeling of difficulty of swallowing, and vulnerabilities with the procedure. Furthermore, in our society, there are some myths regarding the esophagogastroduodenoscopy procedure. Because of all of these factors, doing an EGD and making a diagnosis is extremely challenging.[5]

Indications of this procedure can be diagnostic or therapeutic. Diagnostic indications include pain that is constant in the upper abdomen region, dysphagia, feeding disorders, persistent gastrointestinal reflux disorder, hematemesis, iron deficiency anemia, Chronic diarrhea, malabsorption, evaluation of acute injuries, and precarcinogenic conditions. Therapeutic indications include foreign body removal, dilation of strictures, esophageal variceal ligation, control of upper gastrointestinal bleeding, and treatment of achalasia.[6,7]

This procedure is common in all age groups and is conducted approximately equally in males and females.[8] The complications are relatively infrequent in specialized healthcare facilities. As the patients are not sedated they are anxious during the procedure and do not fully follow the commands of the endoscopist which makes this simple procedure complex. Misinformation about this procedure is relatively common in Pakistan. The literacy rate of this country is lower than the global average the patients do not understand the procedure with traditional consent. With videotapes, the procedure can be explained to the patients so that they are more aware and tolerate the procedure well by following commands given. Allowing family members to make the environment more comfortable provided that appropriate infection control measures are taken.[9] There are a variety of methods available to get around any problems, such as providing thorough counselling to patients on the myths and fears associated with EGD, showing patients videos, and letting family members wait in the endoscopy room with them while the treatment is carried out.[10] The consent form alone does not make the patient fully aware about the information they need. Moreover, there are many infodemics about the procedure. If videotapes are used for explaining procedure and attendant is allowed to stay with the patient during procedure after appropriate infection control measures it improves the ease and patient compliance during the procedure. The aim of this study is to evaluate the role of extensive counselling, showing videos before the procedure, and allowing one family member to stay with the patient during the procedure to improve and easy conduction of the procedure in terms of time and tolerance. Knowledge generated can help highlight the ease of procedure when these simple interventions are done.

Material and Methods

After approval from the institutional review board, a randomized control trial was conducted between March 2022 to August 2022 at a tertiary care private hospital in Lahore. The sample size was calculated to be 125 in each group with a 95 percent confidence interval and 5% margin of error. Patients with an indication of upper gastrointestinal endoscopy were recruited in the study after informed consent. Our inclusion criteria were all patients of age 18-65 years with a valid indication of esophagogastroduodenoscopy. Patients with preexisting psychiatric disorders, having follow-up Endoscopy, or the presence of Neoplastic disease or prior upper Gastrointestinal surgery were excluded from the study. Patients were made nil per oral for 6 to 8 hours before the procedure. After appropriate sedation as per standard guidelines the procedure was done. Allocation concealment and blinding were not done.

Consecutive sampling was done from 1st March 2022 till the completion of sample size. Patients were randomized to Group A or Group B with computer-generated numbers. The allocation ratio was 1:1 between the 2 groups (Figure 1). Group A was the intervention group which included additional counselling detail about the procedure with counselling regarding the safety and comfortability of EGD and showed them videotapes, in addition, family member of patients was allowed to standby in the endoscopy room throughout the procedure. Videotapes were educational videos taken from American Society for Gastrointestinal Endoscopy (ASGE).[11] ASGE has produced educational videos for patients to learn about endoscopic procedures and the conditions they are used to diagnose and treat. These videos were translated to Urdu as it is national language of this country. Family member wore shoes cover, head cover and mask in endoscopy room to control infection. Patients randomized to Group B got only basic standard protocol counselling. Extensive counselling and Videotapes were not shown. Attendants were not allowed to enter the endoscopy room. The self-developed questionnaire developed after literature search consisted of sociodemographic factors and the patients' compliances were monitored during the procedure and an assessment by an endoscopist was made regarding procedure difficulties or easier to perform. For quality assurance questionnaire was pretested on 20 patients undergoing endo-

scopy. Endoscopist evaluated the ease of introduction of the instrument ("easy": no failed attempt of introduction; or "difficult": one or more failed attempts of introduction) and assessed the tolerance of the patients grading it into three steps: "good", "poor", "very bad".[9] Data were collected and after coding entered the statistical Package for the Social science (SPSS version 20) for analysis by using the Chi-square test. All the variable in both groups were compared by means of compliance, assessment of endoscopist regarding endoscopy procedure efficacy, and time duration of esophagogastroduodenoscopy.

Data obtained were entered and analyzed using a statistical package for social sciences (SPSS) version 21. For qualitative variables (like gender, age groups, Hemoglobin categories, Hepatitis and HIV status). Chi-square test was used to compare categories of intervention and control group (Time taken, tolerated procedure and endoscopist assessment, presence of comorbidities). p-value ≤0.05 was considered significant.

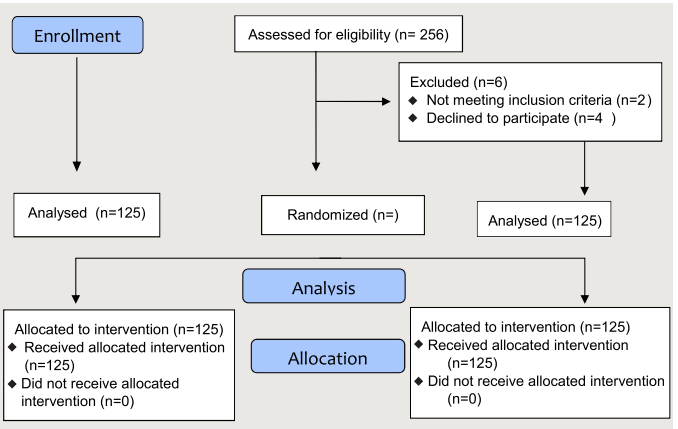


Figure 1: *Consort Diagram Of Study Participants*

Results

A total of 250 study participants from a private sector hospital were included in the study. 125 were randomized in Group A and 125 were randomized in Group B. The sociodemographic characteristics of study participants are shown in Table 1. Comorbidities in study participants are shown in figure 2. The chi-square test was used to access the time of the procedure, tolerated procedure, and endoscopic assessment between group A and group B as shown in Table 2.

Table 3: *Sociodemographic factors of study Participants*

Variable	Frequency	Percentage
Gender		
Male	127	50.8
Female	123	49.2
Age		
18- 35 years	79	31.6
36 to 55 year	143	57.2
56 to onward	28	11.2
Hemoglobin		
More than 13g/dl	140	56.0
Between 10-13g/dl	73	29.2
Between 7-10g/dl	37	14.8
Anti HCV Status		
Negative	220	88.0
Positive	30	12.0
HBsAg Status		
Negative	241	96.4
Positive	9	3.6

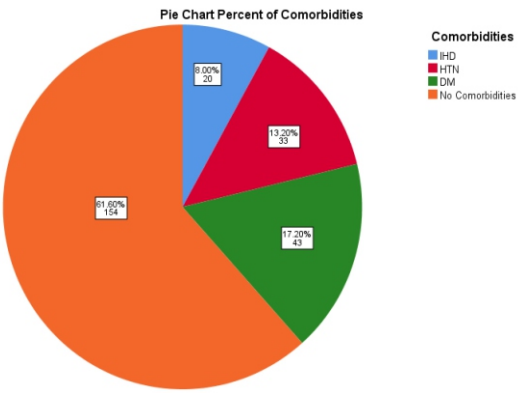


Figure 2: *Comorbidities present in study participants*

Table 2: *Chi square test between recorded variables between Group A and Group B*

Variables	Group A	Group B	Chi-square	p-value
Time Taken				
3minutes	63	51	7.809	0.02
3 to 6 minutes	57	57		
more than6 minutes	5	17		
Tolerated Procedure				
Good	61	37	9.672	0.008
Poor	44	61		
Very Bad	20	27		
Endoscopist Assessment				
easy insertion of scope	62	37	11.863	0.003
difficult insertion of scope	63	86		
failed insertion of scope	0	2		

Discussion

Upper gastroduodenal endoscopy is a daycare procedure with diagnostic and therapeutic benefits. It is also a screening tool for many conditions. Due to myths and infodemics about this procedure in the general population of our country, it becomes difficult to do the procedure with poor patient compliance. The aim of this study was that intensive counselling, showing videotapes, and allowing attendants in the endoscopy room improves the outcome in the patients in terms of improved compliance, time taken, and endoscopist assessment regarding ease of the procedure. This study found an approximately equal gender ratio. This finding is consistent with other studies which show that this procedure occurs both in males and females equally.[12,13] Most of the patients were between 36 to 55 years of age in this study. This procedure occurs in all age groups but studies show that most patients are around 50 years.[13-15] The most common comorbidities in our study were diabetes, hypertension, and ischemic heart disease. These findings are similar to another study but they have also reported chronic liver disease as common comorbidity. This may be due to the fact that they included patients from Medical Emergency Department only. And in this study patients coming from outpatient department were included.[15]

This study found that the time taken for this procedure is statistically significant between the intervention and control group (p-value 0.02). Intervention A has been shown to decrease the procedure time. Another study showed that time, pain, and distress are maximum in participants undergoing this procedure for the first time.[16] The tolerance of procedure and insertion of scope showed improvement with counselling, videotapes, and attendants which is statistically different (p-value 0.008 and 0.003 respectively). These findings are similar to another study in which they compared oral information alone with oral and written information combined.[17] Detailed counselling and psychotherapy improve the compliance of patients. When attendants are allowed the patients feel more comfortable.[18]

The strengths of this study are that it is a randomized control trial and have a good sample size. The limitations of this study are that this study included patients from the outpatient department of one tertiary care hospital. This study highlighted the need to intensive counselling of patient regarding the procedure so that he can be made comfortable. This will improve the outcomes of this procedure. Using videotapes with counselling improves the understanding of our population. This can also be done in other procedures to increase patient awareness and understanding.

Conclusion

Extensive counselling, videotapes, and allowing family members to stay in the endoscopy room improves the outcomes of patients in terms of the time of the procedure, tolerated procedure, and endoscopist assessment.

Conflict of interest *None*

Source of Funding *None*

References

1. Lui RN, Wong SH, Sánchez-Luna SA, Pellino G, Bollipo S, Wong MY, et al. Overview of guidance for endoscopy during the coronavirus disease 2019 pandemic. Journal of gastroenterology and hepatology. 2020 May; 35(5): 749-59.
2. Soetikno R, Teoh AY, Kaltenbach T, Lau JY, Asokkumar R, Cabral-Prodigalidad P, Shergill A. Considerations in performing endoscopy during the COVID-19 pandemic. Gastrointestinal endoscopy. 2020 Jul 1;92(1):176-83.
3. Gralnek IM, Dumonceau JM, Kuipers EJ, Lanas A, Sanders DS, Kurien M, Rotondano G, Hucl T, Dinis-Ribeiro M, Marmo R, Racz I. Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. Endoscopy. 2015 Oct;47(10):a1-46.
4. Gayam S. Environmental impact of endoscopy: "Scope" of the problem. Official journal of the American College of Gastroenterology|ACG. 2020 Dec 1;115(12):1931-2.
5. Gupta S, Shahidi N, Gilroy N, Rex DK, Burgess NG, Bourke MJ. Proposal for the return to routine endoscopy during the COVID-19 pandemic. Gastrointestinal endoscopy. 2020 Sep 1;92(3):735-42.
6. Medas R, Ferreira-Silva J, Girotra M, Barakat M, Tabibian JH, Rodrigues-Pinto E. Best Practices in Esophageal, Gastroduodenal, and Colonic Stenting. GE-Portuguese Journal of Gastroenterology. 2022:1-6.
7. Yang YJ. The future of capsule endoscopy: The role of artificial intelligence and other technical advancements. Clinical Endoscopy. 2020 Jul 16;53(4):387-94.
8. Veldhuijzen G, Klemt-Kropp M, sive Droste JS, van Balkom B, van Esch AA, Drenth JP. Computer-based patient education is non-inferior to nurse counselling prior to colonoscopy: a multicenter randomized controlled trial. Endoscopy. 2021 Mar;53(03):254-63.

9. Nelson DB. Infection control during gastrointestinal endoscopy. Journal of Laboratory and Clinical Medicine. 2003 Mar 1;141(3):159-67.
10. Keen T, Brooks C. Principles of gastrointestinal endoscopy. Surgery (Oxford). 2023 Jan 11.
11. ASGE patients - videos (no date) www.asge.org. Available at: https://www.asge.org/home/for-patients/ videos (Accessed: 25 July 2023).
12. Trevisani L, Sartori S, Gaudenzi P, Gilli G, Matarese G, Gullini S, Abbasciano V. Upper gastrointestinal endoscopy: are preparatory interventions or conscious sedation effective? A randomized trial. World journal of gastroenterology: WJG. 2004 Nov 11;10(22):3313.
13. Oluwagbenga OO, Musah Y, Paul O, Olagoke E, Oladipo O, Osisiogu SM, Adenike OO, Banjo OH, Elijah AO, Alex AS. Upper gastrointestinal endoscopy in Idoekiti, Nigeria: a four-year review. Open Journal of Gastroenterology and Hepatology. 2020 Apr 28;3(2):35-.
14. Malghani WS, Malik R, Chaudhary FM, Din AT, Shahid M, Ahmad S, Din AT, Chaudhary SM. Spectrum of endoscopic findings in patients of upper gastrointestinal bleeding at a tertiary care hospital. Cureus. 2019 Apr 29;11(4).
15. Patel KS, Nichkaode PB, Panchabhai SV, Reddy M, Santhan BP, Singh C. Evaluation of persistent upper abdominal pain by upper gastrointestinal endoscopy. International Surgery Journal. 2020 Feb 26;7(3):791-6.
16. Bhattarai S. Clinical profile and endoscopic findings in patients with upper gastrointestinal bleed attending a tertiary care hospital: a descriptive cross-sectional study. JNMA: Journal of the Nepal Medical Association. 2020 Jun;58(226):409.
17. Lauriola M, Tomai M, Palma R, La Spina G, Foglia A, Panetta C, Raniolo M, Pontone S. Intolerance of uncertainty and anxiety-related dispositions predict pain during upper endoscopy. Frontiers in Psychology. 2019 May 15;10:1112.
18. Felley C, Perneger TV, Goulet I, Rouillard C, Azar-Pey N, Dorta G, Hadengue A, Frossard JL. Combined written and oral information prior to gastrointestinal endoscopy compared with oral information alone: a randomized trial. BMC gastroenterology. 2008 Dec;8:1-7.
19. Habsy BA, Hidayah N, Lasan BB, Muslihati M, Fudholi A. The development model of semar counselling to improve the self-esteem of vocational students with psychological distress. International Journal of Emerging Technologies in Learning (Online). 2019;14(10): 132.

Authors Contribution

SL, MN: Conceptualization of Project
SL, HQBS: Data Collection
HQBS: Literature Search
IM, SL, MN: Statistical Analysis
IM: Drafting, Revision
MN: Writing of Manuscript

Frequency and Management Outcome in Gynecological Malignancies

Nazia Shafique,[1] Faiqa Saleem Baig,[2] Gulshan Naheed,[3] Bushra Bano[4]

Abstract

Objective: The study was done to find out the frequency of different gynaecological malignancies, histological types and management outcome of these malignancies.

Material and Methods: This study was conducted in unit III of Obtetrics and Gynecology Department, Jinnah Hospital, Lahore. Duration of study was 2 years from January 2018 to December 2019 and sample size was 81. All the cases presented with gynaecological cancer was analysed retrospectively by reviewing record. Complete data was evaluated in term of frequency of malignancies and their percentages.

Results: The most common site of gynaecological malignancy was cervical 35 cases (43.2%) followed by ovarian 30 cases (37%).Uterine was the 3rd most common tumour with 13 cases (16%).The vulval and vaginal cancers were found to be lowest with 01 case each (1.2%). There was one case of choriocarcinoma (1.2%).

Conclusion: Cervical cancer was the commonest cancer with squamous cell histological type (80%) followed by ovarian cancer of epithelial origin (73.3%).

Keywords: Gynecological Malignancy, Frequency, Cervical Cancer, Ovarian Cancer.

How to cite: *Shafique N, Baig FS, Naheed G, Bano B. Frequency and Management Outcome in Gynecological Malignancies. Esculapio - JSIMS 2023;19(03):337-341*

DOI: https://doi.org/10.51273/esc23.251319316

Introduction

The gynaecological malignancy is the unbounded growth of abnormal cells that derive from the reproductive organs and spread to the surrounding tissues. In United State every six minutes a new case of gynaecological malignancy is diagnosed. Out of every 400 persons (per 100,000 population) who diagnosed with any of more than 100 types of malignancies, 12 % have female reproductive organ associated malignacy.[1]

Female genital tract malignancies are one of the common sites of malignancies in women. The diagnosis of malignancy is always disastrous for the patient and family in term distress that it brings but also morbidity and mortality associated with it The different types of female genital tract lesions are affected by a number of factors such as parity age hormonal status socio-physical activities and diverse pattern of geographical distribution.[2]

1-4. Department of Obstetrics and Gynecology, Jinnah Hospital, Lahore

Correspondence:
Dr. Nazia Shafique, *Senior Registrar, Department of Obstetrics and Gynecology, Jinnah Hospital, Lahore, Pakistan drnaziashafique@gmail.com*

Submission Date: 01-08-2023
1st Revision Date: 15-08-2023
Acceptance Date: 12-09-2023

Gynaecological tumours produce a significant health issue in females as it is associated with high cancer related mortality. These tumours considered around 40% of all cancer incidence and about 30% of all cancer mortality in the world due to an approximate incidence of greater than 3.6 million and mortality more than 1.3 million.[3]

Frequency of gynaecological cancers is different in different countries which depends on different factors as life style, socioeconomic status, background and genetic likelihood. Cervical tumour is the 4th most frequent tumour in women worldwide with approximately 604000 new cases and 342000 mortalities in world in low and middle socio-economic countries.[4] In developed countries with the initiation of advanced screening program and management facilities of pre-malignant cervical lesions there is significant reduction in mortality related to cervical cancer.

Ovarian cancer is most fatal among all gynaecological malignancies. This is due to its insidious presentation along with histological and molecular variance. In England ovarian cancer is the second commonest tumour after uterine malignancy but it leads to more deaths than all other malignancies taken together.[5]

Endometrial malignancy accounts for the major gynaecological malignancy of developed countries where prevalence is four times higher than in developing countries.[6] This increase is associated with obesity, increase life expectancy and use of tamoxifen for breast cancer.

Material and Methods

This retrospective study was carried out for two (2) years from January 2018 to December 2019 in Obstetrics and gynaecology Unit III Jinnah Hospital, Lahore. All the patients with confirmed diagnosis of malignancy by histopathology were incorporated in this study. All the patients who have taken medical treatment. The cases with benign tumors. Treated breast cancer patients on medical treatment. During the study period a total of 1548 patients were admitted in gynaecology ward. Quantitative method was used for sampling. Patients were thoroughly evaluated by detailed history, general physical examination and systemic examination Baseline investigations and ultrasound was done in all patients. Tumour markers, CT scan MRI imaging and IV urogram was done in patients where needed. Surgery was carried out on 1241 patients taking informed consent for surgical procedure, explaining need for surgery and permission was taken to use data for scientific research. Staging was done clinically, pre-operatively and histologically according to FIGO guidelines.

Results

During the period of two (2) years 81 cases of genital tract tumours were recorded. The proportion of cervical tumours was the highest 35 (43.2%) among these with ovarian 30 (37%) and uterine cancer 13 (16%) being second and third respectively. The mean age of cervical cancer cases was 54 years. Most patients presented with irregular vaginal bleeding, vaginal discharge and postcoital bleeding. All patients were underwent examination under anaesthesia and cervical biopsy was taken for staging and histopathological diagnosis. Most of the patients were presented in advanced stage as 42.8% presented with stage 3 followed by 37.1% with stage-2, stage 1 in 14.2 % and stage 4 in 11.4 % cases. Histologically 80 % tumours were squamous cell carcinoma and 20% were adenocarcinoma. Only 5 patients with stage-1 (14.2 %) were underwent radical surgery. Patients with disease beyond stage-1 were managed with radio chemotherapy. Ovarian cancer was the 2nd commonest tumour. The mean age of cases with ovarian cancer was 43 years. Ovarian cancer mostly presented with abdominal distension and mass abdomen. Patients with ovarian cancer presented in advanced stage (FIGO stage 3 & 4). Histologically 73.33% were epithelial 16.66 % germ cell and 6.66% were sex cord stromal tumour. Out of 22 patients with epithelial ovarian tumour, in 16 patients exploratory laparotomy was done and had TAH / BSO and omentectomy. Tumour debulking surgery was done in remaining cases. Patients with germ cell tumours were young so fertility sparing surgery (unilateral oophorectomy and omentectomy) was done and postoperatively chemotherapy was given to these patients. The mean age at presentation was 50 years in patients with endometrial cancer. It was seen in 13 patients. Main presenting symptom was abnormal vaginal bleeding. 10 patients (76.92 %) were presented with stage 1 and 2. Histologically 84.61 % were adenocarcinoma and there was one case of leiomyosarcoma & fibrosarcoma each. Early stage tumour was treated with radical surgery followed by radiotherapy. Advanced stage (stage 3 & 4) patients were managed with radiotherapy. Cancer of vulva was seen in one case aged 62 years with stage 2 non-keratinized squamous cell carcinoma. Patient was presented with itching on the vulva. Vaginal cancer was found in one patient at 55 years as stage 3 squamous cell carcinoma. She had complaint of vaginal bleeding and frequency of micturition on presentation. There was one patient of choriocarcinoma presented with intractable bleeding so hysterectomy was done to save the life of patient.

Table 1: *There was one case each of cancer vulva vagina and choriocarcinoma.*

Malignancy	Patient No	Percentage
Cervical	35	43.2
Ovarian	30	37
Endometrial	13	16
Vulva	1	1.2
Vagina	1	1.2
Choriocarcinoma	1	1.2

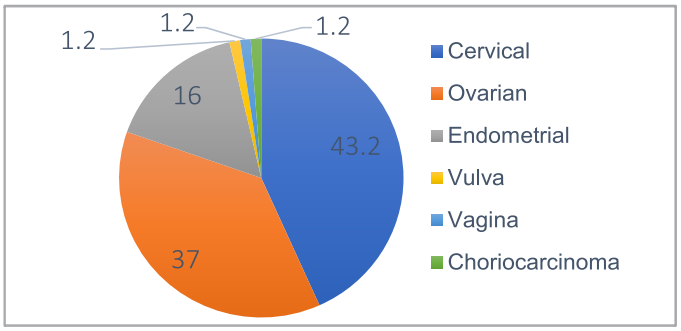


Fig-1: *Frequency of malignant tumors of different organs of female reproductive tract*

Table 2: *The histological subtypes are shown.*

Site	Histological Types	N (%)
Cervical	Squamous cell carcinoma	28(34.5)
	Adenocarcinoma	7(8.6)
Ovarian	Epithelial tumors	22(27.1)
	Germ cell tumors	5(6.1)
	Sex Cord Stromal tumors	2(2.4)
Uterine	Adenocarcinoma	11(13.7)
	Leiomyosarcoma	1(1.2)
	Fibrosarcoma	1(1.2)
Vaginal	Squamous Cell Carcinoma	1(1.2)
Vulval	Squamous Cell Carcinoma	1(1.2)
GTT	Choriocarcinoma	1(1.2)

Table 3: *Mean Age Distribution of Malignant Tumors.*

Malignancy	Mean Age (Years)
Cervical	54
Ovarian	43
Endometrial	50
Vulva	62
Vagina	54
Choriocarcinoma	22

Discussion

Gynecological malignancies are associated with significant female morbidity and mortality worldwide. Absence of proper data about population is main issue in developing countries like Pakistan that why accurate incidences cannot be calculated. In these situations relative frequencies are used as a tool to measure tumour incidence. There is high frequency of genital tract malignancies in Pakistan but awareness about this subject is lacking in population. Almost half of general population consist of female so the frequency of cancer pattern of their reproductive organs was analysed with incidence, preventive and treatment measures to aware gynaecologist.[7]

Cervical cancer is the most common malignancy of the female reproductive tract in this study. Worldwide cervical cancer is the 2nd commonest cancer and the 3rd major cause of death among women. Globally about 500,000 new cases of invasive cervical cancer are diagnosed per year with 270,000 women deaths. Around 80% of deaths associated with cervical cancer occur in developing countries like Pakistan.[8]

Cervical cancer is the commonest in this study which is consistent with Global Cancer Observatory[9] a study conducted in Nigeria[10] and among women in India and adjacent countries.[11] It is the most common tumour in United State too but the 2nd commonest in Europe.[12] In contrast Institutional data from Pakistan has shown that ovarian tumour is the most prevalent tumour among gynaecological malignancies.[13]

Squamous cell carcinoma was the commonest histological finding in most of cases which is consistent with a study conducted in Karachi.[14] The mean age at presentation of cervical carcinoma was 54 years in this study which is similar to the findings mentioned in Benin (51.5 years).15 Cervical cancer constitute 43.3% of female genital tract malignancies in this study which is consistent with results from a similar study Kano (48.6%) (Yakasai et al., 2013).[16] Cervical cancer incidence is more in underdeveloped countries and around 50% of patients were reported in late stage of malignancy with poorly and moderately differentiated types. Most of the patients with cervical cancer presented with some form of bleeding as irregular vaginal bleeding, heavy menstrual bleeding, intermenstrual bleeding or postcoital bleeding. Preinvasive disease is usually asymptomatic and early invasive disease may or may not be associated with symptoms. So with the early detection of disease by cytology smear screening test, cervical carcinoma can be prevented and survival can improve when compare with other female reproductive organ malignancies.[17] Ovarian tumour was the 2nd commonest cancer in this study. This study was in accordance with study by Jeph et al,.[11] showing ovarian the 2nd commonest tumour. Most ovarian tumours arise from surface epithelium. Epithelial tumours is most common histological subtype in our study which is consistent with a study conducted in Peshawar.[18] In present study ovarian cancer was seen in 37% cases against 48% found by Manzoor H et al in a study conducted in Pakistan.[19] Over the last decade dietary habits of our population have extremely changed in combination with decreased physical activity leading to weight gain in our female population. Obesity is associated with increasing risk of ovarian cancer.[20] Ovarian tumour has poor prognosis of all tumours of female genital tract tumour due to non-specific symptoms in early stage and deep seated location of ovaries. It leads to late presentation of patient to the hospital and diagnosis is delayed. However, reduction in its incidence by the use of oral contraceptive pills have been reported in some studies.[21] The incidence of endometrial cancer is higher in developed countries and reported less in Asia and Africa.[21] It accounted for 16% and third most common gynaecological tumour in this study but lower frequency reported in some other studies and commonest histological subtype found was adenocarcinoma in

endometrial cancer.[22] The vaginal carcinoma is usually rare and included one case in this study. Histologically, it was found as squamous cell carcinoma. In extreme age groups with two peak incidence, irregular vaginal bleeding is significant feature.[23] Carcinoma of vulva is a disease of old age and only one case was reported in our study. Its commonest complication is pruritus vulvae24. Incidence of both these is low in our local population and it may be due to better hygiene of local area practiced according to religion.

Conclusion

The retrospective study of female reproductive organ malignancies revealed that cervical carcinoma was the commonest malignancy followed by ovarian cancer. Endometrial cancer was the 3rd most common cancer in this study. Late presentation was seen in majority of all cancers.

Conflict of Interest	*None*
Funding Source	*None*

References

1. Pal S, Incidence of Gynecological Cancers, US Pharm. 2014; 39(9):11.
2. Dalsaniya M, Choksi TS, Shrivastava A, Agnihotri AS. Retrospective and prospective histopathological study of tumors and tumor-like lesions of female genital tract. Int J Med Sci Public Health. 2015;4(11):1602-04.
3. Sung H, Ferlay J, Siegel RL, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA a Cancer J Clin. 2021;71(3):209–249. doi: 10.3322/caac.21660 [PubMed] [CrossRef] [Google Scholar]
4. Stelzle D, Tanaka LF, Lee KK, et al. Estimates of the global burden of cervical cancer associated with HIV. Lancet Glob Health 2020; published online Nov 16. DOI:S2214-109X(20)30459-9.
5. Doufekas K, Olaitan A. Clinical epidemiology of epithelial ovarian cancer in the UK. International journal of women's health. 2014; 6:537.
6. Ferlay J, Autier P, Boniol M, Heanue M, Colombet M, Boyle P, Estimate of the cancer incidence and mortality in Europe in 2006. Annals of oncology. 2007 Mar 1; 18 (3):581-92.
7. Dhakal HP, Pradhan M. Histopathological pattern of gynecological cancers. J Nepal Med Assoc. 2009; 48: 301- 05.
8. Cervical cancer alarm in Pakistan. Internewsreport (Mevarick Pakitancom). Saturday 13Dec 2014
9. Ferlay J, Ervik M, Lam F, et al. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available at: https://gco.iarc.fr/today, (Accessed on: February 02, 2021).
10. Okeke TC, Onah N, Ikeako LC, Ezenyeaku C. The frequency and pattern of female genital tract malignancies at the universities of Nigeria Teaching Hospital, Enugu, Nigeria. Ann Med Health Sci Res 2013; 3:345-8.
11. Jeph V, Adreena, Garg PK, Mahabole K. Incidence of different malignancies in female genital tract: study in 504 women in rural population. Int J of Contemporary Med Res. 2017;4(1):284-6.
12. Tidy J, Seckl M, Hancock BW,on behalf of Royal College of Obstetrics and Gynaecology. Management of Gestational Trophoblastic Diseases. JOG 2021; 128: e1-e27.
13. Tabassum S, Masood AI, Khakwani M. Pattern of gynecological malignancies in south Punjab Region of Pakistan: An overview of 5 years. Professional Med J 2021; 28(1): 90-5.
14. Afridi HK, Zahid NA. Frequency of gynecological malignancies in a Tertiary Care Centre in Karachi, Pakistan. Liaqat National J 2021;3(1):3-6.
15. Okoye CA. Histopathological Pattern of Cervical Cancer in Benin City, Nigeria. The Journal of Medical Investigation Practice. 2014; 9:147- 150.
16. Yakasai IA, Ugwa EA, Otubu J. Gynecological malignancies in Aminu Kano Teaching Hospital Kano: A 3-year review. Nigerian Journal of Clinical Practice. 2013; 16(1):63-66.
17. D'alo D, Stracci F, Cassetti T, Scheibel M, Pascucci C, La Rosa F. Recent trends in incidence, mortality and survival after cancer of the female breast and reproductive organs. Umbria, Italy: 1978-2005. Eur J Gynaecol Oncol. 2010; 31:174-8
18. Sumaira Yasmin, Aiman Yasmin, Mohammad Asif. Clinico histological pattern of ovarian tumours in Peshawar region. J Ayub Med Coll 2008; 20(4):11-13.
19. Manzoor H, Naheed H, Ahmad K, Iftikhar S, Asif M, Shuja J, Sultan N, Ali I, Inayatullah S, Khan YH. Pattern of gynaecological malignancies in south western region of Pakistan: An overview of 12 years. Biomedical reports. 2017 Nov 1; 7(5):487-91.
20. Liu Z, Zhang TT, Zhao JJ, Qi SF, Du P, Liu DW, Tian QB. The association between overweight, obesity and ovarian cancer: A meta-analysis. Japanese journal of clinical oncology. 2015 Oct 21; 45(12):1107-15.
21. Medard ML, Ostrowska L. Combined oral contraception and the risk of reproductive organs cancer in women. Ginekol Pol. 2007; 78:637-41.

22. Stewart BW, Kleihues P. Cancers of female reproductive tract. In;World cancer report. IARC Press, Lyon 2003.
23. Seleye-Fubara D, Uzoigwe SA, Akani CI. Pathology of vaginal cancers in Port Harcourt, Nigeria. A 14-year study. Niger J Clin Pract. 2007; 10:330-4.
24. Zawislak AA, Price JH, Dobbs SP, McClelland HR, McCluggage WG. The management of vulval intraepithelial neoplasia in Northern Ireland. Int J Gynecol Cancer. 2006; 16:780-5.

Authors Contribution

SN: Conceptualization of Project
SFB: Data Collection
NG: Literature Search
BB: Statistical Analysis
SN, BB, NG: Drafting, Revision
SN, BB, SFB: Writing of Manuscript

A Comparison of Fine Needle Aspiration Cytology (FNAC) with Tru-cut Biopsy in Breast Lump Patients Taking Histopathology as Gold Standard

Maliha Javaid Butt,[1] Usman Ali Rahman,[2] Iftikhar Ahmed,[3] Ch. Muhammad Atif Niaz,[4] Muhammad Adil Iftikhar,[5] Humaira Yousaf [6]

Abstract

Objective: To compare sensitivity and specificity of FNAC with Tru-cut biopsy diagnosis of breast lump patients.

Material and Methods: It was a cross sectional study conducted at surgical department of Gulab Devi Teaching Hospital Lahore from January 2022 to December 2022. A total of 122 patients presented in surgical OPD with complaints of breast lump of size between 2cm to 4 cm were included in the study with their consent. All these patients underwent FNAC, true cut biopsy and excisional biopsy. Sensitivity and specificity of both FNAC and true cut were calculated.

Results: Mean age of patients included in this study was 35.4 ± 14.6 years. The sensitivity and specificity of FNAC in benign breast diseases was 98.2% and 74.2% respectively while in malignant diseases it was 72.7% and 98.8% respectively (p-value 0.00). The sensitivity and specificity of Tru-cut in breast diseases was 100% and 97.1% respectively while in malignant diseases it was 97% and 98.2% respectively (p-value 0.00).

Conclusion: Breast lump is more common in females as compared to males. Breast carcinoma is more common in old females and benign breast diseases is common among young females. Tru-cut biopsy is better than FNAC in diagnosis of both benign and malignant lesions of breast lumps.

Keywords: Breast lump, FNAC, TRU CUT

How to cite: *Butt MJ, Rahman UA, Ahmed I, Niaz CMA, Iftikhar MA, Yousaf H. A Comparison of Fine Needle Aspiration Cytology (FNAC) With Tru-cut Biopsy in Breast Lump Patients Taking Histopathology as Gold Standard. Esculapio - JSIMS 2023;19(03):342-345*

DOI: https://doi.org/10.51273/esc23.251319317

Introduction

A common issue encountered in surgical practice among female patients is the presence of a lump in the breast. Breast lumps can range from simple cysts to benign tumors and malignancies. The diagnosis can be made more accurate by combining preoperative history, clinical examination and tests which includes FNAC, TRU CUT biopsy and ultrasound/mammography depending on age of patient.[1] The breasts are present on anterior thoracic wall ranging from clavicle to fifth intercostal space. They are more prominent in females as compared with males. In females, breasts consists of mammary glands. Each breast has 15 to 20 lobes. These lobes looks like spokes of wheel as they surround the nipple. Each lobe contains lobules which are bulblike glands present at the end to produce milk. Connective or fibrous tissue holds glandular and fatty breast tissue in place. Benign breast diseases affect women at various stages of their lives, from early reproductive years to the postmenopausal period. There is a growing prevalence detected through population-based mammographic screening. Benign breast diseases include epithelial proliferation with atypia or without atypia, fibroadenomas, papilloma, adenosis, calcifications, fluid-filled cysts, and fibrocystic changes. Several factors, including hor-

1. Department of Surgery, Services Hospital, Lahore
2-4. Department of Surgery, Al-Aleem Medical College Lahore
5. Department of Pediatric Surgery, KEMU, Lahore
6. Department of Anatomy, Al-Aleem Medical College, Lahore

Correspondence:
Dr. Maliha Javaid Butt ; *Senior Registrar Surgery; General Surgery Unit III, Services Hospital, Lahore, Services Hospital Lahore*
Email: mjb_98@yahoo.com

Submission Date: 01-08-2023
1st Revision Date: 15-08-2023
Acceptance Date: 13-09-2023

monal factors, early onset of menstruation, abnormalities in menstrual cycles, nulliparity, old age at birth of first child, use of oral contraceptives pills, use of hormone replacement therapy and higher body mass index (BMI) after menopause have been linked to an increased risk of breast cancer. Conversely, longer duration of breast-feeding and higher BMI before menopause have been associated with a decreased risk.[2] Breast FNAC (Fine Needle Aspiration Cytology) is a minimally invasive diagnostic technique that is often used instead of an open biopsy. It is cost-effective, easy to perform, and provides quick results. While FNAC can distinguish between benign and malignant lesions, it cannot differentiate between invasive and non-invasive breast cancer. Open surgical biopsy/histopathology is still considered the standard for diagnosing detectable breast lesions. The gold standard for definitively assessing breast lumps is a triple assessment. However, FNAC has drawbacks such as pain and the risk of bleeding. It can also potentially mask radiological assessments when performed before mammography. Additionally, there may be cases where the aspirate does not contain enough cells for cytological examination, making it inadequate for diagnosis. In such cases, Tru-cut biopsies can be performed to address the issue. Tru-cut biopsies provide sufficient tissue for a conclusive histological diagnosis and can differentiate between invasive cancer and carcinoma in situ, especially when FNAC yields insufficient samples but suspicious ultrasound and/or mammography findings are present, including breast lesions with micro calcifications. The availability of tissue banking specimens from tru-cut biopsies is immensely helpful for research purposes. Tru-cut biopsy serves the main purpose of providing a clear pre-operative diagnosis of breast lesions and can be used as an alternative forensic method when FNAC fails to provide a diagnosis[3]. The objective of this study was to compare sensitivity and specificity of FNAC with tru-cut biopsy in diagnosis of breast lump patients.

Material & Methods

It was a cross sectional study conducted at surgical department of Gulab Devi Teaching Hospital Lahore from January 2022 to December 2022. This study was conducted with approval of ethical review board. A total of 122 patients presented in surgical OPD with complaints of breast lump of size between 2cm to 4 cm were included in the study with their consent. All patients with breast lump less than 2 cm and more than 4cm were excluded from the study. Similarly patients with recurrent disease were also excluded from the study. All these patients underwent FNAC, true cut biopsy of breast lump followed by excision of lump or mastectomy. Specimen taken after surgical procedure was also sent for histopathology to compare its results with FNAC and tru-cut biopsy reports. All the data was collected on prescribed proforma. Sensitivity and specificity of both FNAC and tru-cut was calculated through SPSS 24. All quantitative data is presented in the form of means and standard deviation while qualitative data is presented in the form of frequency tables. A P-value of less than 0.05 is taken as significant.

Results

Mean age of patients included in this study was 35.4 ± 14.6 years with range from 15 to 70 years. The mean age of patients having benign breast diseases was 26.0 ± 12.1 years while patients having malignant breast disease had mean age of 46.1±9.7 years. Mean weight of patients included in this study was 55.8 ± 13.4 kg. Out of these 122 patients only 04 (3.2%) were male while 118 (96.8%) were female. In these 122 patients 74 (60.7%) had lump in right breast while 48 (39.3%) had lump in left breast. Out of these 122 patients 59 (48.4%) were diagnosed with fibroadenoma, 57 (66.7%) with invasive ductal carcinoma, 6 (4.9%) with paget's disease. Incidence of benign diseases was more in right breast as compared to left breast with 52.7% vs 47.3% respectively but incidence of malignant diseases was more on left breast as compared to right breast with 64.5% vs 35.5% respectively (p-value 0.06). The sensitivity and specificity of FNAC in benign breast diseases was 98.2% and 74.2% respectively while in malignant diseases it was 72.7% and 98.8% respectively (p-value 0.00). The sensitivity and specificity of tru-cut in breast diseases was 100%

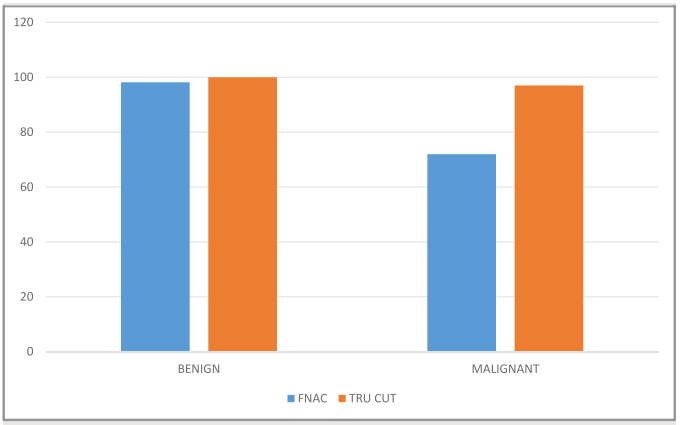


Fig-1: *Comparison of sensitivity of fnac with trucut in benign and malignant breast diseases.*

and 97.1% respectively while in malignant diseases it was 97% and 98.2% respectively (p-value 0.00). The mean procedure time for FNAC was 3.9 ± 0.95 minutes while for TRU CUT it was 16.7 ± 2.97 minutes. The complication rate in tru-cut was 4.1% as compared to FNAC 2.1% in our study. The most common complication in tru-cut was bleeding (60%) while in FNAC skin infection (100%) was the most common complication.

Discussion

Breast lump is most common presentation in female as compared to male patients. In our study only 3.2% patients were male who presented with complaint of breast lump as compared to 96.8% female. This is according to national and international data.[4] According to Gucalp A et al men breast tumors are only 1% of all the reported breast cancer world wide.[5] In our study incidence of breast cancer in men was zero.

In our study prevalence of malignant breast diseases was more as compared to benign diseases. According to our study 48.4% patients presented with benign lump most commonly fibroadenoma as compared to 51.6% malignant diseases with most common invasive ductal carcinoma followed by paget's disease of breast. According to previous national data the incidence of breast cancer in patients breast lump was 24.06%.[6] In our study this incidence is twice of the documented data because of many reasons which includes illiteracy in population, no awareness about disease, social and religious constraints. In our part of world females do not have any knowledge about self-examination and do not report to hospital for breast lump until it is complicated. The incidence of breast cancer is common among old age group. In our study mean age of patients having malignant breast disease was 46.1 ± 9.7 years as compared to 26.0 ± 12.1 years in patients having benign breast diseases. Our results were accordance to national and international data according to which breast cancer is most common among old age women with maximum incidence between 50-64 years of age.[7,8]

The sensitivity and specificity of FNAC for benign breast diseases is more than that of malignant diseases. In our study sensitivity and specificity for benign diseases in FNAC is 98.2% and 74.2% as compared to 72.7% and 98.8% in malignant diseases respectively. The documented sensitivity of FNAC for benign breast diseases in national and international literature is 98.8% which is according to our data.[9,10] Similarly specificity for malignant diseases is between 70-95% according to data.[11,12] In our study it was 72.7% which is within this range.

The sensitivity and specificity of tru-cut for benign breast diseases is more than that of malignant diseases. In our study sensitivity and specificity for benign diseases in tru-cut is 100% and 97.1% as compared to 97% and 98.2% in malignant diseases respectively. The documented sensitivity of tru-cut biopsy in benign and malignant diseases is between 87-99%.[12,13] The sensitivity of FNAC and tru-cut for benign diseases is almost equal (98.2% vs 100%) in our study while there was major difference in sensitivity between FNAC and tru-cut for malignant diseases (72.7% vs 97%). The procedural time for FNAC is short (3.9 ± 0.95 minutes) as compared to tru-cut (16.7 ± 2.97 minutes) as FNAC is less invasive procedure as compared to tru-cut biopsy. According to our study complication rate was more in tru-cut (4.1%) as compared to FNAC (2.1%). Most common complication encountered in FNAC was skin infection (100%) as compared to hemorrhage (60%) in tru-cut biopsy. These are the most common documented complications in literature.[14]

Conclusion

Breast lump is more common in females as compared to males. Breast carcinoma is more common in old females and benign breast diseases is common among young females. Tru-cut biopsy is better than FNAC in diagnosis of both benign and malignant lesions of breast with minimum complication rate.

Conflict of Interest *None*

Funding Source *None*

Reference

1. Ajitha M, Babu V, Singh A. Comparative study of fine needle aspiration cytology, trucut biopsy and final histopathological examination in breast lumps. Int J Biomed Res. 2017;8(3):34-5.
2. Bukhari MH, Arshad M, Jamal S, Niazi S, Bashir S, Bakhshi IM. Use of fine-needle aspiration in the evaluation of breast lumps. Pathology research international. 2011;2011.
3. Shashirekha CA, Singh R, Ravikiran HR, Sreeramulu PN, Prasad K. Fine needle aspiration cytology versus trucut biopsy in the diagnosis of breast cancer: a comparative study. International Surgery Journal. 2017 Oct 27;4(11):3718-21.

4. Gucalp A, Traina TA, Eisner JR, Parker JS, Selitsky SR, Park BH, Elias AD, Baskin-Bey ES, Cardoso F. Male breast cancer: a disease distinct from female breast cancer. Breast cancer research and treatment. 2019 Jan 15; 173: 37-48.
5. Pangotra DM, Aithmia DR, Atri DS. Cytomorphological spectrum of various breast lumps using FNAC as diagnostic modality. Int J Clin Diagn Pathol. 2022;5(3): 05-11.
6. Abbas AK. The incidence of malignancy in breast lumps in females: A prospective population study. Pakistan Journal of Medical & Health Sciences. 2021 Jul; 15(7): 2371-3.
7. Zaheer S, Shah N, Maqbool SA, Soomro NM. Estimates of past and future time trends in age-specific breast cancer incidence among women in Karachi, Pakistan: 2004–2025. BMC public health. 2019 Dec;19:1-9.
8. Sripan P, Sriplung H, Pongnikorn D, Virani S, Bilheem S, Chaisaengkhaum U, Maneesai P, Waisri N, Hanpragopsuk C, Tansiri P, Khamsan V. Trends in female breast cancer by age group in the Chiang Mai population. Asian Pacific Journal of Cancer Prevention: APJCP. 2017; 18(5): 1411.
9. Ogbuanya AU, Anyanwu SN, Iyare FE, Nwigwe CG. Fine Needle Aspiration Cytology for Diagnosis of Benign Breast Disease in A Resource-Limited Setting. Orient Journal of Medicine. 2020 Jun 5;32(1-2):28-37.
10. Kumar KS, Anbalagan P, Udhayasankar V. Clinical study of benign breast diseases. Evolution Med. Dent. Sci. 2017 Jan 5;6(02):132-5.
11. Mohanty SS. Diagnostic accuracy of fine needle aspiration cytology (FNAC) in detecting breast malignancy with the clinical location of lumps. The Breast Journal. 2020 Dec;26(12):2395-9.
12. Wang M, He X, Chang Y, Sun G, Thabane L. A sensitivity and specificity comparison of fine needle aspiration cytology and core needle biopsy in evaluation of suspicious breast lesions: A systematic review and meta-analysis. The breast. 2017 Feb 1;31:157-66.
13. Krishna CM, Narendra MC, Mutheeswaraiah Y, Prakash GV, Nagamuneiah S, Rao BS, Sravya S. Evaluation of Role of Tru-Cut Biopsy in the Diagnosis of Clinically Palpable Breast Lumps. Journal of Evolution of Medical and Dental Sciences. 2020 Apr 13;9(15):1281-6.
14. Amarnath N, Kumar SV, Babu CG. Role of Ultrasound and Tru-Cut Biopsy in Breast Lumps: A Contemporary Review. Annals of SBV. 2021 Jul;10(2):43.
15. Rikabi A, Hussain S. Diagnostic usefulness of tru-cut biopsy in the diagnosis of breast lesions. Oman medical journal. 2013 Mar;28(2):125.

Authors Contribution

UAR, MAI: Conceptualization of Project
MJB, CMAN: Data Collection
IA, HY: Literature Search
UAR, MAI: Statistical Analysis
UAR, MAI: Drafting, Revision
UAR, MAI: Writing of Manuscript

A Comparative Analysis of 4% Chlorhexidine Versus Methylated Spirit as Prophylaxis of Omphalitis and Sepsis in Newborns

Mehwish Akhtar,[1] Lubna Riaz,[2] Asfand Tariq,[3] Araiz Mansoor Naji,[4] Ahmad Zunair Wasim,[5] Maria Javed[6]

Abstract

Objective: To compare the effectiveness of 4% chlorhexidine and methylated spirit in newborns for prevention of omphalitis and neonatal sepsis.

Material and Methods: This open label randomized control trial was carried out in neonatal unit of Shaikh Zayed Hospital Lahore from 1st September 2020 to 30th August 2021. After meeting the inclusion criteria, 300 neonates were enrolled. In group A 4% chlorhexidine was applied for cord care and in group B methylated spirit was used. Neonates were followed till 10th day of life, none was lost to the study. Careful examination was done for cord separation and for any signs of omphalitis or sepsis.

Results: In Chlorhexidine group omphalitis was present in 56(37.3%) patients and in Methylated spirit group 66(44%) patients had omphalitis (p-value=0.240). In Chlorhexidine group 36(24%) patients while in Methylated spirit 50(33.3%) developed sepsis (p-value=0.074).

Conclusion: Methylated spirit and 4% chlorhexidine are equally effective in newborns for prevention of omphalitis and neonatal sepsis.

Keyword: Omphalitis, Neonatal Sepsis, 4% Chlorhexidine, Methylated Spirit

How to cite: *Akhtar M, Riaz L, Tariq A, Naji AM, Wasim AZ, Javed M. A Comparative Analysis Of 4% Chlorhexidine Versus Methylated Spirit as Prophylaxis of Omphalitis and Sepsis in Newborns. Esculapio - JSIMS 2023;19(03):346-350*

DOI: https://doi.org/10.51273/esc23.251319318

Introduction

Neonatal sepsis in one of the leading causes of death in neonates in developing countries. Infection of the umbilical cord often leads to infection in the blood. WHO recommends 4% chlorhexidine to prevent omphalitis and neonatal sepsis.[1] In Pakistan we use methylated spirit for prophylaxis of omphalitis as 4% chlorhexidine is not available and expensive to use. Some commercial gels containing 2% chlorhexidine are available, but these are not as effective as methylated spirit.

Chlorhexidine gel is an antiseptic agent with broad-spectrum bactericidal and bacteriostatic properties effective against gram-negative bacteria and fungi with rapid pathogen killing rates. Methylated spirit on the other hand is both bactericidal, mycobactericidal, fungicidal and viricidal.[2-5] In Pakistan Staphylococcal aureus is common pathogen in umbilical discharge. Some low cost prevention therapy should be used. Methylated spirit is commonly used for cord care. A study was conducted to explore about cord care practices in African setting which showed that 73.2% respondents consider methylated spirit as most important agent for cord care.[6]

Chlorhexidine is available in different concentrations for antiseptic purpose. Efficacy of all concentrations is comparable but 4% chlorhexidine concentration is more effective in inhibiting organism's flora as compared to 2% chlorhexidine. Since then, multiple studies were done to compare methylated spirit and 4% chlorhexidine. Methylated spirit is equally safe where 4% chlorhexidine is unavailable.[7] In Pakistan 57% deaths occur in neonatal period. Pakistan has highest neonatal mortality rate of 42 per 1000 live births.[8] In developing countries

1 *Department of Pediatrics Shaikh Zayed Hospital Lahore*
2 *Rashid Latif Medical College Lahore*

Correspondence:
Dr Lubna Riaz, *Head of Department Pediatrics Shaikh Zayed Medical Complex Lahore ; Lubnariaz15@gmail.com,*

Submission Date: 08-08-2023
1st Revision Date: 22-08-2023
Acceptance Date: 09-04-2023

neonatal sepsis is aggravated by home deliveries, antibiotic resistance and less medical staff. The most important way to decrease mortality and morbidity due to infections is prevention at an early stage.[9] Various antiseptics used in neonatal intensive care units include chlorhexidine, alcohol, iodine, hexachlorophene & octenidine. Each agent having its own advantages and adverse effects.[10] However best antiseptic is yet to be determined.[11] WHO recommends application for 4 percent chlorhexidine in high neonatal mortality area while methylated spirit is commonly used agent for cord care.[12] One study conducted shows that applying chlorhexidine on cord in neonatal intensive care unit decreases mortality rate and decreases time of separation of cord.[13]

Methylated spirit and chlorhexidine both have comparable efficacy and can be used in areas of non-availability of chlorhexidine and whenever chlorhexidine is not safe to use as in very preterm neonates. In Pakistan there is no population based study published on this issue this study aimed to compare the effectiveness of methylated spirit and 4% chlorohexidine from prevention of omphalitis and neonatal sepsis. This study will help to establish the use of methylated spirit in prevention of omphalitis and neonatal sepsis at low price and easy availability.

Material & Methods

It was an open label randomized controlled trial done at the Neonatology unit, Department of Pediatrics, Shaikh Zayed Hospital, Lahore, IRB: SZMC/ IRB/ INTERNAL/MD/130/19, for a period of 12 months from 1st September 2020 to 30th August 2021. The hypothesis was methylated spirit is equally effective as 4% chlorhexidine in preventing omphalitis and sepsis in neonate. 300 newborns were included with simple random sampling by lottery method in study with 150 newborns in each group with confidence interval of 95% and margin of error 5%. Randomization was done by computer software which automatically generated numbers to the participants in an allocation ratio of 1:1 to each group, it helped to remove the selection bias. Sample size was calculated using Raosoft sample size calculator. Assumption for sample size estimation was the hypothesis test for difference of two proportions (two sided test). The estimated sample size is sufficient to detect the difference of 20% among the two groups at significance level 5% and power of study 90%. The estimated sample size was 150 for each group. Trial registration number NCT: 06002295 after approval from hospital ethical committe, neonates fulfilling inclusion and exclusion criteria were selected. Term neonates of either gender born via cesarean section or spontaneous vaginal delivery at Shaikh Zayed Hospital were included. After taking informed consent of parents. Antiseptic agent started from 1st day of life & continued up to 10 days without missing dose. Newborns with congenital defects or cord anomalies, Laboratory or clinical evidence of sepsis, preterm newborns having very low birth weight <1.5 kg. Any evidence of asphyxia during birth were excluded. Full instruc-tions to avoid confounding variables like maintaining temperature, hygiene of newborn, frequent diaper change, avoidance of herbal tonics and cow milk were given to mothers.

In group "A" mothers were advised the topical application of 4% chlorhexidine generously over cord along with base of cord stump and surrounding skin thrice a day. In group "B" clean cotton swab dipped in methylated spirit was used to clean cord along with cord clamps and base thrice a day. Mother of both groups were advised to report after three days or immediately if the baby developed fever, redness or discharge of cord till 10 days of life. On each visit careful examination was done for cord separation and any signs of omphalitis or sepsis. Primary outcome measure was omphalitis which was characterized by locally inflamed cord. Secondary outcome measure was sepsis which was characterized by signs and symptoms such as fever, reluctance to feed, respiratory difficulty, irritability. Treatment success was labelled if there was no evidence of omphalitis or sepsis. If omphalitis or evidence of sepsis was present, the patient was treated as per hospital protocol. Data was collected according to proforma.

Data was entered in SPSS v.23.0 and was analyzed through it. The numeric variables like birth weight and gestational age at birth were presented as mean ± standard deviation, while the categorical variables like gender of the neonate, omphalitis and sepsis were presented as frequency (%). Both groups were compared for omphalitis and sepsis by using the chi-square (χ^2) test. P-value ≤ 0.05 was kept as significant. Data was stratified for gender of the neonate, birth weight and gestational age at birth to deal with the effect modifiers. Post-stratification, Chi-Square test was applied to compare both groups for omphalitis and sepsis in each strata. P-value ≤ 0.05 was kept as significant.

Results

A total of 300 patients participated in this study and all

completed the follow-up. There were 141 (47%) male neonates and 159 (53%) female neonates, giving a male to female ratio of 0.8:1. These patients were divided into two groups. Group A patients were treated with chlorhexidine and group B patients with methylated spirit. In group A, 63 (42%) patients were male and in group B 78 (52%) patients were male, rest was females. Overall omphalitis was present in 122(40.67%) patients while sepsis was present in 86(28.67%) patients. In group A, the omphalitis was present in 56(37.3%) patients and in group B the omphalitis was present in 66 (44%) patients (p-value=0.240). In group A, the sepsis was present in 36(24%) patients and in group B the sepsis was present in 50(33.3%) patients (p-value=0.074). In the study, most common sign of sepsis was respiratory distress, followed by irritability, hypotension, jaundice and apnea. There was statistically no significant difference in the two groups, i.e. p-value=0.903.

Table 1: *Comparison between study groups.*

Outcome		Study Groups		Total	p-value
		A	B		
Gender	Male	63	78	141	0.083
		42.00%	52.00%	47.00%	
	Female	87	72	159	
		58.00%	48.00%	53.00%	
Omphalitis	Present	56	66	122	0.24
		37.30%	44.00%	40.70%	
	Absent	94	84	178	
		62.70%	56.00%	59.30%	
Sepsis	Present	36	50	86	0.074
		24.00%	33.30%	28.70%	
	Absent	114	100	214	
		76.00%	66.70%	71.30%	
Signs and symptoms	Jaundice	3	11	14	0.903
		8.30%	22.00%	16.30%	
	Respiratory Distress	14	14	28	
		38.90%	28.00%	32.60%	
	Hypotension	9	7	16	
		25.00%	14.00%	18.60%	
	Apnea	0	2	2	
		0.00%	4.00%	2.30%	
	Irritability	10	16	26	
		27.80%	32.00%	30.20%	

Group A = Chlorhexidine: ***Group B*** = Methylated spirit

Discussion

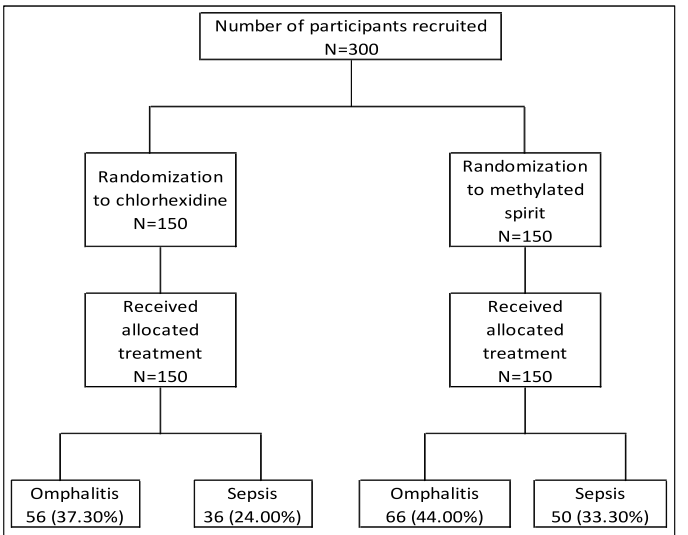


Fig-1: *Number of participant recruited n=300.*

Neonatal sepsis due to omphalitis is a leading cause of morbidity and mortality in neonates, especially in developing countries, accounting for 10%–19% deaths. According to a study conducted in Karachi, omphalitis is 217.4/1000 live births from which moderate-severe omphalitis is 170/1000 live births and associated with sepsis is 20.4/1000 live births.[2]

Omphalitis results mostly due to unhygienic cord cleaning practices. Chlorhexidine is a WHO approved antiseptic for cord care and is available in different formulations i.e. 2, 4 and 7.1%. In high-mortality situations, a topical application of 7.1 percent chlorhexidine to the umbilical cord has been shown to decrease newborn mortality and omphalitis. A study conducted in Peshawar showed that a single application of 4% chlorhexidine was superior to dry cord in prevention of omphalitis.[3] Data regarding use of other formulations of chlorhexidine or methylated spirit in low to middle income countries is scarce. The methods of cord care differ in various countries depending on income status and cultural practices, with the bottom line being a desire to promote healing and hasten cord separation. Whatever the substance, its use has not been studied for as to determine it frequency of application, both in number of days or the times per day.[14] To give an example, cord cleaning decreased invasive organisms such as Escherichia coli (49 percent, 64 percent, and 42 percent less), Klebsiella pneumoniae (46 percent, 53 percent, and 33 percent less) and Staphylococcus aureus (46 percent, 53 percent, and 33 percent less) on days 1, 3, and 6 respectively.[15] In this study, chlorhexidine and methylated spirit were compared for cord cleaning. It was shown that in Chlor-

hexidine group, omphalitis occurred in 56 (37.3%) patients while in Methylated spirit group, omphalitis was present in 66 (44%) patients (p-value=0.240). Similarly in Chlorhexidine group, sepsis was present in 36 (24%) patients and in Methylated spirit group, the sepsis was present in 50 (33.3%) patients (p-value=0.074). A similar study done in Islamabad showed that methylated spirit resulted in a significantly less cord sloughing time than chlorhexidine (p-value = 0.001) and both treatments had equal efficacy in prevention of omphalitis.[16] D D Shwe et al in a similar study earlier had mentioned no difference in the risks of neonatal sepsis and mortality among those treated with methylated spirit compared to those exposed to chlorhexidine gel (RR:1.0;95% CI=0.984-1.017; P=1.000) and (RR: 1.0;95% CI= 0.994-1.018; P=0.986) respectively.[17] A study conducted in African setting has shown methylated spirit to be effective in 73.2% patients for cord care.[6]

Okpaleke et al also found that there is insignificant difference regarding the occurrence of umbilical cord infection after the use of chlorhexidine or methylated spirit. Their study however showed a greater noncompliance in the use of chlorhexidine gel (21.1 percent) as compared to methylated spirit (9.6 percent) (p-value=0.001)[(18)]. Similar observations have been made by other researchers regarding the use of either methylated spirit or chlorhexidine gel for cord cleaning in neonates. In fact, methylated spirit was found to be a safer substitute in a clinical setting where the topical chlorhexidine gel was not accessible due to pricing or was contraindicated / unsafe to use.[7,19] Apart from local irritation, chlorhexidine has been shown to cause various allergic reactions.[20] One study has even shown detectable levels of chlorhexidine in the blood of preterm infants after its local application. This may inhibit L1-mediated neurite outgrowth of cerebellar granule neurons, thus it can be a neurotoxic for developing brain.[21]

Whatever the choice, use of appropriate antiseptic agent by health care workers is vital to promote neonatal health and reduce mortality due to neonatal sepsis.[22] It is high time that WHO should make alternative low price recommendations to chlorhexidine use for cord cleaning or otherwise mothers in low income countries will keep using harmful home remedies. One such recommendation can be use of methylated spirit. The limitation of this study is that it was a single center study and it did not include comparison with 2% chlorhexidine or its other formulations. On the other hand, this study has an advantage of easy to perform, not having any invasive parameters on follow up except for those who develop septicemia. It is suggested that in future, further studies should be done with larger sample size and studies should be done at multicenter setting to control the bias. Evidence-based interventions are needed to achieve Sustainable Development Goal 3.2. This will help in reducing neonatal mortality. Currently, umbilical cord care coverage is measured by population-based household survey programs such as the Demographic and Health Surveys (DHS) Program and Multiple Indicator Cluster Surveys (MICS), typically conducted every 2–5 years. There is a need to conduct such surveys regarding cord care especially in rural areas. Mother should also be counselled /taught to recognize fever, redness or swelling of the umbilicus and report to the hospital immediately.

Conclusion

This study concluded that both groups 4% chlorhexidine and methylated spirit are statistically equally effective in newborns for prevention of omphalitis and neonatal sepsis.

Conflict of Interest *None*

Source of Funding *None*

References

1. World Health Organization. WHO recommendations on Newborn Health. Geneva: World Health Organization. 2017;4.
2. Mir F, Tikmani SS, Shakoor SS, Warraich HJ, Sultana SA, Ali SA, et al. Incidence and etiology of omphalitis in Pakistan: a community-based cohort study. J Infect Dev Ctries. 2011;5:828-833. doi:10.3855/jidc.1229.
3. Ishaq M, Noor B, Ahad A, Muhammad N, Bibi R. Chlorohexidine for the Prevention of Omphalitis in neonates with a single dose. Pakistan Journal of Medical & Health Sciences. 2023 May 6;17(04):141-. doi: https://doi.org/10.53350/pjmhs2023174141
4. Lachapelle JM. Antiseptics and Disinfectants. In: John S, Johansen J, Rustemeyer T, Elsner P, Maibach H, editors. Kanerva's Occupational Dermatology. Cham: Springer; 2020. p. 36. doi:10.1007/978-3-319-68617-2_36. doi: https://doi.org/10.1007/978-3-319-68617-2_36
5. Andleeb Kanwal Za, Akram M, Anwar S, Pirzada S. Cord Care Methods in Neonates. World Health. 2020 Dec;6:7 doi: https://doi.org/10.53350/ pjmhs 211510 3509

6. Afolaranmi TO, Hassan ZI, Akinyemi OO, Sule SS, Malete MU, Choji CP, et al. Cord care practices: a perspective of contemporary African setting. Front Public Health. 2018;6:10. doi: 10.3389/fpubh.2018.00010
7. Shwe D, Abok I, Diala U, Egbodo C, Toma B, Nathan S, et al. Methylated spirit versus 4% chlorhexidine gel in neonatal umbilical cord infection: A short report of a randomized, open-labelled, parallel-group trial. Niger J Paediatr. 2018;45:118-122. doi: 10.4103/njcp.njcp_535_20
8. Demographic and Health Survey. Available from: https:// dhsprogram.com/pubs/pdf /PR109/ PR109.pdf [Accessed 2021].
9. Celik IH, Hanna M, Canpolat FE, et al. Diagnosis of neonatal sepsis: the past, present and future. Pediatr Res. 2022;91:337-350. doi: https://doi.org/10.1038/s4 1390-021-01696-z
10. Asma'u A, Oloche OB, Ridwan JM, Muhammad A, Mohammad AU, Omeneke IK, Kehinde IP, Omoshalewa UM, Fatima JB, Ilah GB. Determinants of Umbilical Cord Care Practices among Mothers of Neonates Admitted into Special Care Baby Unit of Usmanu Dan Fodiyo University Teaching Hospital, Sokoto, Nigeria. 2021. doi: http://dx.doi.org/ 10.21276/ijcmr.2021. 8. 4.3
11. Ponnusamy V, Venkatesh V, Clarke P. Skin antisepsis in the neonate: what should we use? Curr Opin Infect Dis. 2014;27:244-250. doi: 10.1097/QCO.0000000000000064
12. Osuchukwu EE, Ezeruigbo C, Eko J. Knowledge of standard umbilical cord management among mothers in Calabar South local government area, Cross River State, Nigeria. Int J Nurs Sci. 2017;7:57-62. doi: 10.5923/j.nursing.20170703.01
13. Okoye CF, Okoh EE, Ager T, Ikpeama OJ, Ogbodo IJ, Aguyi I, Okoye AO, Kakwi J, Udeogu K, Ifeadike CO, Kingsley AP. A Cross Sectional Comparative Study of Methylated Spirit and Chlorhexidine in Preventing Neonatal Cord Infections in a Local Hospital, Jos-Plateau State, Nigeria. Trop J Med Res [Internet]. 2022 Nov. 15 [cited 2023 Aug. 19];21(2):85-92. doi: https://doi. org/ 10.5281/zenodo.7792906
14. Umbilical cord-care practices in low- and middle-income countries: a systematic review. BMC Pregnancy Childbirth. 2017 Feb;17(1):68. DOI: 10.1186/s12884-017-1250-7.
15. Zaman SB, Siddique AB, Ruysen H, et al. Chlorohexidine for facility-based umbilical cord care: EN-BIRTH multi-country validation study. BMC Pregnancy Childbirth. 2021;21(Suppl 1):239. doi:10.1186/s12884-020-03338-4. doi: https://doi.org/10.1186/s12884-020-03338-4
16. Hussain I, Wahid S, Qureshi MA, Hashmi FUI, Fahim M. Comparison of the Impact of Topical Chlorhexidine Versus Methylated Spirion Umbilical Cord Sloughing Time in Neonates. Pak Armed Forces Med J. 2022; 72(4): 1392-1396. DOI: 10.51253/ pafmj.v72i4.6542.
17. Shwe DD, Afolaranmi TO, Egbodo CO, Musa J, Oguche S, Bode-Thomas F. Methylated spirit versus chlorohexidine gel: A randomized non-inferiority trial for prevention of neonatal umbilical cord infection in Jos, North-Central Nigeria. Niger J Clin Pract. 2021; 24: 762-769. doi: 10.4103/njcp.njcp_535_20
18. Okpaleke M-H, Ndikom CM, Bulama KU. Incidence of umbilical cord infection in neonates receiving 7.1% chlorhexidine gel and methylated-spirit in Ibadan. J Neonatal Nurs. 2019;25:20-25. doi: 10.1016/ j.jnn. 2018. 07.002
19. Metzler M, Coffey PS. Using consumer data to inform marketing strategies for chlorhexidine for umbilical cord care programming in Kenya and Nigeria. Soc Mark Q. 2018;24:235-248. doi: 10.1093/ inthealth/ ihad 061
20. Kefala K, Ponvert C. Allergic contact dermatitis to chlorhexidine-containing antiseptics and their excipients in children: A series of six cases. Pediatr Dermatol. 2023; 40(1):151-153. doi: 10.1111/pde.15127
21. Milstone AM, Bamford P, Aucott SW, Tang N, White KR, Bearer CF. Chlorhexidine inhibits L1 cell adhesion molecule–mediated neurite outgrowth in vitro. Pediatr Res. 2014;75:8-13. doi: 10.1038/pr.2013.175
22. Mullany LC, Saha SK, Shah R, Islam MS, Rahman M, Islam M, et al. Impact of 4.0% chlorhexidine cord cleansing on the bacteriologic profile of the newborn umbilical stump in rural Sylhet District, Bangladesh: a community-based, cluster-randomized trial. Pediatr Infect Dis J. 2012;31:444-450. doi: 10.1186/1471-2458-13-S3-S15

Authors Contribution

LR, MA: Conceptualization of Project
MJ, AZW: Data Collection
MA, AMN: Literature Search
MJ, AMN: Statistical Analysis
AT: Drafting, Revision
AT, LR, MJ: Writing of Manuscript

Efficacy of Postplacental Intrauterine Device Insertion

Kiran Noureen,[1] Amna Khanum,[2] Mehwish Ayyaz,[3] Bushra Haq,[4] Alia Masood,[5] Zubda Aiman[6]

Abstract

Objective: To determine efficacy of post-placental IUD insertion in terms.

Material and Methods: This descriptive case series was conducted from 01-02-2022 to 30-04-2022 at the Obstetrics and Gynaecology Unit 5 Lady Aitchison Hospital and unit 2 Services hospital Lahore.145 cases were studied by taking 95% confidence internal, 5% absolute precision and prevalence of administration issue as 10.5%. Non probabiling consecutive sampling teaching was employed.

Results: Out of 145 objects expulsion occurred in 10 cases (6.9%).

Conclusion: In conclusion, post placental insertion of the Tcu 380A IUD was feasible with less expulsion rate and not associated with significant side effects.

Keywords: contraception, IUCD, efficacy

How to cite: *Noreen K, Khanum A, Ayyaz M, Haq B, Masood A, Aiman Z. Efficacy of Postplacental Intrauterine Device Insertion. Esculapio - JSIMS 2023;19(03):351-354*

DOI: https://doi.org/10.51273/esc23.251319319

Introduction

Population of world is increasing at very rapid pace.[1] This poses a great burden on resources of developing countries and urgent need to meet sustainable development goals. Effective control of population growth by contraceptive use is need of hour.[2] Birth control, as it is now called Planned Parenthood is not a new idea.[3] One of oldest contraceptive recipe in writing is the one found in the Egyptian Ebers Papyrus which dates back to 1500BC. Historically the placement of IUD dates back to the early days of 1900.Initially these devices were made from steel material in the form of rings. During these days, it was considered illegal and involved personnel's were sentenced imprisonment. In 1960, modern IUD used now days was developed consisting of plastic T coil and loop shapes.4 In 1970, the addition of copper to IUD improved their efficacy due to local inflammatory effect. Later on these devices became available in smaller sizes so it was easy to place and these side effects were marginal. The rapid rise in use of IUD was suddenly declined in 1970 and 1980 due to its association with infection and septic miscarriage.[5] Now a days Cu-T380A and mirena are in wide use due to their safety and considerably low side effect profile. These devices are used by women worldwide on a large scale due to low failure rate and these are operator dependent. Pakistan since inception is experiencing a high rate of population growth, lowering of population growth rate is one of the primary objectives of 8th five years plan.[6] Discontinuation rates for Tcu380A are very lower than for other methods. Integrating family planning counselling into prenatal care may improve contraceptive usage in postpartum period. IUD immediately postpartum is safe. IUD can be inserted post placental, immediate postpartum and interval/extended postpartum (after 4 weeks post-delivery).[7] There were two expulsion (2/19, 10.5%) by 10 weeks postpartum after post placental intrauterine device insertion.[8] Rationale of my study is to find out the results of contraception by post placental IUD insertion, if found to be successful then should be encouraged in women because it is safe, effective, convenient and advantages include high motivation good compliance and low expulsion rate. This study is thus a step in the direction towards improving contraception post placental. My study will be very useful in reducing population load through induction of feasible contraceptive method and for future citation.[9]

1,3,5,6. Gynae and Obs Lady Aitchison Hospital Lahore
2. Gynae and Obs Services Institute of Medical Sciences, Lahore
4. Gynae and Obs Services Institute of Medical Sciences, Lahore

Correspondence:
Dr. Mehwish Ayyaz ; *Senior Registrar, Department of. Obstetrics and gynecology, Lady Aitchison Hospital, Lahore, Pakistan*

Submission Date: 11-08-2023
1st Revision Date: 21-08-2023
Acceptance Date: 11-09-2023

Materials and Methods

This descriptive case series was conducted from 01-02-2022 to 30-04-2022 at the Obstetrics and Gynaecology Unit 5 Lady Aitchison Hospital and unit 2 Services hospital Lahore. Sample size of 145 females was calculated by taking 95% confidence interval, 5% absolute precision and prevalence of administration issue as 10.5%. Non probability consecutive sampling technique was employed. 20-40 years age group female who were delivered by spontaneous vaginal delivery and who gave consent for post placental IUD placement in antenatal period were included in study whereas those having elective caesarean section, having uterine leiomyoma distorting their cavity, diagnosed cases of uterine and cervical malignancy, allergic to copper, PROM for more than 24 hours and PPH were excluded from study. After taking consent from hospital ethical review committee all women fulfilling the inclusion criteria were included in the study and informed consent was taken from the patient. At routine antenatal visits of women, they were counselled about advantages, disadvantages and contraindications of IUD, other available options for contraception were also discussed. Their choice for IUD was properly documented on antenatal cards and consent signed by patient and her husband. Exclusion criteria were strictly followed to limit the confounding variables. After delivery of placenta and membranes, Tcu380A was placed in uterine fundus by retracting posterior vaginal wall with Sims speculum and using sponge forceps for IUD insertion using aseptic technique and patients were followed for for expulsion by ultrasonography whether it is expelled or displaced when thread is not found in place or copper T is in the cervix. Follow up is ensured by taking telephone contact. Questionnaire designed for this purpose was filled. Data was analysed by using SPSS version 20.Mean and standard deviation was calculated for the quantitative variables like age and parity. Frequency and percentages were calculated for qualitative variables like rate of expulsion.

Results

Among 145 subjects, 103 ladies (71.0%) were between 20-30 years old while 42 ladies (29.0%) were between 31-40 years of age. Mean age was observed 28.12 ± 2.9 years (Table -1) Distribution of cases by parity shows,

Table 1: *Age Distribution.*

Age (Year)	Number	Percentage
20-30	103	71
31-40	42	29
Total	145	100
Mean ± SD	**28.12 ± 2.9**	

Table 2: *Distribution of cases by parity*

PARITY	NUMBER	PERCENTAGE1-3
1-3	64	44.1
4-6	81	55.9
Total	145	100.0
Mean ± SD		**4.1 ± 0.7**

Table 3: *Distribution of cases by expulsion*

Expulsion	Number	Percentage
Yes	10	06.9
No	135	93.1
Total	**145**	**100.1**

64 cases (44.1%) belong to Para 1-3 and 81 cases (55.9%) had parity 4-6. Mean parity was 4.1 ± 0.7(Table-2). Expulsion occurred in 10 cases (6.9%) (Table -3).

Discussion

To decrease maternal and perinatal mortalities it is necessary to reduce unplanned pregnancies by using effective contraceptives. There were different school of thoughts related to contraceptive usage. Some groups like anti-imperialists, nationalists and moralists opposed these birth spacing methods. If population is not controlled appropriately it becomes a trap which can be very dangerous to economy and it puts huge constrains on country healthcare resources. Even before history was written people tried for population adjustment by prolonging lactation, miscarriages, coitus interrupts and even killing infants and aged people.[10]

In history of Islam, many Muslim physicians further increased awareness about contraception and methods used by Muslim countries were more reasonable. Al-Razi introduced different types of suppositories for birth spacing. Most popular scientist Avicenna introduced concept of safe periods in eleventh century. In Egyptian times, some herbs were mixed to make contraceptives which were used vaginally. Greeks further improved these methods.[11]

Pakistan has high population growth rate since its independence. In our country men have dominant role in deciding about family size and to approve the use of contraceptive use for their partners.[12] While designing Pakistan population programmes importance of role of male partners in family planning not received proper

attention. There was downward shift in infertility in Pakistan from 6.3 in 1975 to 4.8 in 2000-2001.We are unable to implement effectively various socioeconomic and development plans due to high population growth rate. To meet this urgent need national family planning programme was established in start of sixties. After about 30 years of efforts of government and other non-government organisations (NGOs) contraception prevalence rate has increased to 37% and total fertility rate is 3.5. Pakistan has not achieved desired control over population growth compared to other countries of same socioeconomic status like Indonesia and Bangladesh.[13] Large number of people in our country live in villages and some couples want birth spacing but currently not practising any contraceptive method. This problem of unmet need can be solved if easy, free of cost availability of contraception is practised in rural and urban areas.[(14)] In late sixties, first survey was done about couple knowledge of birth spacing. This study showed that educated males, who have awareness about methods of family planning, had used more contraceptive options.[15]

In my study, 71% of patients who gave consent for IUD placement were between 20-30 years age group. This is the highest fertile period of their lives. In contrast, only 29% of patients used IUDs in 31-40 years age group. This trend can be explained by the fact that women who regularly attend hospitals for antenatal and family planning services are more likely to benefit because these contraceptive services are available free of cost and incentives are also given.[16]

Teenage marriages are common in developing countries. As a consequence of this most women complete their family by thirties, so further ten to fifteen years period demands appropriate contraceptive usage so that unwanted pregnancies and miscarriage rate can be decreased.[15]

The expulsion rate of post placental IUD insertion was 6.9% in current study in contrast to some studies where expulsion rate is high in patients with pelvic inflammatory disease, so IUD should not be used in patients suffering from infection and prior treatment with ceftriaxone, ofloxacin and flagyl for fourteen days is mandatory. In our culture, most women are not empowered.[17] Frequently husband and in-laws influence women choice of contraception and most do not favour sterilization thinking loss of fertility forever, therefore in these women placement of IUD immediately after delivery of placenta will be an attractive option to limit family size as this is easily reversible and there is no need to take daily medication. Illiteracy is a major obstacle in accepting birth spacing regimens. About 80% females of reproductive potential have not received basic education and they are dependent on their husband, friends and family to gain family planning information and these filtered ideas reach them representing dominant person perspective.[18]

When Copper T-380 A is compared with other intrauterine devices containing copper, it has been concluded that expulsion rates are less with CuT380A based on results of randomized controlled trials. Women need close follow up during first year because this is time when they are more susceptible to expulsion than after 10 years. IUD is mostly expelled during menstruation and it is accompanied by severe abdominal pain and vaginal bleeding.[(19)] If IUD is not completely expelled and at the time of examination it is noted to be present in cervix or vagina then a competent health care provider should pay attention to its immediate removal and woman involved in decision making to place another IUD if there is no evidence of infection.[12]

The issue of post placental IUD placement was studied by a systematic review. Despite the fact that there were many methodological flaws in studies and most were not up to mark but some conclusions were made on its basis. The rates of complications like infection and perforation were very low. When IUD was placed within ten minutes of placenta removal, its rate of expulsion were considerably less (36.9%) when there is delay of three days, it was associated with 69.8% expulsion risk. Hence time elapse before IUD insertion is major factor which determines its outcome further favouring and strengthening our study that is IUD placement immediately after placental delivery. We did not practise IUD insertion with sponge forceps but neither instrumental placement nor manual influence expulsion according to published data and strategies used to fix IUD by placing suture do not interfere with expulsion.

In my study it was noted that more educated females accepted TCu380A and this was observed in other studies also. Majority of the patients did not have any complications but abdominal pain and abnormal vaginal bleeding was experienced by many subjects. This observation is same as in other studies. Comparison was carried out between Mirena and Cu-T efficacy regarding contraception and a note was made of expulsion also, out of 11 participants who were offered CuT380A, expulsion occurred in 2. Another study described comparison of CuT380A and multiload copper375 placed after placental delivery in lower segment caesarean

section versus spontaneous vaginal delivery, expulsion occurred in 13% of females after vaginal delivery and 9% after caesarean section.

In this study 55.9% of the patients were Para 4 and above showing that it was most acceptable in high parity patients. The patients who requested IUD removal were younger than 20 years although contraceptive continuation with all methods is low in this age group.

Expulsion rate in our study is comparable to the results of other studies, reported evidence concludes that IUD expulsion rate is directly proportional to the number of years used. However, a study conducted on 427 females contradicts these results where no patient experienced expulsion after one year of insertion.[4,11,20]

The most common reason for discontinuation of use of Copper T is irregular vaginal bleeding and abdominal pain and multiple reviews have been conducted to address this issue. These reviews conclude that use of prostaglandin antagonists is helpful in reducing these symptoms. Different forms of Copper T have been introduced in research settings in which copper is distributed over lateral part of arms but this modification has no effect on overall outcome and also not influence risk of expulsion.

Conclusion

In conclusion, post placental insertion of the Tcu380A IUD was feasible with less expulsion rate and not associated with significant side effects.

Conflict of Interest *None*

Funding source *None*

References

1. Buhling KJ,Zite NB,Lotke P,Black kintra writing group Worldwide use of intrauterine contraception: a review.contraception,2014;89(3):162-173.
2. Divakar H, Bhardwaj A, Purandare CN, Sequeira T, Sanghvi P. Critical Factors Influencing the Acceptability of Post-placental Insertion of Intrauterine Contraceptive Device: A Study in Six Public/Private Institutes in India. The Journal of Obstetrics and Gynecology of India. 2019;69(4):3449.
3. Kanhere AV, Pateriya P, Jain M. Acceptability and feasibility of immediate postpartum IUCD insertion in a tertiary care centre in Central India. Int J Reprod Contracept Obstet Gynecol. 2015;4(1):179-84.
4. Shirazi SA, Kazmi SJH. Analysis of population growth and urban development in Lahore-Pakistan using geospatial techniques: Suggesting some future options. South Asian Studies. 2020;29(1).
5. Gupta A, Verma A, Chauhan J. Evaluation of PPIUCD versus interval IUCD (380A) insertion in a teaching hospital of Western UP. Int J Reprod Contracept Obstet Gynecol. 2013;2(2):204-
6. Sardar F, Balouch I, Bajari N. Intrauterine Contraceptive Device; Effectiveness Comparison of Postpartum Intrauterine Contraceptive (ppiucd) Versus Interval IUCD. Professional Medical Journal. 2018; 25(10).
7. Pradeep M, Nayana D. Study of knowledge, attitude and acceptance of PPIUCD in antenatal mothers. Indian Journal of OBGYN. 2019;6(1):42-4.
8. Munir K, Sultan M. Macroeconomic determinants of income inequality in India and Pakistan. Theoretical & Applied Economics. 2017;24(4).
9. Jain AK, Mahmood A, Sathar ZA, Masood I. Reducing unmet need and unwanted childbearing: evidence from a panel survey in Pakistan. Studies in Family Planning. 2014;45(2):277-99.
10. Asif MF, Pervaiz Z. Socio-demographic determinants of unmet need for family planning among married women in Pakistan. BMC public health. 2019; 19(1): 1-8.
11. Mishra S. Evaluation of safety, efficacy, and expulsion of post-placental and intra-cesarean insertion of intrauterine contraceptive devices (PPIUCD). The Journal of Obstetrics and Gynecology of India. 2014;64(5):33743.
12. Goswami G, Yadav K, Patel A. A prospective study to evaluate safety, efficacy and expulsion rate of post placental insertion of intra uterine device. Journal of Evolution of Medical and Dental Sciences. 2015; 4(56): 9770-5.
13. Halder A, Sowmya M, Gayen A, Bhattacharya P, Mukherjee S, Datta S. A prospective study to evaluate vaginal insertion and intra-cesarean insertion of postpartum intrauterine contraceptive device. The Journal of Obstetrics and Gynecology of India. 2016;66(1): 35-41.

Authors Contribution

KN: Conceptualization of Project

AK: data collection

MA: Literature Search

BH: Statistical Analysis

A Comparative Study of Cisplatin Plus Adriamycin Compared with Cyclophosphamide Plus Adriamycin in Patients with Untreated Metastatic TNBC

Sobia Yaqub,[1] Muhammad Abbas Khokhar,[2] Amjad Zafar,[3] Ali Waheed Goraya,[4] Aqsa Rauf,[5] Zeeshan Ahmed Khan Niazi[6]

Abstract

Objective: To look for the response of platinum agents in BRCA unknown TNBC patients as it is a cheaper drug and readily available.

Material and Methods: This study was comparative, conducted in department of Medical Oncology and Radiotherapy from May 2019 to Februaray 2021 in which a total of 290 (145 in each arm) patients of metastatic TNBC were enrolled. A total of 290 patients (145 in each arm) of symptomatic metastatic TNBC were randomized into 2 groups. Group A received Adriamycin (60mg/m²) plus Cisplatin (75mg/m²) while Group B received Adriamycin (60mg/m²) plus Cyclophosphamide (600mg/m²) on day 1 of 21 days cycle for a total of 4 cycles. The response was assessed using RECIST criteria v.1.01. National Cancer Institute Common Toxicity Criteria version 4.03 (CTCAE) was used to document toxicities. Health-related quality of life was determined using EORTC QLQ- C30 with a minimum decrease of ≥ 10 points considered significant.

Data was analyzed using spss version 23. The quantitative variables were presented as mean ±SD while qualitative variables like tumor response as percentage and frequency. An Independent sample t-test with a confidence interval of 95% was used for comparison between groups and a p-value of < 0.05 was taken as significant.

Results: In group A, 33(22.8%) and 67(46.2%) showed complete and partial responses respectively while stable and progressive disease was noted in 25(17.2%) and 20(13.8%). In group B, 23(15.9%) had complete response while 66(45.5%), 41(28.3%), and 15(10.3%), showed partial response, stable and progressive disease respectively (p=0.094) ORR between groups was 69.0% vs.61.4%. More grade ¾ neuropathy (p=0.004) and nephropathy (p=0.00007) was seen in group A. Quality of life was comparable in both groups(p=0.540)

Conclusions: No statistically significant difference in noted between two treatment arms but patients in the Cisplatin arm experienced more neuropathy and nephropathy.

Keywords: TNBC, Cisplatin, metastatic

How to cite: *Yaqub S, Khokhar MA, Zafar A, Goraya AW, Rauf A, Niazi ZAK. A Comparative Study of Cisplatin Plus Adriamycin Compared with Cyclophos-phamide Plus Adriamycin in Patients with Untreated Metastatic TNBC. Esculapio - JSIMS 2023;19(03):355-358*

DOI: https://doi.org/10.51273/esc23.251319320

Introduction

Breast cancer that lacks expression of Estrogen receptors (ER), Progesterone receptors (PR), and HER 2 is labeled as triple negative. It accounts for ~ 15% of all breast cancer subtypes. Molecular studies have shown it to be Basal-like in the majority of cases.[1] Hereditary Breast cancer accounts for 10-15% of all breast cancer cases, BRCA1 and BRCA2 being the most common susceptibility genes.[2] These hereditary cancer patients usually present at an early age, and are mostly basal-like and triple-negative tumors[3] Lack of specific therapeutic targets makes it a poor risk group[4] Metastatic triple-negative breast cancer is an incurable disease where single agent or combination chemotherapy is

1,2,4-6. Department of Oncology, King Edward Medical University
3. Department of Oncology, Jinnah Hospital Lahore

Correspondence:
Sobia Yaqub, *Senior Registrar, Department of Oncology, King Edward Medical University, Lahore Pakistan. Email: sobia_yaqub@yahoo.com*

Submission Date: 24-07-2023
1st Revision Date: 14-08-2023
Acceptance Date: 04-09-2023

traditionally being used to control symptoms and improve quality of life (QOL) of patients, depending upon disease burden.[5] Platinum-based therapies have proven their efficacy in metastatic triple-negative breast cancer.[6] Poly ADP ribose polymerase (PARP) inhibitors, a combination of Atezolizumab and nab Paclitaxel, Sacituzumab Govitecan, an antibody-drug conjugate are other treatment options[7] but unfortunately these drugs are expensive and not readily available making chemotherapeutic agents still most commonly used strategy.

Material and Method

The study was conducted in department of Medical Oncology and Radiotherapy from May 2019 to Februaray 2021 in which a total of 290 (145 in each arm) patients of metastatic TNBC were enrolled. A total of 290 patients (145 in each arm) of symptomatic metastatic triple-negative breast cancer, fulfilling inclu-sion criteria (ECOG 0-2, absence of symptomatic brain metastasis, Ejection fraction ≥ 55%, no psychiatric ill-ness, no grade ¾ neuropathy, no prior history of chest irradiation)) were randomly divided into 2 groups after taking informed consent. Clinicopathological characteristics were determined as pre-treatment evaluation using a questionnaire Group A received Adriamycin (60mg/m²) plus Cisplatin (75mg/m²) while Group B received Adriamycin (60mg/m²) plus Cyclophosphamide (600mg/m²) after baselines hematological and biochemistry profile. The chemotherapy cycle was repeated every 3 weeks for a total of 4 cycles, response was assessed using a contrast-enhanced CT scan after completion of therapy according to RECIST criteria version 1.01. National Cancer Institute Common Toxicity Criteria version 4.03 (CTCAE) was used to document toxicities at end of treatment. EORTC QLQ- C30 was used to determine health-related quality of life with a minimum decrease of ≥ 10 points considered significant. Data was entered and analyzed in SPSS (Statistical Package for Social Sciences) version 23. The quantitative variables like age were calculated by taking the mean and standard deviation. Qualitative variables like tumor response rate and dose-limiting toxicity were calculated by taking percentages and frequencies. Confounding factors like age and duration of illness were enrolled by stratification. Independent sample t-test was used for comparison between two groups with p value less than 0.05 taken as significant.

Results

A total of 290 patients (145 in each group) were enrolled in the study with an age range between 18-60 years. Mean age in Group A was 41.28±12.52 and in Group B it was 42.15±12.47 (p=0.554). Clinicopathological parameters were comparable in both groups. In group-A, 33(22.8%) had complete response, while 67(46.2%) had partial response followed by stable disease in 25 (17.2%) and progressive disease in 20(13.8%), while in group-B, 23(15.9%) had complete response, while 66 (45.5%) had partial response followed by stable disease in 41(28.3%) and progressive disease in 15 (10.3%), the difference was insignificant (p=0.094). At the end of treatment, more grade 3/4 neuropathy

Table 1: *Demographic characteristics in Groups.*

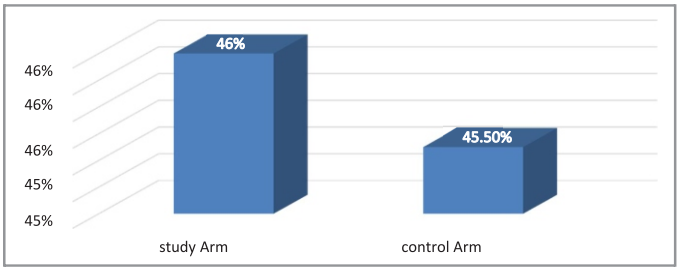
Demographic characteristics	Group A	Group B	P value
Age	41.28±12.52	42.15±12.47	0.554
Residence			
Rural	84	81	0.722
urban	81	64	
Marital status			
Married	143	2	1.0
Single	143	2	
Socio-economic status			
Lower(<20,000Pkr/M)	73	71	
Middle(20,000-50,000			0.687
Pkr/M)	62	67	
Upper(.50,000Pkr/M)	10	1	
Co-morbid illness			
No	116	118	
DM	15	14	0.902
HTN	11	11	
IHD	1	0	
Others	2	2	
Disease Characteristics			
Lymph Node Involvement			
Yes	129	119	
No	16	26	0.095
Sites Of Metastasis			
Lung	66	64	0.960
Liver	43	42	
Bones	34	36	
Others	2	3	
Family history of breast cancer			
Yes	39	33	0.415
No	106	112	
BreastCancer Morphology			
IDC	141	141	
ILC	2	2	1.0
Metaplastic carcinoma	2	2	

Table 2: *Comparison of Response between two study arms.*

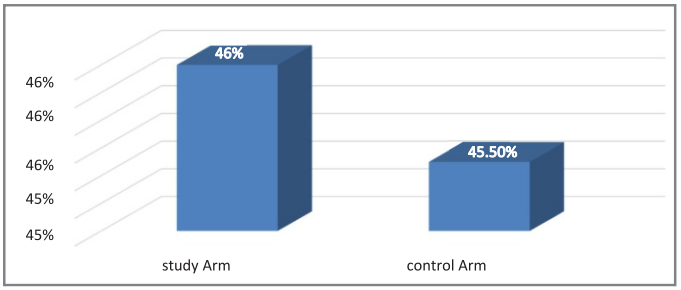
Response	Adriamycin plus Cisplatin		Adriamycin plus Cyclophosphamide	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
CR	33	22.8	23	15.9
PR	67	46.2	66	45.5
SD	25	17.2	41	28.3
PD	20	13.8	15	10.3

Table 2: *Comparison of toxicity between two groups:*

Toxicity	Adriamycin plus Cisplatin		Adriamycin plus Cyclophosphamide	
	Frequency (n) (Average/ cycle)	Percentage (%) (average/ cycle)	Frequency (n) (Average/ cycle)	Percentage (%) (average/ cycle)
Nausea	12.25	4.2	11.25	3.877
Vomiting	10.5	3.62	11.25	3.877
Diarrhea	2.75	0.94	2.75	0.94
Neutropenia	3.25	1.12	1	0.34
Neuropathy	5.25	1.8	0	0
Nephropathy	9.5	3.27	0	0



(p=0.004) and nephropathy (p=0.00007) were observed in the Cisplatin group but no difference in the quality



of life was noted between the two groups (p=0.540).

Figure 1: *Comparison of complete response between two*

Fig-2: *Comparison of complete response between two*

Discussion

Breast cancer is the common most malignancy affecting females of all ages with an estimated 271,270 new cases and 42,260 deaths in the USA, according to Cancer statistics 2019.[8] Breast cancer is classified traditionally on the basis of biomarkers, detected by Immunohistochemical staining, including the presence of Estrogen receptors (ER), Progesterone receptors (PR), and overexpression of Human epidermal growth factor receptor (HER2) the later if comes equivocal (+2) is confirmed by FISH (Fluorescence in situ hybridization). Recent advances in Gene expression profiling has led to new molecular classification of Breast cancer which include Luminal A, Luminal B, HER2 enriched, normal breast-like, and Basal-like.[9] Term triple negative Breast cancer (TNBC) encompasses a group of various types of breast cancer that share the common feature of lack of expression of Estrogen Receptor (ER), Progesterone Receptor (PR), and Overexpression of HER 2 Neu. Basal-like claudin-low and normal breast-like are the most common molecular subtypes that are seen in patients with TNBC. In literature, both terms Basal-like and TNBC are used as synonymous though gene expression analysis shows that in around 25% of cases, TNBC is not basal-like.[10] In early-stage TNBC, guidelines for surgery and Local Radiotherapy are the same as for other breast cancer subtypes. However, unlike other subtypes, these tumors are more sensitive to chemotherapy.[11] This chemo-sensitivity is particularly important in a Neo-adjuvant setting where patients get high pathological responses to standard chemotherapeutic agents. "TNBC paradox" is a unique feature of TNBC, where despite good clinical response to standard chemotherapy, the survival rates of these patients are poor. TNBC has shown particular sensitivity to platinum agents which relates to the high expression of BRCA gene mutations in these patients as carriers of these mutations have defective double-stranded DNA repair which exhibits response to DNA-damaging drugs.[12] A study published in "Annals of Oncology" in 2021, has shown improvement in pCR, with the addition of Carboplatin to neo-adjuvant chemotherapy in TNBC.[13] A meta-analysis has shown a 13% improvement in pCR with the addition of Platinum with taxane chemotherapy (p=0.0001) in early-stage disease and a statistically significant improvement in PFS in metastatic disease p=0.24.[13] Platinum drugs (Cisplatin or Carboplatin) are the preferred first-line agent to treat BRCA mutated metastatic triple negative Breast cancer while in patients who don't harbor such mutations, Platinum drugs are used in first or subsequent lines either as a single agent or in combination with other drugs depending upon symptom burden.[14] In our study, we

administered Doxorubicin which is the standard first-line chemotherapy in metastatic Breast cancer in combination with Cisplatin in patients who had symptomatic metastatic TNBC and compared its response with a combination of Doxorubicin and cyclophosphamide. From our literature search, we know that among our selected patient population, BRCA-mutated patients are the most suitable candidate for interventional drug combination but as this study is conducted in a public sector hospital in Pakistan where BRCA testing is not routinely done because of its cost and lack of facilities. So, we introduced Cisplatin along with Doxorubicin to see the response which in turn is a reflection of BRCA positivity in this population as there are high chances of this genetic mutation being present in those who responded. The results of our study showed that there is no statistically significant difference in response rates between the two arms with a high frequency of neuropathy and nephropathy observed in the intervention arm. Another limitation of this study is that we only checked for objective response rate, long term follow-up and analysis for survival aren't included in this study. Toxicity profile was comparable between two treatment groups with slightly more neuro toxicity and nephrotoxicity observed in cisplatin arm. However, quality of life which is an important parameter in the management of metastatic cancer was given due importance and it showed that there was no difference in the quality of life among the two patient groups.

Conclusion

There is no difference in response rates in both treatment arms however the use of Cisplatin with Adriamycin is associated with more toxicity making it inferior to the standard Adriamycin plus doxorubicin combination.

Conflict of Interest *None*

Source of Funding *None*

References

1. Foulkes WD, Smith IE, Reis-Filho JS. Triple-negative breast cancer. New England journal of medicine. 2010 Nov 11;363(20):1938-48.
2. Apostolou P, Fostira F. Hereditary breast cancer: the era of new susceptibility genes. BioMed research international. 2013 Oct;2013.
3. Young SR, Pilarski RT, Donenberg T, Shapiro C, Hammond LS, Miller J, Brooks KA, Cohen S, Tenenholz B, DeSai D, Zandvakili I. The prevalence of BRCA1 mutations among young women with triple-negative breast cancer. BMC cancer. 2009 Dec;9(1):1-5.
4. Rakha EA, Chan S. Metastatic triple-negative breast cancer. Clinical oncology. 2011 Nov 1;23(9):587-600.
5. Zeichner SB, Terawaki H, Gogineni K. A review of systemic treatment in metastatic triple-negative breast cancer. Breast cancer: basic and clinical research. 2016 Jan;10:BCBCR-S32783.
6. Staudacher L, Cottu PH, Dieras V, Vincent-Salomon A, Guilhaume MN, Escalup L, Dorval T, Beuzeboc P, Mignot L, Pierga JY. Platinum-based chemotherapy in metastatic triple-negative breast cancer: the Institut Curie experience. Annals of oncology. 2011 Apr 1; 22(4): 848-56.
7. Malhotra MK, Emens LA. The evolving management of metastatic triple negative breast cancer. InSeminars in oncology 2020 May 28. WB Saunders.
8. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2019. CA: a cancer journal for clinicians. 2019 Jan;69(1):7-34.
9. Lam SW, Jimenez CR, Boven E. Breast cancer classification by proteomic technologies: current state of knowledge. Cancer treatment reviews. 2014 Feb 1; 40(1):129-38.
10. Kumar P, Aggarwal R. An overview of triple-negative breast cancer. Archives of gynecology and obstetrics. 2016 Feb;293(2):247-69.
11. Wahba HA, El-Hadaad HA. Current approaches in treatment of triple-negative breast cancer. Cancer biology & medicine. 2015 Jun;12(2):106.
12. De Laurentiis M, Cianniello D, Caputo R, Stanzione B, Arpino G, Cinieri S, Lorusso V, De Placido S. Treatment of triple negative breast cancer (TNBC): current options and future perspectives. Cancer treatment reviews. 2010 Nov 1;36:S80-6.
13. Poggio F, Tagliamento M, Ceppi M, Bruzzone M, Conte B, Fregatti P, Punie K, de Azambuja E, Del Mastro L, Lambertini M. Adding a platinum agent to neoadjuvant chemotherapy for triple-negative breast cancer: the end of the debate. Annals of Oncology. 2022 Mar 1; 33(3):347-9.
14. Caparica R, Lambertini M, de Azambuja E. How I treat metastatic triple-negative breast cancer. ESMO open. 2019 Jan 1;4:e000504.

Authors Contribution

YS: Conceptualization of Project
KAM: Data Collection
ZA: Literature Search
GWAM, KAM: Statistical Analysis
RA, ZA, NKAZ: Drafting, Revision
SY, RA: Writing of Manuscript

Determinants of Early Initiation of Breastfeeding after Cesarean Section in a Tertiary Care Hospital

Khadija Ahmad,[1] Rabiah Mahwish,[2] Mariam Mazhar,[3] Momina Bashir,[4] Maryam Yousaf[5]

Abstract

Objectives: To assess the determinants of early initiation of breastfeeding (EIBF ≤ 1 hr.) after cesarean section in a tertiary care hospital and to determine the perception of WHO breastfeeding recommendations among mothers.

Material and Methods: An analytical cross-sectional study was conducted in Post-operative ward of obstetrics department of Services Hospital Lahore. Duration of Study was (9th October 2022 to 9th January, 2023). Sample size of 246 was calculated. Sampling technique was used purposive sampling. All mothers who had cesarean section deliveries were included except terminally ill. Data was analyzed by SPSS 26 using Binary logistic Regression .

Results: Only 13.4% of mothers started breastfeeding within 1 hour after caesarean section. Adverse effects of analgesics (opioids) on milk production and delayed skin-to-skin contact immediately after delivery contributed for delay in EIBF.

Conclusion: Delay in EIBF is attributed to decreased production of milk due to analgesics(opioids used for labour pain) and non-practicing of immediate skin-to-skin contact. Perception regarding breastfeeding among mothers was good.

Keywords: Breastfeeding, Cesarean section, skin-to-skin contact, milk production, perception

How to cite: *Ahmad K, Mahwish R, Mazhar M, Bashir M. Yousaf M. Determinants of Early Initiation of Breastfeeding after Cesarean Section in a Tertiary Care Hospital. Esculapio - JSIMS 2023;19(03):359-364*

DOI: https://doi.org/10.51273/esc23.251319321

Introduction

Breastfeeding is the process of expressing or pumping milk by mothers to feed their infants. Prevention of newborn deaths can be made effective by early initiation of breastfeeding (EIBF)[1]. In underdeveloped countries, adherence to WHO breastfeeding recommendations falls short, with just 37% of infants receiving breastfeeding initiation within one hour of birth and continuing exclusive breastfeeding for six months.[2] A research underscored breastfeeding's significance, labeling breast milk as a potent "superfood" termed as a "silver bullet". Prompt breastfeeding within the first hour could avert approximately 830,000 infant deaths annually .[3]

Childbirth-associated obstetrical interventions are among the leading causes of slack in breastfeeding practices. The rapid rise in cesarean sections worldwide is a serious matter of concern[2]. In 2018 the Centers for Disease Control and Prevention reported the cesarean rate to be 31.9% whereas the WHO recommends the ideal rate 10-15%.[4]

Women undergoing cesarean section vary in their breastfeeding experiences due to multiple factors including restricted mobility, postoperative pain, emotional reactions, and effects of analgesics[2]. The Baby-Friendly Hospital Initiative (BFHI) advocates for immediate mother-baby skin-to-skin contact within one hour of birth. Post-surgical complications can hinder bonding and breastfeeding initiation, potentially resulting in reduced newborn receptivity, suckling ability, and milk supply.[4]

1-5. *Department of Gynaecology Services Institute of Medical Sciences, Lahore*

Correspondence:
Khadija Ahmed, *Student MBBS, Services Institute of Medical Sciences, Lahore*

Submission Date: 15-05-2023
1st Revision Date: 05-06-2023
Acceptance Date: 09-09-2023

A cross-sectional analytic study at Minia University reported on factors influencing breastfeeding practices after cesarean section as insufficient milk (18.7%), infrequent suckling of infant (29.3%) and postpartum depression (41.5%).[5] An Italian study found that only 3.5% of post-cesarean women breastfed their child as compared to 71.5% with vaginal births.[6] In South Asia, 42% of newborns and 45% all over the world, receive early breastfeeding[7]. In Pakistan, statistically, the early initiation of breastfeeding was practiced only by 18% and the exclusive practice by only 37.7%. This low percentage is alarming and it persists due to lack of perception of mothers.[8]

This research was imperative to assess the determinants of Early initiation of breastfeeding after cesarean section and to scrutinize the perception of women regarding breastfeeding practices who had been admitted to the post-operative unit of the Gynecology department of Services Hospital Lahore.

Material and Method

It is an analytical cross-sectional study conducted in Post-operative ward of obstetrics department of Services Hospital Lahore. Duration of Study was (9th October 2022 to 9th January, 2023). Sampling Technique was used Purposive sampling. Sample size was calculated by using "S" size WHO software at 95% confidence interval with an anticipated population of 61% and relative an error of 10%. The minimum sample size was 246[3]. All the mothers who had cesarean section deliveries either with spinal anesthesia or general anesthesia were included. Mothers who delivered infants by cesarean section but were terminally ill were excluded. Data was collected using a close-ended questionnaire at the 2nd post operative day of the participants. Informed consent from all respondents was taken. The questionnaire consisted of the Socio-demographic profile, past obstetric history of the mother, determinants of early initiation of breastfeeding after cesarean section and Perception of mothers regarding WHO breastfeeding recommendations. Data was analyzed using SPSS version 26. For quantitative variables mean and standard deviation were calculated. For qualitative variables, frequency and percentage were calculated. Regression analysis was done to see the significant correlation between different risk factors.

Results

The data was collected from the post-operative ward of the obstetrics and gynecology department of Services Hospital Lahore. A total of 246 women fulfilling the inclusion and exclusion criteria were the participants in this study. The mean age of the mothers was 26.78± 4.604, Among all the participating mothers 32.1% of mothers had only 1 child (alive) previously. The previous mode of delivery for 52% of mothers was a cesarean section. The husband of most of the mothers was illiterate. Out of all the participants, only 33 (13.4%) mothers started breastfeeding within 1 hour after Caesarean Section. Early Initiation of Breastfeeding is a dependent variable and has interdependency on different adverse effects on milk production after C-section and immediate skin-to-skin contact of the neonate with the mother. Women who experienced various difficulties in milk production were less likely to initiate early breastfeeding, whereas skin-to-skin contact immediately after delivery was found to be a significant supportive factor in EIBF. A number of variables were found to be insignificantly affecting breastfeeding within 1st hour of birth, 93.1% women received spinal anesthesia before C-section & only 6.9% women were given general anesthesia, none of the women with general anesthesia were able to start EIBF. Only 7.3% of women were facilitated for skin-to-skin contact , 51.2% women claimed that post-operative pain was challenging for them regarding EIBF,

Table 1: *Sociodemographic characteristics*

Sociodemographic characteristics	n(%)
Age of the mothers (Years)	
19-24	86(34.9)
25-30	114(46.3)
31-35	32(13.8)
35-40	12(4.87)
Education of mothers	
Illiterate	43(17.4)
Primary/middle	46(18.6)
Matric/intermediate	109(44.3)
Bachelors/Masters	48(19.5)
Mother's occupation	
House wife	231(93.9)
Working women	15(6.1)
Age at marriage (years)	
<18	33(13.4)
19-23	144(58.5)
24-29	62(25.2)
>29	7(2.8)
Husband's occupation	
Laborer	71(28.9)
Public servant	36(14.6)
Private job	139(56.5)

35.4% women had labor period of ≤ 12 hours, Latch of 33.3% of women was ineffective, 62.2% women didn't receive any professional guidance regarding EIBF, 86.2% women had antenatal visits more than 4 but despite this only 13.4% women performed EIBF. With respect to provided facilities,15.4% of women reported that they received practical support to initiate breastfeeding, 27.6% were trained to express breast milk, 82.1% of participants claimed that they were provided with rooming in the facility, and 53.7% were well aware about the appropriate posture required for breastfeeding. As far as perception of mothers regarding WHO guidelines and knowledge about the benefits of breastmilk is concerned it has been stated in (Fig-1) Among all the participants 6.1% women had fear of disfigurement caused by breastfeeding, 33.7% women said that they were provided with written Guidelines, 38.2% received antenatal counseling, 59.3% of mothers knew about obesity caused by formula milk, 50% of the mothers knew that fluids and teats must be avoided in newborns and 92.7% recognized well, the cues of their infants.

Table 2: *Determinants Affecting EIBF*

Determinants	n (%)	AOR (CI at 95%)	P-value
Skin-to-skin contact			
Immediate	25(10.2)	0.290(0.140-0.810)	0.018
Delayed	221(89.9)		
Effect on milk production Analgesics (e.g. opioids)			
Increased	59(2.0)	0.244(0.108-0.551)	0.003
Decreased	135(54.9)		
No effect	106(43.1)		

Table 3: *Factors associated with EIBF*

Factors effecting EIBF	n(%)	P-value
Anesthesia		
Spinal	229(93.1)	0.08
General	17(6.9)	
Post operative pain		
Yes	126(51.2)	
No	120(48.8)	0.064
Hesitation while breastfeeding in hospital	214(87.0)	
Yes	32(13.0)	0.072
No		
Duration of labor pain (hours)		
Nil	159(64.6)	
≤12	54(22)	0.096
>12	33(13.4)	
Mode of pregnancy		
Intentional	211(85.8)	
Unintentional	35(14.2)	0.108
Latch		
Effective	164(66.7)	0.084
Ineffective	82(33.3)	
Antenatal visits		
<4	34(13.8)	0.154
≥4	212(86.2)	
Rooming in facility		
Yes	202(82.1)	
No	43(17.5)	0.076

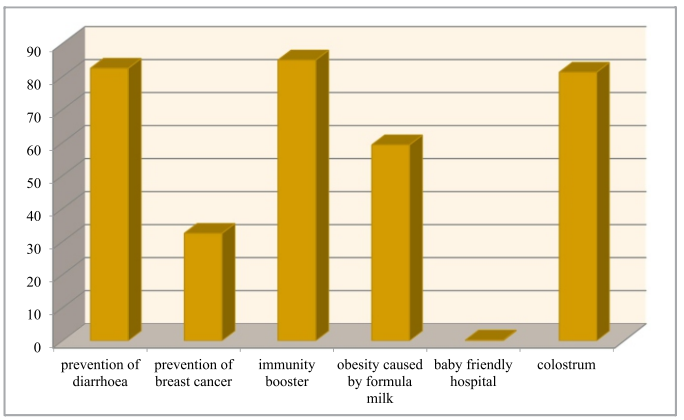


Fig-1: *Knowledge of Mothers Regarding Benefits of Breastfeeding.*

Discussion

Breastfeeding is the 1st and the best gift a mother could ever give to a child. It's the only natural food sufficient to meet all nutritional requirements immediately after birth until 6 months of age.

Our study comprised of 246 women admitted to any of 4 units of Obstetrics department of Services Hospital, Lahore. Early Initiation of Breastfeeding is a fundamental need of every neonate that was found to be 13.4% in our study whereas 25.03% in countries like Ethiopia according to a Demographic and Health survey.[9] A research of the kingdom of Saudi Arabia concluded poor prevalence of EIBF in the Northern region; moderate in central, western and eastern regions but good enough in the southern regions.[10]

As per Sociodemographic details of our participants is concerned 46.3% of women belonged to an age group of 25 to 30 years which was similar to an Egyptian study at Minia university with 28.1% prevalence of early initiation of breastfeeding.[5] In our study majority of women had secondary or higher secondary education. However

educational status was found to have no significant relation with early breastfeeding practices. Whereas according to inference of a cross-sectional study in Bangladesh, increasing education level was inversely related to rate of EIBF and a similar pattern was observed with financial status of women[22]. If women parity is concerned majority of the women in our study were multiparous but this factor was insignificant with respect to EIBF, Whereas a demographic survey in 2018 at Peru concluded that women who had 4 or more deliveries were 21% more likely to perform EIBF than those who were delivering their first child[23] .Significant factors that were found to have delayed early initiation of breastfeeding included lack of implementation of immediate skin-to-skin contact and reduced lactation due to sedative action of analgesics. Both of these factors might result in hampered suckling ability of infant as well as reduced infant's receptivity. Negative impact of analgesics on milk production was encountered by more than half of our target population which was found to be similar to a cohort study conducted in Canada.[11] Skin-to-skin contact between mother and the infant causes release of an essential hormone, oxytocin the "love hormone" in mother that is crucial for establishment of bonding in a mother-infant dyad. Immediate skin-to-skin contact in our setting was 10.2% which is substantially low and attributed to a lack of professional guidance. In Bangladesh it was twice as ours according to a population-based survey[12]. Whereas in Singapore rate of immediate skin-to-skin contact practice was about 4 times higher and the slight slack they had was attributed to lack of staff and interruptions like physical examination of neonates.[13]

Post-operative pain results in reduced mobility in women but in our analysis, it is not significantly affecting timely initiation of breastfeeding which is contrary to findings of university of Texas where post-operative pain was in negative association with the latch[14]. Training of the health care providers in order to create an enabling environment to robust favorable breastfeeding practices is also a basic need of this era. Rooming in facility is also a compliable factor in immediate initiation of breastfeeding, but in our study this factor is not significant which is in contrast to a Cross sectional study appraised in Komfo Anokye teaching Hospital of Ghana, Africa.[15] Antenatal Care (ANC) is one of the recommended fundamental strategies to alleviate the risk of maternal and neonatal mortality. Mothers having Antenatal visits more than 4 during pregnancy are more likely to start breastfeeding timely than those who they don't receive antenatal care. In our study women with more than 4 antenatal visits were 86.2% of total participants but unfortunately this variable was not significantly supporting EIBF. An Indian study evaluated the determinants of Early Breastfeeding practices in rural and urban areas which implied that four or more than four ANV play positive role in commencement of EIBF[16]. Professional Antenatal counseling is also a supportive factor in EIBF. Unfortunately its prevalence in our hospital was just 38.2%. Similarly a meta-analysis conducted in New Delhi India also interpreted that antenatal counseling is an important intervention in early initiation of breastfeeding.[17]

Colostrum, the golden milk, with immunogenic properties, protects neonates against infectious diseases such as diarrhea, pneumonia, neonatal meningitis. Fortunately 81.3% of women visiting Services hospital were well aware of its importance which was much a bit higher than that of mothers in Riyadh (74%) according to a Saudi study.[25] Pre-lacteal feeding predominantly reduces the success rate of immediate as well as exclusive breastfeeding. 50% of the participants in our study had this concept that fluids and teats should not be given to the newborns before 1st breast milk which is in co-relation to a study conducted at Dhaka, Bangladesh, where honey and sugar water were found to be the most widely reported pre-lacteal feeds given to almost more than 50% infants[18]. Immediate and exclusive breastfeeding confers cumulative protective effects against breast cancer. Unfortunately, only 32% of total participants had awareness regarding this potential benefit of breastfeeding. In Beijing, China a study conducted on successful experiences of breastfeeding among Chinese mothers living in Ireland analyzed that most of the mothers knew that breastfeeding not only prevents breast cancer but it also helps to maintain normal body weight[19]. Baby friendly hospital initiative (BFHI) has been a remarkable component of WHO/ UNICEF strategy for optimal infant breastfeeding. BFHI has fostered the establishment of tools and materials for implementation of "Ten Steps to Successful Breastfeeding"[20]. As per our study awareness about existence of baby friendly hospitals among participants was 0.8% that's almost negligible. Similar results were found among Lebanese women with a percentage of 6.3%[24]. In our Tertiary care hospital majority of mothers had awareness regarding WHO recommendations and these findings were in coherence with a Cross-sectional

study of China.[21]

It is a single-setting cross-sectional study hence results cannot be generalized on the whole population. Moreover, Comparison of early breastfeeding practices has not been done between public and private sector hospitals. Alarming rise in rate of cesarean section is an obstacle for initiation of optimal early infant feeding practices. Establishment of appropriate and prompt skin-to-skin contact and implementation of BFHI could be the possible solutions to combat this challenge.

Conclusion

Delay in EIBF is attributed to decreased production of milk due to analgesics(opioids used for labour pain) and non-practicing of immediate skin-to-skin contact. Perception regarding breastfeeding among mothers was good.

Conflict of Interest *None*

Funding Source *None*

References

1. Getnet B, Degu A. Yenealem F.Prevalence and associated factors of early initiation of Breastfeeding among women delivered via caesarean section in South Gondar zone hospitals Ethiopia,2020. Maternal Health, Neonatology and perinatology 2020 Dec,6(1):19.
2. Yisma E, Mol BW, Lynch JW, Smithers LG. Impact of caesarean section on breastfeeding Indicators: within-country and meta-analyses of nationally representative data from 33 countries In sub-Saharan Africa. BMJ open. 2019 Sep 1;9(9):e027497.
3. Mehmood H, Maroof S. Effect of antenatal counselling on early initiation of breastfeeding, an Interventional study at two Federal Hospitals, Islamabad Pakistan. JPMA. The Journal of the Pakistan Medical Association. 2020 Jan 1;70(1):70-3.
4. Joseph EL. Promoting Newborn Skin-to-Skin Contact to Increase Breastfeeding Initiation and Exclusivity in Cesarean Deliveries (Doctoral dissertation, Seton Hall University) 2020.
5. Emam EA, Ali AS. Factors influencing breastfeeding practice after cesarean section delivery. J Nurs Health Sci. 2017;6(5):63-70.
6. Saddki N, Mohamad N, Johar N, Alina Tengku Ismail T, Sulaiman Z. Determinants of nonexclusive breastfeeding practice during the first 6 months after an elective caesarean birth: a Prospective cohort study. International Breastfeeding Journal. 2022 Dec;17(1):1-9.
7. Barkat R, Jiwani A, Rahim A, Khan S. Frequency of early initiation of breastfeeding among Women in Thatta, Sindh and factors associated with it: A secondary data analysis. Journal of the Pakistan Medical Association. 2021;71(12):2 731-4.
8. Arif S, Khan H, Aslam M, Farooq M. Factors influencing exclusive breastfeeding duration in Pakistan: a Population-based cross-sectional study. BMC public health. 2021 Dec;21(1):10.
9. Gedefaw G, Goedert MH, Abebe E, Demis A. Effect of cesarean section on initiation of breast feeding: Findings from 2016 Ethiopian Demographic and Health Survey. PloS one. 2020 Dec 18;15(12):e0244229.
10. Ahmed AE, Salih OA. Determinants of the early initiation of breastfeeding in the Kingdom of Saudi Arabia. International breastfeeding journal. 2019 Dec;14(1): 1-3
11. Hobbs AJ, Mannion CA, McDonald SW, Brockway M, Tough SC. The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum. BMC pregnancy and childbirth. 2016 Dec;16(1):1-9.
12. 14.Ali NB, Priyanka SS, Bhui BR, Herrera S, Azad M, Karim A, Shams Z, Rahman M, Rokonuzzaman SM, Meena US, El Arifeen S. Prevalence and factors associated with skintoskin contact (SSC) practice: findings from a population-based cross-sectional survey in 10 selected districts of Bangladesh. BMC Pregnancy and Childbirth. 2021 Dec;21(1):1-3.
13. Lau Y, Tha PH, Ho-Lim SS, Wong LY, Lim PI, Citra Nurfarah BZ, Shorey S. An analysis of the effects of intrapartum factors, neonatal characteristics, and skin-to-skin contact on early breastfeeding initiation. Maternal & child nutrition. 2018 Jan;14(1):e12492.
14. Babazade R, Vadhera RB, Krishnamurthy P, Varma A, Doulatram G, Saade GR, Turan A. Acute postcesarean pain is associated with in-hospital exclusive breastfeeding, length of stay and post-partum depression. Journal of Clinical Anesthesia. 2020 Jun 1;62:109697.
15. Boakye-Yiadom AP, Nguah SB, Ameyaw E, Enimil A, Wobil PN, Plange-Rhule G. Timing of initiation of breastfeeding and its determinants at a tertiary hospital in Ghana: a crossectional study. BMC Pregnancy and Childbirth. 2021 Dec;21(1):1-9.
16. Senanayake P, O'Connor E, Ogbo FA. National and rural-urban prevalence and determinants of early initiation of breastfeeding in India. BMC Public Health. 2019 Dec;19(1):1-3.
17. Sinha B, Chowdhury R, Sankar MJ, Martines J, Taneja S, Mazumder S, Rollins N, Bahl R, Bhandari N. Interventions to improve breastfeeding outcomes: a Systematic review and meta-analysis. Acta Paediatr. 2015; 104(S467):114–34
18. Khatun H, Comins CA, Shah R, Munirul Islam M, Choudhury N, Ahmed T. Uncovering the barriers to exclusive breastfeeding for mothers living in Dhaka's slums: a mixed method study. International breastfeeding journal. 2018 Dec;13(1):1-1.

19. Zhou Q, Chen H, Younger KM, Cassidy TM, Kearney JM. "I was determined to breastfeed, and I always found a solution": successful experiences of exclusive breastfeeding among Chinese mothers in Ireland. International breastfeeding journal. 2020 Dec;15(1):1-0.
20. Fauziah N, Riono P. Impact of Baby-Friendly Hospital Initiative for Improving Exclusive Breastfeeding: A Systemic Review of Ten Steps to Successful Breastfeeding. KnE Life Sciences. 2021 Mar 15:881-96.
21. Hamze L, Mao J, Reifsnider E. Knowledge and attitudes towards breastfeeding practices: A crosssectional survey of postnatal mothers in China. Midwifery. 2019 Jul 1;74:68-75
22. Islam MA, Mamun AS, Hossain MM, Bharati P, Saw A, Lestrel PE, Hossain MG. Prevalence and factors associated with early initiation of breastfeeding among Bangladeshi mothers: a nationwide cross-sectional study. PloS one. 2019 Apr 25;14(4):e0215733.
23. Hernández-Vásquez A, Chacón-Torrico H. Determinants of early initiation of breastfeeding in Peru: analysis of the 2018 Demographic and Family Health Survey. Epidemiology and health. 2019;41.
24. Oueidat H, Charafeddine L, Nimer H, Hussein H, Nabulsi M. Knowledge and attitudes of Lebanese women towards Baby Friendly Hospital Initiative practices. Plos one. 2020 Sep 11;15(9):e0238730.
25. Almahmoud K, Almousa A, Albalawi L, Althobaiti R, Alothman A, Almhizai R. Colostrum knowledge among mothers in Riyadh, Saudi Arabia.

Authors Contribution

AK: Conceptualization of Project
MR: Data Collection
MM: Literature Search
BM: Statistical Analysis
YM: Drafting, Revision
AK: Writing of Manuscript

Medical Students' Perspectives Towards Absenteeism in Class

Mohi Ud Din,[1] Noor Fatima,[2] Shazia Awan,[3] Muqaddas Mariyam,[4] Uswa Naseer,[5] Khadija Aziz Tarar[6]

Abstract

Objective: To examine the reasons why medical students miss their classes.

Material and Methods: A descriptive cross-sectional study was conducted in a private medical college of Faisalabad, for 7 months. Ethical approval was taken beforehand. Participants from all MBBS classes and those who gave consent were included. Total sample size was 300. Stratified sampling technique was used. A pretested and structured questionnaire was used to get the response. Frequencies and percentages were calculated. One-sample t-test was applied. P-value less than 0.05 was considered as statistically significant.

Results: Mostly students joined medical field as per their choice (89%) and majority also liked their field of study (95%). Most common reasons for absenteeism were preparation for tests, hectic schedule and self-directed learning. One-sample t-test showed significant contribution of all variables towards absenteeism among medical students.

Conclusion: There were several reasons why students missed classes, most commonly mentioned by students were "To prepare your tests or tutorials; Hectic schedule and want to spend the same time in self-studies/self-directed studies." Teachers must be approachable and helpful in order for pupils to get over their fears and shortcomings. The curriculum should include mentorship programs and constructive feedback.

Keywords: Absenteeism, class, medical, perspectives, students

How to cite: *Din MU, Fatima N, Awan S, Mariyam M, Naseer U, Tarar KA. Medical Students' Perspectives Towards Absenteeism in Class. Esculapio - JSIMS 2023;19(03):365-370*

DOI: https://doi.org/10.51273/esc23.251319322

Introduction

Medical education is a rigorous and demanding field, requiring a significant amount of time and effort on the part of students in order to succeed. In this context, attendance in class is often seen as a critical factor in achieving success.[1] However, medical students' perspectives towards absenteeism in class can vary widely depending on a number of factors, including their personal motivations, academic goals, and individual circumstances.[2]

Medical education is highly structured and organized, with a large amount of material to cover in a short period of time. One perspective that is commonly held among medical students is that attendance in class is essential for success in medical school. Missing classes can make it difficult for students to keep up with the material and stay on track with their peers.[3] Additionally, many medical schools have attendance policies in place that require students to attend a certain percentage of classes in order to pass the course or graduate. In this view, absenteeism is seen as a major barrier to success.[4] There are several reasons why medical students view attendance in class as so important. First, medical education is highly competitive, and students must work hard to distinguish themselves from their peers. In this context, attendance in class can be seen as a way of demonstrating commitment and dedication to the field. Additionally, medical students are often highly motivated and driven, and they recognize the importance of staying on top in order to succeed. In this view, missing classes is simply not an option for students who are serious about their education and their future careers.[5] Another reason why medical students may view attendance in class as so important

1. *Department of Community Medicine Aziz Fatimah Medical and Dental College, Faisalabad*
2,4-6. *Aziz Fatimah Medical and Dental College, Faisalabad*
3. *Department of Pulmonology, Mohi-ud-din Medical College, Mirpur, AJK*

Correspondence:
Dr. Mohi Ud Din, *Assistant Professor, Department of Community Medicine, Aziz Fatimah Medical and Dental College, Faisalabad, Pakistan.*
E-mail. dr.md89@outlook.com

Submission Date: 05-08-2023
1st Revision Date: 17-08-2023
Acceptance Date: 15-09-2023

is that medical education is highly structured and organized. Courses are often taught in a linear fashion, with new material building on previously learned concepts.[6] Missing classes can disrupt this linear progression and make it difficult for students to understand new material. In this context, absenteeism is seen as a significant risk factor, with the potential to derail a student's academic progress.[7] However, not all medical students view absenteeism in such a negative light. Some students may view absenteeism as a necessary trade-off in order to achieve their academic and personal goals. Medical school is demanding, and students may need to prioritize their time and resources in order to meet their obligations. For example, students may need to miss classes in order to attend clinical rotations or complete research projects. Additionally, many medical students have personal obligations or health concerns that make attendance in class difficult or impossible. In this view, absenteeism is seen as a necessary compromise for some students, with the potential to enhance rather than inhibit academic success.[8] Another perspective that some medical students hold is that absenteeism is a symptom of larger issues within the medical education system. For example, some students may feel that classes are not engaging or that lectures are not effective methods of learning.[9] Others may feel that medical education is overly focused on memorization and testing, and that attendance in class is not necessarily correlated with learning outcomes. In this view, absenteeism is seen as a symptom of a larger problem that needs to be addressed. Also, students feel that they are under a great deal of pressure to perform well. In this context, attendance in class may be seen as a way of demonstrating commitment and dedication to the field, rather than as an effective method of learning.[10]

The causes differ from nation to nation, but the bulk of them stem from issues with the institution itself. However, it is important to consider the social and personal factors that influence student absenteeism. Poor teaching techniques, strained relationships with instructors, an uncomfortable learning environment, a lack of enthusiasm in the topic, illness, and social media addiction are among the main causes indicated by numerous research. As an industrial and 3rd largest city of Pakistan, medical students of Faisalabad may have different reasons for absenteeism. Despite the fact that the issue is known to exist, no published study has evaluated and examined the scope and determinants of absenteeism in this particular city. In order to understand the reasons of absenteeism among undergraduate medical students in Faisalabad, this study was carried out.

Material and Methods

A descriptive cross-sectional study was conducted in a private medical college of Faisalabad, from September 2022 to March 2023. Ethical approval was taken beforehand from institutional ethical review committee with Ref.No: IEC/182-22. Participants from all MBBS classes and those who gave consent were included. Participants were included in the study through stratified sampling by taking 1st 60 students from each MBBS class by considering equal proportion of males and females students. To ascertain absenteeism behaviour and contributing variables, a self-reported questionnaire was employed. A pretested and structured questionnaire, adopted from studies titled "Absenteeism among Saudi Medical Students and Analysing the Attitude of Medical Students toward Class Absenteeism" was used after taking permission from author.[11] It has 2 parts. In 1st part, student demographics and did they join medical field as per choice and also whether like their field of study were asked. In 2nd part, attitude of students towards absenteeism reasons was assessed comprising 26 items on 5 point Likert scale ranging from strongly disagree to strongly agree. It was made as google form and circulated through email and WhatsApp and responses were recorded and then imported in excel sheet and finally in SPSS work sheet. Frequencies and percentages were calculated. One-sample t test was applied. P-value less than .05 was considered as statistically significant.

Results

Total 300 participants were included in the study. There were equal percentage of males and females from every class i.e. 30 males and 30 females, total 60 students (20%) each from 1st year to final year MBBS. Majority of study participants were from age group above 21 years of age i.e. 194 (64.7%) and were day scholars i.e. 184 (61.3%). Mostly joined medical field as per their choice and majority also liked their field of study as shown in fig. 1 and 2 respectively. There were multiple reasons regarding absenteeism in class. They have been arranged as per their mean and rank order in descending order as shown in Table 1. To evaluate the degree of significance for the variables, a one-sample t-test was performed for additional analysis as shown in Table 2. The results of Table 2 show that each variable considerably increases absenteeism among the participants.

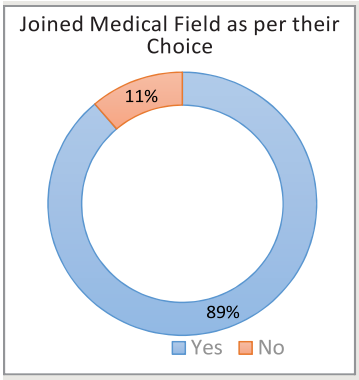


Fig. 1: *Joined medical field as own choice*

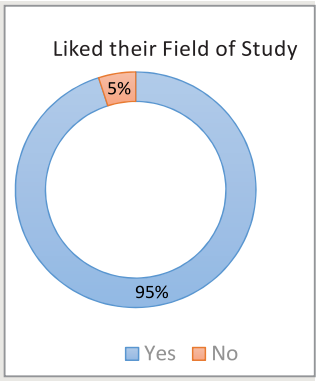


Fig. 2: *Liked their field or not*

Discussion

This study investigated the possible reasons of absenteeism in class by medical students. As the curriculum of MBBS is shifting from traditional towards integrated, now there is more need to improve medical students' attendance because of multiple subjects' involvement in curriculum starting from 1st year and if there is lack of attendance, it will create more problems for them rather than traditional curriculum where only specified subjects had been taught. The most important 10 reasons quoted by medical students contributing towards absenteeism are following: To prepare your tests or tutorials; Hectic schedule; You want to spend the same time in self-studies/self-directed studies; You easily find lectures online in the form of videos/slides/ppts; Due to burnout; Inflexible time tables that hamper quality learning; You cannot concentrate during lectures; Due to any health issue; You were awake late at night and You do not like the teaching style of the teacher. A study done by Jeannette Weber et al showed that exam-related issues, including scheduling, perceived unjust grading, and personal traits like self-expectations and failure dread,

Table 1: *Statistical analysis of Likert based questions, regarding the attitude of the study participants toward the reasons for absenteeism*

You skip lectures/tutorials because of:	Frequency	Percentage	Variance
To prepare your tests or tutorials	3.46	1.347	1.814
Hectic schedule	3.31	1.396	1.948
You want to spend the same time in self-studies/self-directed studies	3.03	1.323	1.751
You easily find lectures online in the form of videos/slides/ppts	2.99	1.390	1.933
Due to burnout	2.92	1.372	1.883
Inflexible time tables that hamper quality learning	2.89	1.346	1.811
You cannot concentrate during lectures	2.88	1.307	1.709
Due to any health issue	2.83	1.343	1.803
You were awake late at night	2.80	1.346	1.813
You do not like the teaching style of the teacher	2.77	1.269	1.611
You do not find yourself connected to the subject	2.71	1.224	1.499
For having meals when you skip your breakfast	2.62	1.364	1.861
Aggressive attitude of your teacher	2.62	1.317	1.735
Poor teaching skills of a teacher	2.57	1.232	1.517
You think the lectures are not enough informative	2.54	1.194	1.426
You think you can easily understand without guidance	2.53	1.175	1.381
Any bad memory associated to that particular teacher	2.48	1.228	1.508
Unfavourable learning environment like an excessive distraction, noise, no proper seating in classrooms, overcrowding, poor ventilation	2.45	1.222	1.492
Socialization like in cafeteria or social media	2.44	1.248	1.558
No interest in that subject	2.41	1.149	1.320
To attend the unannounced visits from your family	2.32	1.184	1.402
Because of some family issue	2.27	1.118	1.249
You have already received lecture slides from other sources like seniors	2.26	1.078	1.163
Resident of a far-flung area	2.19	1.217	1.481
Transport issues	2.16	1.129	1.274
Traffic jam on roads	2.14	1.227	1.505

Table 2: *One-sample t-test showing significance level of the established variables*

You skip lectures/tutorials because of:	t	DF	Significant (2-Tailed)	95% CI of the difference (lower-upper)
Traffic jam on roads	30.210	299	0.000	2.00 – 2.28
A resident of a far-flung area	31.218	299	0.000	2.06 – 2.33
No interest in that subject	36.337	299	0.000	2.28 – 2.54
Poor teaching skills of a teacher	36.143	299	0.000	2.43 – 2.71
Unfavourable learning environment like an excessive distraction, noise, no proper seating in classrooms, overcrowding, poor ventilation	34.735	299	0.000	2.31 – 2.59
Socialization like in cafeteria or social media	33.856	299	0.000	2.30 – 2.58
Due to burnout	36.818	299	0.000	2.76 – 3.07
Any bad memory associated to that teacher	34.934	299	0.000	2.34 – 2.62
Do not find yourself connected to the subject	38.291	299	0.000	2.57 – 2.85
Easily find lectures online	37.290	299	0.000	2.84 – 3.15
Do not like the teaching style of teacher	37.755	299	0.000	2.62 – 2.91
You think you can easily understand without guidance	37.246	299	0.000	2.39 – 2.66
You think the lectures are not enough informative	36.887	299	0.000	2.41 – 2.68
You want to spend the same time in self-studies/self-directed studies	39.700	299	0.000	2.88 – 3.18
You cannot concentrate during lectures	38.205	299	0.000	2.73 – 3.03
Because of some family issue	35.226	299	0.000	2.15 – 2.40
Transport issues	33.194	299	0.000	2.04 – 2.29
You have already received lecture slides from other sources like seniors	36.299	299	0.000	2.14 – 2.38
You were awake late at night	36.021	299	0.000	2.65 – 2.95
Hectic schedule	41.115	299	0.000	3.15 – 3.47
Tests/assessments	42.950	299	0.000	3.22 – 3.53
To prepare your tests or tutorials	44.451	299	0.000	3.30 – 3.61
For having meals when you skip your breakfast	33.307	299	0.000	2.47 – 2.78
Due to any health issue	36.465	299	0.000	2.67 – 2.98
To attend the unannounced visits from your family	33.934	299	0.000	2.19 – 2.45
Inflexible time tables that hamper quality learning	37.200	299	0.000	2.74 – 3.04
Aggressive attitude of your teacher	34.455	299	0.000	2.47 – 2.77

as well as organizational factors and time and performance pressure, identified as the main causes of stress among medical students.[12] This stress can lead towards absenteeism as well which is similar to results of our study where most common reason cited towards absenteeism is preparation of tests and tutorials. A study done by Takami Maeno et al showed that the alteration of the academic calendar and busy/hectic timetable was the most frequently recognized primary obstacle to the implementation of professional education[13] which is similar to the results of our study where hectic schedule is one of the commonest reasons towards absenteeism. A study done by Neil P. Morris et al showed that attendance for unrecorded lectures was much higher as compared to recorded ones which students can assess anytime later on.[14] This is similar to our study where availability of lectures is one of the reason for not attending class.

A study done by Antonios Nteveros et al depicted that the consequences of burnout among medical students are numerous since it is linked to absenteeism, low morale, and unhappiness[15] which is similar to the results of our study. Similarly, a study done by Moeed Iqbal Qureshi et al found that rigid timetables were among the top causes of absenteeism among medical students, which hindered quality learning[16], similar to the results of our study. A study done by Ahmed Alsoufi et al showed that one of the factors contributing to student absenteeism is students' disinterest in lectures and their reliance on the availability of learning materials online which impede their concentration during lectures and tutorials.[17] a study done by Bothaina Ahmed Attal showed that due

to late-night internet usage and a lack of sleep hygiene awareness, medical students often experience insufficient sleep duration and poor sleep quality, which is linked to concentration problems, poor academic performance, and absenteeism.[18] These results are similar to our study.

A study done by Azim Mirzazadeh showed that the scientific knowledge, topic mastery, and oral communication skills of faculty members were seen by both faculty members and students as having the greatest impact on student attendance. The opinions of students and faculty members on how attending class affects academic success were statistically significant. Students were less likely to agree with the faculty members who stated that professionalism in students was measured by their attendance in class.[19] According to the results of study done by Kiran Nawaz et al, instructional factors, evaluation factors as well as social variables, were the main contributing factors influencing absenteeism among nursing students.[20] Our study was limited by the fact that it was a single centre study. The generalisability of absenteeism reasons among medical students could not be determined due to the study's nonprobability sampling approach and also due to variability of factors variations in different institutes. Compared to qualitative procedures used in face-to-face situations, the depth of information that may otherwise be acquired is typically overlooked by online data collecting.

Conclusion

There are several reasons why students miss class, most commonly mentioned by students were “To prepare your tests or tutorials; Hectic schedule and want to spend the same time in self-studies/self-directed studies.” Teachers must be approachable and helpful in order for pupils to get over their fears and shortcomings. The curriculum should include mentorship programs and constructive feedback.

Funding Source *None*

Conflict of interest *None*

References

1. Al Khaja, K.A.J., Tayem, Y., James, H. et al. Pharmacology and therapeutics resource session attendance and academic performance of pre-clerkship medical students in problem-based learning curricula. BMC Med Educ 19, 269 (2019). https://doi.org/ 10. 1186/ s12909-019-1699-3
2. Sharma SK, Vagha SJ, Ukey UU, et al. Dwindling attendance of undergraduate medical students, reasons and possible solutions. J Evolution Med Dent Sci 2021; 10(03):148-152, DOI: 10.14260/jemds/2021/31
3. Elisabeth Moores, Gurkiran K. Birdi & Helen E. Higson (2019) Determinants of university students’ attendance, Educ. Res. J., 61:4, 371-387, DOI: 10.1080/ 00131881. 2019.1660587
4. Reyes A. Compulsory School Attendance: The New American Crime. Education Sciences 2020;10:75. https:// doi.org/10.3390/educsci10030075.
5. Fadelelmoula T, 2018. The impact of class attendance on student performance. Int Res J Med Med Sci, 6(2): 47-49. DOI: 10.30918/IRJMMS.62.18.021
6. Gautam, N., Dhungana, R., Gyawali, S., Dhakal, S., & Pradhan, P. M. S. (2022). Perception of Medical Students Regarding TU-IOM MBBS Curriculum and Teaching Learning Methods in Nepal. Kathmandu University Medical Journal, 20(2), 219–224. https:// doi.org/ 10. 3126/kumj.v20i2.51404
7. Kuhfeld M, Soland J, Tarasawa B, Johnson A, Ruzek E, Liu J. Projecting the potential impact of COVID-19 school closures on academic achievement. Educ. Res. 2020 Nov;49(8):549-65. DOI: 10.3102/ 0013189 X20965918
8. Chaudhry SH, Iqbal J. Absenteeism of medical students from subspecialty clinical rotations: a qualitative study. J Coll Physicians Surg Pak. 2019 Jan 1;29(1):45-60.
9. Latif Khan Y, Khursheed Lodhi S, Bhatti S, Ali W. Does Absenteeism Affect Academic Performance Among Undergraduate Medical Students? Evidence From "Rashid Latif Medical College (RLMC).". Adv Med Educ Pract. 2019 Dec 2;10:999-1008. doi: 10.2147/ AMEP.S226255.
10. Wynter, L., Burgess, A., Kalman, E. et al. Medical students: what educational resources are they using?. BMC Med Educ 19, 36 (2019).https://doi.org/10.1186/s 12909-019-1462-9
11. Qutub MF, Azahrani AA, Bafail MA, Alomari AS, Abuznadah WT, Alsaywid BS, Munshi FM, Alsaywid BS. Absenteeism among Saudi medical students. Egypt. J. Hosp. Med. 2018 Jan 1;70(8):1248-53. DOI: 10. 12816/0044631
12. Weber, J., Skodda, S., Muth, T. et al. Stressors and resources related to academic studies and improvements suggested by medical students: a qualitative study. BMC Med Educ 19, 312 (2019). https://doi.org/ 10. 1186/ s12909-019-1747-z
13. Maeno T, Haruta J, Takayashiki A, Yoshimoto H, Goto R, et al. (2019) Interprofessional education in medical schools in Japan. PLoS ONE 14(1): e0210912. https:// doi.org/10.1371/journal.pone.0210912

14. Morris NP, Swinnerton B, Coop T. Lecture recordings to support learning: A contested space between students and teachers. Comput Educ. 2019 Oct 1;140:103604. https://doi.org/10.1016/j.compedu.2019.103604

15. Nteveros A, Kyprianou M, Artemiadis A, Charalampous A, Christoforaki K, et al. (2020) Burnout among medical students in Cyprus: A cross-sectional study. PLoS ONE 15(11): e0241335. https:// doi.org/10.1371/ journal.pone.0241335

16. Qureshi, M., & Ahmad, A. (2019). MEDICAL STUDENTS' PERSPECTIVE ON ABSENTEEISM AND ITS REMEDIES. Pak. Armed Forces med. j., 69(2), 332-39. Retrieved from https://www.pafmj.org/ index.php/PAFMJ/article/view/2749

17. Alsoufi A, Alsuyihili A, Msherghi A, Elhadi A, Atiyah H, et al. (2020) Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. PLoS ONE 15(11): e0242905. https://doi.org/10. 1371/journal.pone.0242905

18. Attal BA, Bezdan M, Abdulqader A. Quality of sleep and its correlates among Yemeni medical students: a cross-sectional study. Sleep Disord. 2021 Jan 18; 2021. https://doi.org/10.1155/2021/8887870

19. Mirzazadeh A, Aminian M, Alizadeh M, Sahebozamani E, Sabzi Aliabadi S. Factors Affecting Class Absenteeism: Perspective of Medical Students and Faculty Members at Tehran University of Medical Sciences. Iran J Med Sci. 2018; 18 :243-256

20. Nawaz K, Hussain M, Sarwar H, Afzal M, Gilani SA. Determine the factors influencing absenteeism among nursing students. Int. acad. j. health med. nurs. 2018; 50(7):64-72.

Authors Contribution

MUD, SA: Conceptualization of Project

NF, MM, UN, KAT: Data Collection

NF, MM, UN, KAT: Literature Search

MUD: Statistical Analysis

MUD, NF, UN, KAT: Drafting, Revision

MUD, SA, MM: Writing of Manuscript

Using Artificial Intelligence (AI) As An External Examiner

Tayyaba Azhar,[1] Kinza Aslam,[2] Zakia Saleem,[3] Ahsan Sethi,[4] Tahseen Fatima[5]

Abstract

Objective: To access the validity of ChatGPT on AI assisted tool for evaluating essay questions.

Material and Methods: This was a cross-sectional quantitative study conducted at University College of Medicine and Dentistry from June till August 2023. Eighteen questions were selected from fifteen exit tests of Certificate in HPE course. Each of the answers were independently graded by two assessors with doctorate in HPE. The same answers were then reevaluated using ChatGPT. The inter-rater reliability was determined using Kappa test.

Results: The agreement between ChatGPT and examiner scores varied on various items. Weak agreement was observed for questions 8 and 9, moderate agreement for questions 2, 3, and 5, and strong kappa agreement for questions 1, 4, 6, and 7.

Conclusion: Artificial intelligence assisted tools such as ChatGPT is a reality but its use in assessing essay questions would require massive training data from expert assessors. Once appropriately trained, it may replicate assessment decisions across the full range of subject.

Keywords: AI, ChatGPT, Automated scoring, human scoring.

How to cite: *Azhar T, Aslam K, Saleem Z, Sethi A, Fatima T. Using Artificial Intelligence (AI) As An External Examiner. Esculapio JSIMS 2023;19(03):371-374*

DOI: https://doi.org/10.51273/esc23.251319323

Introduction

Despite the prominence of AI and associated technologies in daily life, the usage of technology (especially technology involving AI) has been slow to advance in the context of educational research and within educational contexts, such as schools and colleges. It still has a reputation as the new kid on the block in the world of educational assessment.[1]

This is unexpected in many ways because it makes sense to employ modern computer capacity to support AI and automated machine decision making when processing data like exam results. This was never more important than in 2020, when the COVID-19 epidemic caused all of England's national high-stakes testing systems to cease operations. The entire system had to be altered simply because students could no longer take paper-based exams while seated in an exam room. The now-famous exams catastrophe slowly came undone due to the reliance on outdated testing methods.[1,2] Assessing student learning in health professions education can be challenging due to the complexity of subject matter. In order to overcome these challenges, the program of assessment should be such that it incorporates a variety of assessment tools that can assess students competence holistically. Despite the many questions that arise around their usage, essay questions remain to be an important component of assessments in health professions education because when used appropriately, essay questions can be an effective way of gauging student's higher order thinking abilities and subject matter expertise. However, grading essay questions is difficult and prone to error. The observed score = true score + error is a common formula used in assessment.[3] It suggests that when measuring a certain characteristic or trait (such as knowledge or skill level), the score that is observed

1. *FMH College of Medicine & Dentistry*
2. *University College of Medicine & Dentistry*
3. *University College of Medicine & Dentistry*
4. *QU Health, Qatar University, Doha, Qatar*
5. *Medical Education Department- University College of Medicine & Dentistry*

Correspondence:
Dr.Tayyaba Azhar, A*ssistant Professor & Director Medical Education, FMH College of Medicine & Dentistry- tayyabasualehi@gmail.com*

Submission Date: 07-08-2023
1st Revision Date: 17-08-2023
Acceptance Date: 12-09-2023

is made up of two components: the true score and the measurement error. True score refers to the actual level of the characteristic or trait that the individual possesses and measurement error refers to the inaccuracies or variations that can occur in the measurement process. Sources of error while grading essay questions include but are not limited to grader bias, grader subjectivity, lack of clarity in grading criteria, inadequate training of graders, time constraints and grading fatigue. In order to address some of these concerns, educational institutions are turning towards artificial intelligence, more commonly referred to as automated grading, for grading exams. This technology uses natural language processing to analyze the content of the student's response, identify keywords and concepts, and match them to predetermined grading criteria. The use of automated grading may potentially reduce grading bias as it is expected to be more impartial.[4] The most recent advancements in education technology, notably in the area of formative and summative assessment practise, now include automated scoring, including the usage of AI. Developers of AI make a variety of assertions about the validity and applications of their technologies but they all generally agree that, it shortens the marking process, it eliminates or lessens human bias; and it is at least as accurate and dependable as human markers.[5,6] To check the accuracy of this claim, this research project was designed to (re) grade essay questions using ChatGPT.

Material and Methods

This was a cross-sectional quantitative study conducted at University College of Medicine and Dentistry from June till August 2023 and compares the results of a facilitator's and ChatGPT's assessments of students' knowledge and abilities using a comparative research approach. The score of 403 participants, who were taking the exit test for the Certificate in Health Professions Education, was initially graded by the facilitator and was re-scored by using the AI language model ChatGPT. Of these participants, 225 were female and 178 were male. Eighteen graded questions were chosen from the fifteen sets of exit tests. Using knowledge and skill about the pertinent topic, the facilitator scored the chosen question. The same set of questions was subjected to a rescoring process by ChatGPT. Kappa and correlation tests were used to compare the data obtained from the two assessment techniques. The correlation test was used to analyze the strength and direction of the link between the two assessment methods, and the kappa test was used to assess the degree of agreement between the two assessment techniques.7,8 This study has taken considerable care throughout the research process to preserve ethical norms. The institute's administrators were made aware of the study's objectives before its start, and the necessary consent was secured before processing any participant data. Also, the privacy and protection of the participants were guaranteed, and the confidentiality of all data was of the utmost significance. To ensure that the research is carried out responsibly and ethically, the study has also accounted for all ethical norms and concerns.

Results

A total of 403 students were included in the study. Of these, 178 (44.2%) were male and 225 (55.8%) were female. The ChatGPT score and examiner score consisted of 9 items. Items 1, 3, and 8 showed a negative correlation, while only 8 items showed a significant difference between the ChatGPT score and the examiner score. Items 2 and 4 showed a weak positive correlation and an insignificant difference between the ChatGPT score and the examiner score. Items 5, 6, and 9 showed a moderate positive correlation and difference between ChatGPT score an the examiner and the examiner score. Only item 7 showed a strong positive correlation, but there was an insignificant difference between the ChatGPT score and the examiner score. According to the Kappa test, questions 8 and 9 showed weak agreement between the ChatGPT and examiner scoring. Questions 2, 3, and 5 showed moderate agreement between the ChatGPT and examiner scoring, while questions 1, 4, 6, and 7 showed strong kappa agreement between the ChatGPT and examiner scoring.

Discussion

This study showed that the agreement between ChatGPT and human examiners' scoring varied for different items. Items 8 and 9 had weak agreement, suggesting that accurately measuring these items may be challenging. A study also found that the correlation between human and machine scoring was not superior for essay questions.[9] Literature suggests that automated scoring only focuses on language and grammar correction, while human raters can also provide personalized suggestions on the organization of the

Table 3: *Comparison of Predictive Values (Bishop Score vs. Cervical Length)*

Question	N	Correlation Value	p-Value	Correlation Status	Kappa Test Value	Kappa Significant value	Interpretation
Q1	20	-0.021	0.931	Negative	0.005	0.89	Slight Agreement
Q2	20	-0.01	0.965	Negative	-0.114	0.164	
Q3	15	-0.214	0.443	Negative	-0.037	0.38	
Q4	15	0.406	0.134	moderate positive	0.053	0.29	Slight Agreement
Q5	76	-0.07	0.548	Negative	-0.01	0.67	
Q6	19	0.47	0.039	moderate positive	0.03	0.57	Slight Agreement
Q7	19	0.47	0.39	moderate positive	0.014	0.737	Slight Agreement
Q8	13	0.15	0.61	weak positive	0	0	Slight Agreement
Q9	13	0.665	0.013	moderate positive	0.031	0.574	Slight Agreement
Q10	23	0.23	0.286	weak positive	0.01	0.759	Slight Agreement
Q11	23	0.527	0.01	moderate positive			
Q12	23	0.106	0.63	weak positive	0.06	0.043	Slight Agreement
Q13	23	0.45	0.035	moderate positive	-0.017	0.484	
Q14	22	0.65	0.001	moderate positive	-0.59	0.172	
Q15	21	0.2	0.383	weak positive	0.012	0.736	Slight Agreement
Q16	12	-0.62	0.29	Negative	-0.9	0.228	
Q17	29	0.096	0.62	weak positive	-0.08	0.174	
Q18	17	1	0.68		-0.138	0.083	

structure and arguments. Additionally, another study found that the average score of the auto-mated scoring system was higher than that of human raters in evaluating Chinese college students' English writing. Questions 1, 4, 6, and 7 showed strong agreement, while questions 2, 3, and 5 showed moderate agreement. A previous study demonstrated that computers can mark short-answer questions as accurately as human markers.[10] Another study has demonstrated that computer marking based on language processing can identify critical words, analyze the context and hence issue predictable grades.[11] Furthermore, computer marking can provide more consistent results, especially when the time spent developing the question and response matching can be justified. This can also free up course tutors from the task of marking simple responses, enabling them to focus on more judgment-intensive assessment tasks and supporting their students in other ways.[12] In addition to this, by freeing up tutor's time, computer marking can also assist them in providing timely and high quality feedback to students.[13] Literature remains conflicted on whether computer marking is superior to human marking as there is research-showing benefits of both. It is, however, difficult to ignore some of the advantages computer marking has to offer in terms of being efficient, cost effective, impartial and free from fatigue bias.[14,15] Even then, human marking will not be replaced by computer marking as humans pay a lot more attention to the social and communicative aspects of writing which cannot be ignored in essay questions.[16]

Conclusion

Artificial intelligence assisted tools such as ChatGPT is a reality but its use in assessing essay questions would require massive training data from expert assessors. Once appropriately trained, it may replicate assessment decisions across the full range of subject. Future studies should consider developing detailed rubrics for essay questions and then provide those rubrics to the examiners and as well as ChatGPT for assessing their validity and reliability.

Funding Source: *None*

Conflict of Interest: *None*

References

1. Richardson M, Clesham RJLRoE. Rise of the machines? The evolving role of Artificial Intelligence (AI) technologies in high stakes assessment. 2021;19(1):1-13.
2. Islam MM, Poly TN, Alsinglawi B, Lin MC, Hsu M-H, Li Y-CJJocm. A state-of-the-art survey on artificial intelligence to fight COVID-19. 2021;10(9):1961.
3. Van Der Vleuten CPJAiHSE. The assessment of profe-

ssional competence: developments, research and practical implications. 1996;1(1):41-67.
4. Douce C, Livingstone D, Orwell JJJoERiC. Automatic test-based assessment of programming: A review. 2005; 5(3):4-es.
5. Bridgeman BJHoaeeCa, directions n. 13 Human Ratings and Automated Essay Evaluation. 2013:221.
6. Pinot de Moira A. Features of a levels-based mark scheme and their effect on marking reliability. 2013.
7. Hartling L, Hamm M, Milne A, Vandermeer B, Santaguida PL, Ansari M, et al. Validity and inter-rater reliability testing of quality assessment instruments. 2012.
8. Carletta JJapc-l. Assessing agreement on classification tasks: the kappa statistic. 1996.
9. Bridgeman B, Trapani C, Attali YJAMiE. Comparison of human and machine scoring of essays: Differences by gender, ethnicity, and country. 2012;25(1):27-40.
10. Chen H, Pan JJA-PJoS, Education FL. Computer or human: a comparative study of automated evaluation scoring and instructors' feedback on Chinese college students' English writing. 2022;7(1):1-20.
11. Wang Z, Liu J, Dong R, editors. Intelligent auto-grading system. 2018 5th IEEE International Conference on Cloud Computing and Intelligence Systems (CCIS); 2018: IEEE.
12. Butcher PG, Jordan SEJC, Education. A comparison of human and computer marking of short free-text student responses. 2010;55(2):489-99.
13. Matthews K, Janicki T, He L, Patterson LJJoISE. Implementation of an automated grading system with an adaptive learning component to affect student feedback and response time. 2012;23(1):71-84.
14. Burrows S, Gurevych I, Stein BJIjoaiie. The eras and trends of automatic short answer grading. 2015; 25: 60-117.
15. Haley D, Thomas P, De Roeck A, Petre M. Measuring improvement in latent semantic analysis-based marking systems: using a computer to mark questions about HTML. 2007.
16. Huang S-JJEJoFLT. Automated versus Human Scoring: A Case Study in an EFL Context. 2014;11.

Authors Contribution

TA, AS: Conceptualization of the Project

TA, KA, ZS: Literature Search

TA, KA: Data Collection

TF: Statistical Analysis

TA, KA, AS: Drafting, Revision

INSTRUCTION TO AUTHOR

The 'Esculapio' agrees to accept manuscripts prepared in accordance with the "Uniform Requirements submitted to the Biomedical Journals" as approved by the International Committee of Medical Journal Editors (ICMJE) guidelines. All authors are asked to follow standardized checklists for different types of publications available on https://www.equator-network.org/

Plagiarism:

Manuscripts are screened for plagiarism using Trunitin software.

Covering Letter

- The corresponding author should submit a covering letter to the editor stating the importance and purpose of study.
- He/she should provide the details of all authors including their names, emails and complete name of institutes.
- Please declare conflict of interest and any funding source.

Ethical Approval Letter:

All authors are required to submit Ethical Approval Letter from Institutional Review Board (IRB) where study is conducted. It is mandatory requirement for all research articles submitted to Esculapio.

General Principles:

1. Manuscript must be written in British English.
2. Manuscript should be typed on A-4 size paper (8.5 x 11 inches or 21.6 x27 cm) white paper with margins of 1 inch.
3. Type on one side of the paper with double spacing.
4. All pages should be numbered on the lower right hand side of manuscript.
5.The article should be formatted accordingly on MS Word:

- Font Type: Times New Roman
- Font Size: 18 for article title, 14 for article text
- Line spacing should be set at 1.5 throughout the text

Title page:

The title page should include the following: article title, article category, abstract word count, manuscript word count, number of references, and the number of tables and figures.

- The title length should not exceed more than 14 words.
- Do not capitalize the first letter of each word in the title unless it is a proper noun.
- Do not use abbreviations in the title.
- Manuscript should be submitted with a covering letter signed by all authors, clearly mentioning name of corresponding author.
- Sequence of authors, once signed and submitted, cannot be changed.
- Clearly identify full names, designations, quali;cations, e-mails and institutes of all the authors.
- The journal will only contact to corresponding author.
- Explain role of each author in the study next to the title page.
- Authors must also submit a copy of ethical permission letter from the institutional review board or institution head where the research study was conducted.

Conflict of interest:

Authors should provide declaration of conflict of interest and funding information with regard to the research.

Instructions regarding different Manuscripts:

Original Research Article should be written under following headings:

- Abstract
- Introduction
- Material & Method
- Result
- Discussion
- Conclusion

Words counts: 3000-3200 words,
excluding abstract and references.
Maximum 3 tables or figures.

- Up to 25 references.
- Should be exclusively submitted to Esculapio.

Manuscript formatting – Abstract:-

Structured abstract: Approx 250 Words, under headings of :

- Objective
- Materials and methods
- Results
- Conclusion
- Key words must be according to Medical Subject

Headings (MeSH) , List of index
Un-Structured abstract: Approx 150 Words
Article categories

- Case report
- Case series
- Narrative review
- Short communication
- Short report and special communications

Introduction

Describes background and objective of the study do not include data or conclusion from the current study .

Method:-

The following heading should be used for the methods section, as appropriate:

- Subjects and methods
- Patients and methods
- Materials and methods

a. Selection and description of participants
The inclusion criteria of the study participants, which may be patients, healthy controls or healthy subjects, should be clearly described. Exclusion criteria need to be explained.
b. Technical Information & equipments
Recognized the method, procedures and any equipments (manufacturer's name and address) in detail so that workers easily reproduce them and also give references to establish methods including statistical method . All drugs and chemicals should be described in generic name(s), dose(s), and route(s) of administration.

Statistics

Simple way is used to describe statistical method so that reader enable to access the original data to correct the results. Statistical software should be mentioned.

Results

- Results should be described in a logical sequence in the text, tables and illustrations.
- Summarize important observations.
- Frequencies and percentages both should be mentioned.
- Exact p values should be reported.
- Mean should be with standard deviations.

Discussion:-

Summarize main results and compared with results of other published studies.
Emphasize new findings of research.

Conclusion:-

Findings which has been shown in the results should not be included in conclusion.
Conclusion should be a brief summary of the study.

References:-

Vancouver style should be used, if there are more than six authors, write et al after the first six names.
A table is provided below as summery of above mentioned information.

Manuscript Type	Abstract Structure	Abstract Word Count	Maximum Authors	Word count	Number of References	Total Tables & Figures
Audit	Structured	250	6	3000	25	3
Case Report	Unstructured	150	6	1250	10	2
Letter to Editor	NA	NA	3	400	5	1
Original Article	structured	250	6	3000	25	3
Review Article	structured	250	6	4000	40	3
Editorial				1000	8-20	

Processing charges:

All manuscripts from Pakistan have processing charges of Rs.3,000/- (non-refundable). Overseas US$ 50/-

Publication charges:

Once the manuscript is accepted for publication, the authors are required to pay publication charges of Rs.7,000/- (in case of overseas US$100/-).
For colored photograph extra Rs 1,000/-.

Payment mode:

The Processing & Publication charges can be sent directly to our bank account

The relevant bank account details are as under:

Title of account: ESCULAPIO
Account number : 6010042806500015
Name of Bank: The Bank of Punjab, services hospital branch, jail road ,Lahore
Printed copy: Three printed copies will be supplied to the correspondence author. Authors can order additional copies at the rate of Rs 1000/- per copy

Covering Letter

To,

The Editor in Chief,
ESCULAPIO - Journal of Services Institute of Medical Sciences,
Lahore

From:

Name of correspondent author: _____

Postal address: _____

_____ Date of Submission _____

Cell. No: _____ E-mail._____

Solemnly declare that my/our article titled "_____

_____"

has not been submitted to any other journal within country and abroad for publication and if approved for publication in quarterly basses of "ESCULAPIO", it will not be submitted again elsewhere. I/we further declare that it is review article/original article/ case report.

Undertaking

Sr. No	Author's Name	Designation	Department/Institution	Email	Signature
1					
2					
3					
4					
5					
6					

Type of Article: Original Article…… Review Article……. Case Report…….. Other…..

Sr. No	Author's Name	Contribution
1		Conceptualization of Project
2		Data Collection
3		Literature Search
4		Statistical Analysis
5		Drafting, Revision
6		Writing of Manuscript

*(The copies of article once submitted will not be returned irrespective of its publication)

Declaration Form

ESCULAPIO Journal of Services Institute of Medical Sciences, Lahore.

To,
The Editor in Chief
Esculapio - Journal of Services Institute of Medical Sciences,
Lahore.
From:
Name of Correspondent Author: Dr Muhammad Asif
Postal address: H No 8/367. Mughal pura sambrial road Daska
Date of Submission 14-10-2022
Cell. No: 03316728473 E-mail. drasif_hameed@hotmail.com

UNDERTAKING:

Solemnly declare that my/our article titled "**CORRELATION BETWEEN HAND LENGTH AND STATURE"** submitted to any other journal within country and abroad for publication and if approved for publication in quarterly basses of "Esculapio-Journal of SIMS", it will not be submitted again elsewhere. I/we further declare that it is review article/original article/ case report.

Sr. No	Author's Name	Designation	Affiliation	Email	Cell No
1	Dr Muhammad Asif	Assistant Professor	Sialkot Medical College, Sialkot	drasif_hameed@hotmail.com	03316728473
2	Dr Saima Manzoor	Assistant Professor	University of Lahore	tahirsyma@gmail.com	03009445642
3	. Dr Usman Butt	Assistant Professor	KMSMC		03216113203
4	Dr Aftab Alam Tanoli	Associate Professor	Loralai medical College	drtanoli403@gmail.com	03348953784
5	Dr Anwar Khan ,	Demonstrator Forensic Medicine	Sialkot Medical College, Sialkot.	dranwarkhan143@gmail.com	03317863500
6	Dr Muhammad Adil	Senior lecturer	Fazia Ruth Pfau Medical College, Karachi	adilhabeebdr@gmail.com	

Type of Article: Original Article

Sr. No	Author's Name	Contribution
1	Dr Aftab Alam Tanoli	Conceptualization of Project
2	Dr Muhammad Asif, Dr Anwar Khan	Data Collection
3	Dr Muhammad Adil, Dr Aftab Alam Tanoli	Literature Search
4	Dr Muhammad Asif	Statistical Analysis
5	Dr Saima Manzoor	Drafting, Revision
6	Dr Usman Butt, Dr Muhammad Asif	Writing of Manuscript

*(The copies of article once submitted will not be returned irrespective of its publication)