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Patient Safety Culture For Safer Care Through Health Policy Analysis And System Approach

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Patient safety culture (PSC) is a public health concern in developed and developing countries worldwide. Patient safety culture helps reduce cost and improve the precision and effectiveness of the care. For instance, in US hospitals, it is estimated that improving patient safety has saved 28 billion dollars from the 2010-2015 [1]. However, in developing countries, PSC has not attained the necessary attention yet. The condition is even more severe in low and middle-income countries where the adverse event rate in hospitals is about 8%, mainly due to lack of resources and infrastructure. Out of these, 83% of events were preventable, and 30% led to deaths. Like any other developing country, quality in the healthcare sector is inferior in Pakistan, specifically in patient safety.

everyone has the right to receive better, safe, and effective healthcare services. All the healthcare systems and healthcare facilities around the globe are developed to benefit the human population. Unfortunately, it may cause harm, injuries, and even deaths if PSC is not well-established in a medical setting. Usually, if a person travels by plane, there are one in a million chances of getting harmed, whereas there is one in 300 chance of being affected while seeking healthcare services. As per WHO reports, one in ten patients is affected in a healthcare setting with approximately 43 million patient safety incidences annually [2]. The Institute of Medicine defined patient safety as "the freedom of accidental injury. World Health Organization stated that patient safety reduces the risk of redundant harms associated with healthcare to an acceptable

level. Hence, human error and its reporting have a significant impact on ensuring patient safety and preventing the occurrence of undesirable events in a medical setting [3]. How health policy and system research can contribute for provision of quality health care and quality of life to every group of population. For achievement, there is a need to advocate the funders of health research with a clearer understanding of what is the Health Policy and System Research and how it relates to health research especially neglected area like; patient safety [4]. Scientists schooled in basic and social science are less comfortable with the methods used in health policy and systems research, limited funding is a major issue. In the light of this discussion, it seems like that the basic cause of failure to achieve the goals is not to practice the Health Policy and System Research as it should be.

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Evaluation of Patient satisfaction level and its Predictor with Pre-Operative Anesthesia Care at Ali Fatima Hospital, Lahore

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ABSTRACT

Background and Objectives: Patient satisfaction in preoperative anesthesia is crucial for assessing healthcare quality. Preoperative anesthesia evaluations are pivotal in tailoring anesthetic plans to individual patients, thereby improving safety, reducing complications, and alleviating preoperative anxiety. This study aims to evaluate satisfaction levels and identify predictors to improve anesthesia care. Assess patient satisfaction and identify areas for improvement in preoperative anesthesia care.

METHODOLOGY: A cross-sectional study at Ali Fatima Teaching Hospital, Lahore, included 380 patients aged 18-60 undergoing various surgeries. Data on demographics, anesthesia type, satisfaction, and outcomes were analyzed using SPSS version 25.

RESULTS: Overall satisfaction was high, with regional anesthesia (75%), spinal anesthesia (73.7%), and general anesthesia (69.4%). Pain control satisfaction was highest with spinal (85.6%) and general anesthesia (81.3%) compared to regional anesthesia (25%). Communication and pain management were identified as areas needing improvement.

CONCLUSION: Preoperative anesthesia care was generally satisfactory, but enhancing communication and pain management, particularly for regional anesthesia, could further improve patient experiences.

KEYWORDS: Patient satisfaction, preoperative anesthesia, anesthesia types, communication, pain management

INTRODUCTION

Patient satisfaction is a crucial metric in healthcare, reflecting patients' perceptions and emotional responses to their care experiences. It encompasses factors such as expectations, service quality, and prior experiences. (1) In anesthesia care, patient satisfaction is essential, as highlighted by the 2013 ASA survey which emphasized the growing importance of patient satisfaction surveys despite some skepticism. (2)

Preoperative anesthesia evaluations are pivotal in tailoring anesthetic plans to individual patients, thereby improving safety, reducing complications, and alleviating preoperative anxiety. (3) Patient satisfaction in this context is influenced by multiple factors includ

ing service accessibility, hospital infrastructure, and interactions with healthcare providers. (4) Effective preoperative assessments and education contribute significantly to patient satisfaction and recovery outcomes. (5) Patient opinions are increasingly important in evaluating care quality, prompting focused research on specific hospital stay aspects. (6) Montella Hospital in West Aceh has faced challenges in meeting patient expectations, with issues like staff punctuality and inefficient processes affecting satisfaction. (7) Addressing these concerns is vital for improving care quality. Understanding patient satisfaction components is crucial for improving care. (8)

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Preoperative anxiety, functional status, and postoperative pain control are linked to recovery and satisfaction. Inadequate preoperative preparation can lead to suffering and adverse outcomes.(9)

Standardized tools like the Prior to Anesthesia Evaluation Form (PAAF) help ensure comprehensive assessments and informed consent, enhancing patient outcomes.(10) The Research Center, Pakistan Kidney and Liver Institute (RC&PKLI) uses the Prior to Anesthesia Evaluation Form (PAAF) based on international standards for thorough pre-anesthesia evaluation.(11) Preoperative education is also crucial in reducing anxiety and improving postoperative recovery.(12)

Effective pre-anesthesia evaluation involves assessing patient health, medications, and risks. Anesthetists should review medications, consider premedication, and establish clear fluid intake guidelines during labor.(13),(14),(15) Patient satisfaction data helps identify system issues and improve patient confidence.(16) That describes the degree to which the treatment provided satisfies the expectations of the patients.(17) Pre-anesthesia evaluation aims to identify obstacles, educate patients, and secure informed consent, reducing preoperative anxiety.(18)

ASA classification helps assess patient health before anesthesia and surgery, guiding anesthetic choices.(19) Preoperative clinics optimize patient health and prevent surgical delays.(20)

This study aims to evaluate patient satisfaction with preoperative anesthesia across various surgical specialties for patients aged 18 to 60 years. By analyzing a sample of 380 patients, the study seeks to identify areas for improvement and enhance the quality of preoperative anesthesia care.

METHODOLOGY

Study Design: The study's design was cross-sectional.

Data Collection: All participants were chosen from Ali Fatima Teaching Hospital Lahore

Data Collection Tool: The self-structured data collection tool consist of the questionnaire form that contains the demographic data (age, gender, surgery, types of anesthesia and residents)

Study Duration: The duration of the study was 6 months after the approval of synopsis.

Statistical Analysis: For analysis, data were loaded into SPSS (Statistical Package for Social Sciences), Version 25. The relationship between a number of independent variables and patient satisfaction was predicted using a binary logistic regression analysis.

There was an interval of confidence of 95% that used to find out the odds ratio. Less than 0.05 Pvalues were considered to be important statistically.

Data Analysis: The data obtained were entered into an IBM SPSS (Statistical Package for Social Sciences) software version 25 spreadsheet. Analysis was carried out using the same software and Graph Pad Instate. The numbers of respondents the answers given to the questionnaire's questions were noted as simple percentages. Chi square test paired sample statistics were applied in order to examine the relationship between the variables. The knowledge of Respondents were compared by calculating their mean knowledge scores. The level of significance was set at 0.05 at 95% confidence

RESULTS

The study's age distribution revealed that the largest group of participants (29.5%) was aged 27–34, followed closely by those aged 35–42 (27.4%). Additionally, 16.8% were aged 18–26, and 26.3% were between 43 and 50 years old. This age diversity underscores the importance of considering different life stages in our analysis.

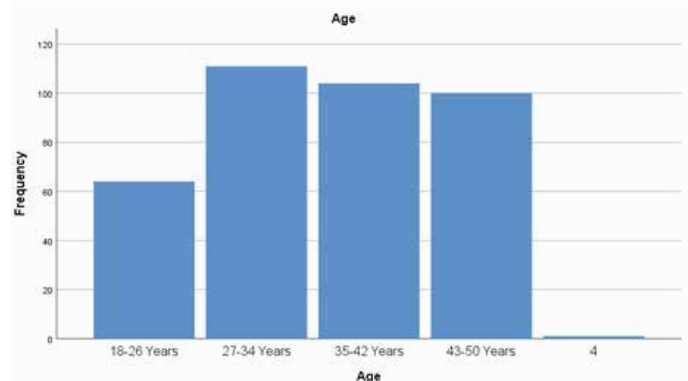


Figure-1: Frequency of Patient satisfaction level and its Predictor with Age

The majority of cases (55.0%) were found to be treated with general anesthesia, according to the results. Spinal anesthesia was utilized in 43.9% of cases, trailing closely behind. Furthermore, a lesser percentage of cases—1.1% of all cases—used regional anesthesia.

Suggest that majority of patients at AFH were satisfied with the management of discomfort or pain during procedures: 16.3% were very satisfied, 81.8% were satisfied, and 1.8% were neutral. This indicates effective pain management practices and overall high satisfaction levels among patients.

The results showed that a sizable majority of participants—89.7%—said the anesthesia staff adequately addressed all of their queries and concerns. None of

these, a noteworthy percentage of 10.3% stated that the team did not sufficiently answer their queries and concerns. Even though the majority of participants had favorable experiences, the existence of those who thought their concerns were not adequately addressed raises the possibility of areas in which patient participation and communication may be strengthened.

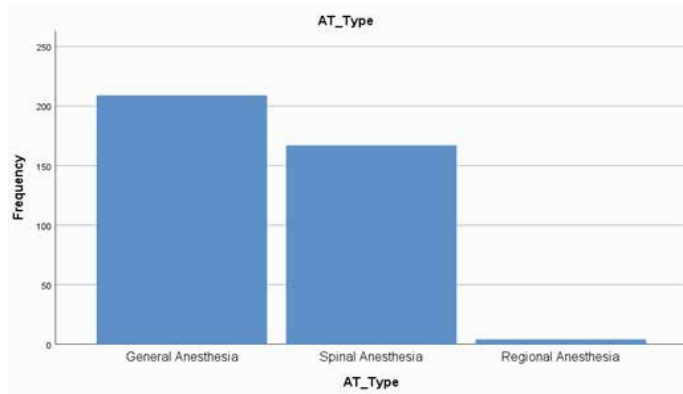


Figure-2: Frequency of Patient satisfaction level in general, spinal & regional anesthesia

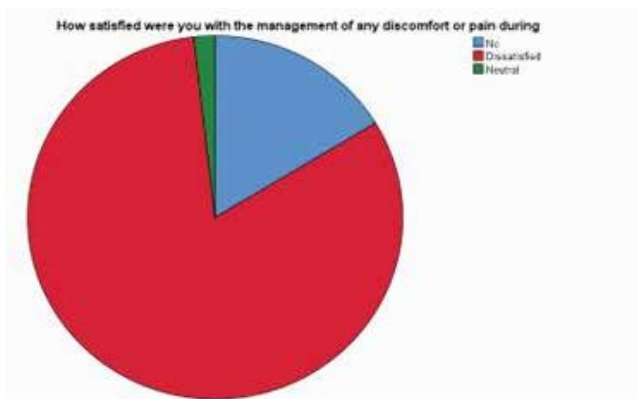


Figure-3: Percentage of patient satisfaction with management of any discomfort or pain

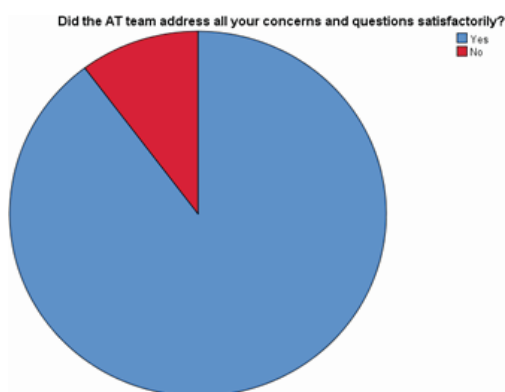


Figure-4: Percentage of patient concerns and level of satisfaction

DISCUSSION

Preoperative anesthesia Patient satisfaction is an essential aspect of medical care delivery that affects treatment outcomes and thoughts about quality of medical care. Into patient experiences and satisfaction levels are gained from the study carried out at Ali Fatima Teaching Hospital, which also identifies areas where anesthetic services can be strength ended. Participants in the study were evenly distributed in terms of gender and aged between 18 and 60, which is representative of the general adult population receiving anesthetic-related surgeries. In a previous study, 62.5% of participants were female. (21) While our study focused on the 45.3% of males and the 54.7% of females in both populations. As its demographic composition makes evident, it is crucial to comprehend the expectations and experiences of this age group with anesthetic care in order to maximize service delivery. The study, which involved 99 patients, found that teleconsultation for pre-anesthetic consultations during pregnancy was highly accepted and left patients with a strikingly high degree of satisfaction.(22) Although our study, which used a self-structured questionnaire with a sample size of 380, Preoperative anesthetic care was deemed to be highly satisfactory by participants overall (94.6%), according to the study.

Gebremedhn.2013 indicates that of the 111 patients who underwent surgery under general anesthesia, twenty-two had intraoperative awareness, and 11 (or 50%) of the patients expressed dissatisfaction.(23) While our research include sample size of 380 patients undergoes varies procedures and anesthesia types like general spinal and regional anesthesia, and mostly are satisfied with general and spinal anesthesia.

The majority of patients appear to have had a great experience with the anesthetic services offered by Ali Fatima Teaching Hospital, based on the high satisfaction rating. Clear communication about anesthesia procedures, which was rated as clear by 92.1% of participants, is one of the major variables influencing this satisfaction. In addition, a considerable segment of the participants (55.3%) assessed the anesthesia team's 40 professionalism and friendliness as outstanding. The significance of bedside manners and interpersonal skills in influencing patient experiences beyond professional competency alone is underscored by this favorable opinion.

Throughout the perioperative phase, patients' comfort and contentment can be greatly enhanced by health.

care professionals acting in a kind and competent manner.(24) Chalasani SH.et al 2022 The study population ranked their procedures' worst aspects as Anxiety (6.24%), pain (27.97%), and anxiety with pain (3.21%). while in ours study Despite these encouraging results, the study pointed up some crucial areas that needed to be improved.

A noteworthy issue raised by 81.8% of participants was their frustration with pain management. This suggests that there is an urgent need to increase communication regarding pain expectations and management alternatives, or to improve pain management practices. Efficient pain management is essential for both the comfort of the patient and the best possible results for their recuperation after surgery. In 95% of participants expressed dissatisfaction with the communication regarding schedule adjustments, which is another important issue that the study identified.

Kusha Nag et al. In a study evaluating patient satisfaction with the process of making decisions , researchers discovered that most patients preferred a collaborative role and that nearly every patient who was made aware of their opinion for anesthesia and taking part in the process felt satisfied and well respected.(25) The trust and general contentment with care of patients can be affected by changes in treatment plans or schedule, which emphasizes the significance of prompt and transparent communication between healthcare practitioners and patients.

Even with their high levels of satisfaction, only 87.6% of participants in the research said they would suggest the hospital for preoperative anesthetic care. The study findings highlight the crucial roles of professionalism, efficient communication, and pain management in determining how satisfied patients are with the preoperative anesthetic care they receive. Improved patient experiences, better treatment outcomes, and a higher percentage of patient recommendations can result 41 from addressing these concerned areas of Anesthetic treatment with focused interventions.

CONCLUSION

In preoperative Anesthetic evaluation conclude that most participants expressed high satisfaction, particularly with the anesthesia team's professionalism and clear communication, there are still a number of areas that could use improvement, particularly in the areas of pain management and schedule changes communication. Resolving these problems might improve patients' overall satisfaction and experiences. Overall,

the outcomes of the study suggests that AFH has generally succeeded in providing satisfactory pre-operative care and managing discomfort or pain during procedures across different anesthesia types. Regional Anesthesia, could provide insights for enhancing patient experience uniformly across all types of anesthesia. Such findings are crucial for maintaining and improving high standards of care and patient satisfaction in surgical settings.

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Muhammad Abdullah: Design of the work and the acquisition. Drafting the work.

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Prevalence of Sarcopenia and its Related Clinical Factors in Postmenopausal Women with Type-1 Osteoporosis

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ABSTRACT

Background and Objectives: Sarcopenia is a progressive muscle disorder characterized by muscle wasting, decreased strength, and a substantially elevated risk of developing severe and potentially life-threatening health complications. For decades, muscle wasting has been recognized as a clinical symptom in various severe diseases and conditions. However, with increasing life expectancy and an aging population, sarcopenia has emerged as a prominent age-related condition in primary care, significantly contributing to disability and mortality rates. Our goal was to elucidate the clinical characteristics associated with sarcopenia prevalence in postmenopausal women with type 1 osteoporosis.

METHODOLOGY: 370 postmenopausal osteoporosis patients who routinely visited the physiotherapy department at Ali Fatima Hospital were examined in this cross-sectional investigation. Mean age 64.59 ± 5.85 years, it was discovered that the patients' quality of life, postural stability, muscular strength, and balance were related to the existence of sarcopenia.

RESULTS: Among postmenopausal female patients with type 1 osteoporosis, the incidence of sarcopenia was relatively high (90.35%), affecting quality of life in 39.82% of patients, postural instability in 92.21% of patients, and balance in 39.92% of patients.

CONCLUSION: This study concluded that the prevalence of sarcopenia was 90.35% with affected quality of life in 39.82%, postural instability in 92.21% patients and balance in 39.92% patients respectively.

KEYWORDS: Sarcopenia, Osteoporosis, Postmenopausal woman, QOL, Postural Instability.

INTRODUCTION

Sarcopenia is a widespread, advancing condition that impacts skeletal muscles, resulting in reduced muscle bulk and performance, thereby heightening the risk of significant complications. It is widely recognized that a decline in muscle tissue and capability can present as symptoms in various major illnesses, such as cancer, endocrine disorders, rheumatologic diseases, and other systemic conditions. With the rise in life expectancy, sarcopenia is increasingly seen in general practice as an age-related issue, contributing to higher mortality and disability rates. Various international research organizations have created definitions, screening techniques, and diagnostic standards for sarcopenia.(1) The term "sarcopenia" was first introduced in the 1990s. In a 1997 essay, Irwin H. Rosenberg discusses

its origins and contemporary importance, highlighting a lecture he gave at a symposium called "Sarcopenia: Diagnosis and Mechanisms" on April 17, 1996, in Washington, DC. The word "sarcopenia" is derived from the Greek words "sarx" (meaning "flesh") and "penia" (meaning "loss")(2)

Sarcopenia is classified as "primary" (age) when age is the sole contributing factor. However, when additional variables are evident, it is categorized as "secondary." The EWGSOP describes three conceptual stages: "presarcopenia," "sarcopenia," and "severe sarcopenia." The "presarcopenia" stage involves a reduction in muscle mass without affecting strength or physical performance, detectable only through techniques that accurately measure muscle mass relative to popula

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tions. The "sarcopenia" stage is characterized by a loss of muscle tissue, decreased muscle strength, or reduced physical function. Severe sarcopenia is defined when there is a simultaneous presence of decreased muscle mass, reduced muscle strength, and impaired physical performance.(3) Sarcopenia associated with hospitalization, acute sarcopenia, and induced sarcopenia are not attributed to age. Instead, these conditions arise from factors such as activity levels, diet, or illness.(4)

Sarcopenia may be caused by systemic illnesses, notably inflammatory conditions like cancer or organ failure. Physical inactivity, whether due to a sedentary lifestyle, immobility, or disability resulting from illness, can also contribute to sarcopenia. Furthermore, insufficient intake of protein or calories, which may arise from conditions like anorexia, malabsorption, restricted eating patterns, or inadequate access to nutritious foods, can play a role in the development of sarcopenia.(5)

Sarcopenia is associated with several risk factors, including age, gender, and physical activity levels. Resistance exercise is particularly effective in mitigating the skeletal muscle loss associated with aging. Additionally, sarcopenia is linked to major co-morbidities such as osteoporosis, insulin resistance, type 2 diabetes, and obesity.(6) Sarcopenia has been linked to increased risks of cardiovascular disease, mortality, physical disability, and metabolic dysfunction. It often coexists with obesity, leading to a condition known as sarcopenic obesity. This condition primarily affects older individuals who have elevated body fat percentages alongside reduced muscle mass, strength, or quality. Consequently, there appears to be a significant correlation between obesity, metabolic disorders, cardiovascular disease, and mortality in individuals with sarcopenia.(7)

Aging is accelerating globally, especially among those over 60. By 2050, the percentage of people over 60 worldwide is expected to increase significantly, rising from 10% to 16%.(8) Between 1990 and 2010, the population over 60 increased by 75.1%, and by 2025, it is predicted to have doubled to 11%.(9) In 1985, the global population consisted of about 9 percent elderly women.(10) By 2015, the number of senior females in Europe had increased by less than 40%.(11) Musculoskeletal problems among the elderly vary by age, geography, and personal circumstances. These issues are prevalent globally but exhibit significant differences between countries. In 2017, musculoskeletal diseases imposed a significant burden, with an estimated 1.3

billion prevalent cases and 138.7 million disability-adjusted life years (DALYs). Age-standardized death rates were reported at 1,720 per 100,000 individuals. Since 1990, there has been a slight decrease in age-standardized prevalence (-1.6 percent) and DALY rates (-3.5 percent).(12)

Sarcopenia becomes more prevalent with age, affecting approximately 14% of individuals aged 65 to under 70, and about 53% of those over 80. According to published definitions, sarcopenia's prevalence ranges from 5% to 14% among people aged 61 to 71, and from 12% to 52% in those aged 80 and above. In the year 2000, there were 600 million adults aged over 60 worldwide. By 2050, the global population is expected to be reached two billion, up from 1.2 billion in 2025. Currently, sarcopenia affects more than 50 million people, with projections indicating that this number will be surpassed by 200 million in the next 40 years based on standard prevalence estimates.(13)

The hormonal changes during menopause adversely affect women's musculoskeletal health, heightening their vulnerability to health issues during midlife and beyond. Conditions like osteoporosis, osteoarthritis, and sarcopenia, which involve reduced muscle mass and function, are all associated with estrogen deficiency typical of menopause.(14) Reduced estrogen levels also contribute to decreases in both bone density and muscle strength.(15) As the global population ages, the prevalence of osteoporosis is on the rise. Complications from osteoporosis can lead to significant social and financial burdens, underscoring the importance of early identification. While other imaging modalities allow for the quantification of bone loss, assessment of fracture presence, and study of bone quality, conventional radiography enables semi-qualitative and qualitative evaluation of osteoporosis. In efforts to detect osteoporosis early, advanced imaging techniques such as high-resolution MRI and micro-CT are being utilized.(16)

METHODOLOGY

This cross-sectional study was conducted at Ali Fatima hospital, Lahore. We enrolled 370 postmenopausal women aged between 55 to 75 years who had been diagnosed with osteoporosis. Patients with other types of osteoporosis (i.e., osteoporosis caused by malignant tumors, steroids, hyperthyroidism, and metabolic diseases) were excluded. We also excluded patients with reduced postural stability due to specific diseases, such as cardiovascular disease and vestibular nerve disorders. The study was conducted from 12 February to 5 July 2024, as the frequency of regular visits to Ali

Ali Fatima hospital, Lahore, physiotherapy department is generally three months for osteoporosis patients. The inclusion criteria were female sex, age between 55 to 75 years, and ability to fill a self-descriptive questionnaire.

The Chair Stand Test: The Chair Stand test, which involves repeatedly standing up from a seated position within a specified time frame, was utilized to gauge lower body strength and endurance.(17)

The EuroQol-5D (EQ-5D) questionnaire was used to evaluate patients' health-related quality of life (QOL) at Jinnah Hospital, Mayo Hospital, and Ali Fatima Hospital. The EuroQol Group developed this questionnaire, which provides a comprehensive assessment of health-related QOL in several domains, such as mobility, regular activities, self-care, pain/discomfort, and anxiety/depression. There are three degrees of difficulty for each dimension: no issues, moderate problems, and severe problems. Each level is denoted by a distinct five-digit code that represents the person's current state of health. A code such as 1-2-2-3-3, for example, denotes no functional limitations, moderate difficulties with self-management and daily tasks, and significant difficulties with pain/discomfort and anxiety/depression. These five-digit codes are added together to get the EQ-5D index score, which is a value between 5 and 15 that gives a general idea of the patient's overall.

The Berg Balance Scale: This scale is a popular instrument for assessing balance in elderly people and people with balance problems. It comprises of a set of exercises designed to evaluate a person's ability to stay balanced while engaging in a variety of functional motions, including sitting, standing, reaching, and turning. .(18)

The Romberg Test: An individual's ability to remain balanced while standing still with their feet together and their eyes closed is assessed using the Romberg test. This test can identify anomalies in sensory or proprioceptive function that may impact postural stability. It depends on proprioception and vestibular input to maintain balance.(19)

RESULTS

The characteristics of the study participants are summarized in Table 1. A total of 370 women aged between 55 to 75 years (mean age: 64.59 years) were recruited. The results of the correlation analysis between DEXA scan and Chair Stand Test revealed that 342 participants had osteoporosis, while 309 participants tested positive for sarcopenia. Notably, the results indicated that approximately 90.35% of the participants (309 out of 342) had sarcopenia.

Table 1: Percentage of the study population DEXA scan and DEXA score.

Participant Age (years)		Mean	Range	Standard Deviation	Frequency	Percentage
		65	25	6		
Marital Status	Married				359	97.0%
	Unmarried				11	3.0%
Age of Menopause (years)		48	10	3		
Diagnose of Osteoporosis	Yes				337	91.1%
	No				33	8.9%
DEXA scan	Yes				342	92.4%
	No				28	7.6%
DEXA score	-1 to +1				0	0.0%
	-1 to +2.5				14	3.8%
	< 2.5				337	91.1%
	No Scan				19	5.1%

Table 2: Chair Stand Test, Quality of life, Berg Balance Scale, Romberg Test

		Frequency	Percentage
Chair Stand Test	+ve	334	90.3%
	-ve	36	9.7%
Quality of Life	Severe Problem	147	39.7%
	Moderate Problem	208	56.2%
	Slight Problem	15	4.1%
	No Problem	0	0.0%
	Extreme Problem	0	0.0%
Berg balance Scale	Low Fall Risk	0	0.0%
	Medium Fall Risk	228	61.6%
	High Fall Risk	142	38.4%
Romberg Test	+ve	340	91.9%
	-ve	30	8.1%

Table 3: DEXA Scan and Chair stand Test

DEXA scan * Chair Stand Test				
Count				
		Chair Stand Test		Total
		+ve	-ve	
DEXA scan	Yes	309	33	342
	No	25	3	28
Total		334	36	370

Table 5: Romberg Test * Chair Stand Test

Count				
		Chair Stand Test		Total
		+ve	-ve	
Romberg Test	+ve	308	32	340
	-ve	26	4	30
Total		334	36	370

The results of the correlation analysis between Quality of life and Chair Stand Test revealed that 133 participants had severe problem. Notably, the results indicated that approximately 39.82% of the participants (133 out of 334) had affect the quality of life. The results of the correlation analysis between Romberg test and Chair Stand Test revealed that 308 participants had

Table 6: Berg balance Scale * Chair Stand Test

Berg balance Scale * Chair Stand Test				
Count				
		Chair Stand Test		Total
		+ve	-ve	
Berg balance Scale	Medium Fall Risk	203	25	228
	High Fall Risk	131	11	142
Total		334	36	370

postural instability. Notably, the results indicated that approximately 92.21% of the participants (308 out of 334) had postural instability.

The results of the correlation analysis between Berg balance scale and Chair Stand Test revealed that 131 participants had high fall risk. Notably, the results indicated that approximately 39.22% of the participants (131 out of 334) had balance issues.

DISCUSSION

Research conducted at the physiotherapy department of the Ali Fatima Hospital in Lahore revealed that sarcopenia was often observed in postmenopausal women with osteoporosis and that it was linked to a history of falls, postural stability, nutrition, and quality of life. The primary cause of musculoskeletal deterioration and loss of functional ability in older adults is sarcopenia. The condition is characterised by a decrease in the amount and quality of skeletal muscle. The frequency of sarcopenia varies by age group.(20) The age range of our study was 55–75, with a mean age of 65. This is in line with other research on sarcopenic older adult populations. Akira Okayama et al study 's from 2022 found sarcopenia in postmenopausal women in several randomly selected age groups. The mean age of the 61 patients was 77.6 ± 8.1 years.(21)

The majority of participants in our study were between the ages of 58 and 71, according to the standard deviation of six years, which is also in line with other studies. (22)

According to our research, the menopausal mean age in our population was 49 years, with a 3-year standard deviation. This result is in line with earlier research that suggested the average menopausal age was around 46 years. (23).The results of this investigation are consistent with other studies showing that osteoporosis and osteopenia are highly prevalent in comparable groups.(24)The majority of patients (90.8%) had DEXA values below 2.5, which is indicative of osteoporosis. This finding is in line with other research that found a significant incidence of osteoporosis in this age range. (25). Additionally, the percentage of patients with osteopenia (3.8%) is consistent with earlier findings. (26)

The study's conclusions show that a vast majority of individuals—93.0 percent—did not have any comorbidities, whereas just 6.7% of participants did—having one or more. This implies that most of the subjects had minimal underlying medical issues and were generally in good health.

According to the findings of the Chair Stand Test, a sizable majority of participants (90.0 percent, $n=334$) had positive test results, suggesting insufficient functional ability and lower extremity strength. This implies that the majority of individuals lacked the functional ability and physical power necessary to get up from a sitting posture on their own.

However, a lesser percentage of subjects (10.0 percent, $n=36$) had negative test results, meaning that their lower extremity strength and functional ability were unaffected.

The results of this study are in line with earlier studies that have demonstrated lower extremity weakness and functional limits in older persons, which can have major effects on day-to-day functioning. (27)

The EQ-5D quality of life assessment results show that among postmenopausal women with osteoporosis, there is a worrying prevalence of severe difficulties in at least one dimension. A considerable influence on their day-to-day life was shown by the almost 40% (39.6%) of individuals who reported having serious issues with their mobility, self-care, pain, regular activities, or sadness.

Furthermore, a majority of the participants (56.1%) reported experiencing moderate problems, suggesting a significant number of symptoms and functional limitations. The low percentage of respondents (4.0%) who expressed modest worries demonstrates how prevalent these issues are in this group of people. These results are in line with other studies that shown osteoporosis in postmenopausal women increases the likelihood of sarcopenia, a disorder marked by a gradual loss of muscular mass, strength, and function.(28) With 91.9 percent (340/370) of the subjects testing positive, the Romberg test findings show a high prevalence of positive results among the participants. On the other hand, 8.1 percent (30/370) of the subjects had negative Romberg test results, which suggests that their proprioception and balance are unharmed.

Most subjects showed deficits in proprioception and balance, which are essential for mobility, postural stability, and functional ability. (19)

The high percentage of positive Romberg test findings is in line with other studies that have demonstrated the danger of balance and mobility problems in older persons with osteoporosis. (19). The study's findings

emphasise how crucial it is to identify and treat this population's balance and proprioception issues in order to stop falls and the damage they cause.

The Berg Balance Scale results show a worrisome prevalence of postural instability and fall risk among the participants, with 38.5 percent (142/370) and 61.5 percent (228/370) respectively categorised as moderate and medium fall risk. According to these results, a sizable fraction of participants may be at danger of falling, which can result in severe injuries and disabilities.

This is in line with other studies that have demonstrated that osteoporosis in older persons increases the risk of falls because of decreased muscular strength, mobility, and balance. (29).

This research is subject to many limitations. In order to be included, postmenopausal women had to fulfil two requirements: they needed to be older (55–75 years old) and osteoporotic. As a result, women in various age groups might not be able to utilise the findings. Women who need walking assistance were included; however, women who were completely unable to walk or who had other concurrent diseases that may affect muscle mass or function (such as advanced cancer or end-stage renal illness) were excluded. Our study participants Each participant was chosen from the "Ali Fatima Hospital, Lahore" physiotherapy department.

CONCLUSION

This study concluded that the prevalence of sarcopenia was 90.35% with affected quality of life in 39.82%, postural instability in 92.21% patients and balance in 39.92% patients respectively. This large group includes over 370 elderly postmenopausal women who have Type-1 osteoporosis. By verifying each and every osteoporosis diagnosis using DEXA scan results, the high calibre of the osteoporosis data was guaranteed. This is the first investigation of the clinical traits linked to the incidence of sarcopenia in postmenopausal women with Type-1 osteoporosis. More studies of this sort will be required to ascertain the frequency of sarcopenia in postmenopausal women with Type-1 osteoporosis and the clinical characteristics linked to it in various age groups and research scenarios.

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Ali Muslim Raza: Substantial contributions to the conception and design of the work.

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Frequency of Genu Valgum and Genu Varum and its Association with Age, Gender, BMI and Knee Angular Deformities in Young Adults.**Saman Bukish^a, Alisha-tu-Zahra^a, Saleh Mushtaq^a, Fareeha Amjad^a**^a Department of Physical Therapy, The University of Faisalabad.Correspondence: dpt-fa19-913@giu.edu.pk**ABSTRACT**

Background and Objectives: Genu valgum is a skeletal disorder characterized by the inward alignment of the knee joint and outward deviation of the femur and tibia, leading to lateral mechanical axis changes and associated pain. Genu varum is a deformity where the lower leg bows inward, giving the leg an archer's bow appearance. The prevalence of genu valgum varies across different populations. : Our aim is to check the association between age, gender, BMI, and the frequency of knee angular deformities (Genu Valgum and Genu Varum) in young adults.

METHODOLOGY: Three hundred and nine young adults who routinely \came to their university at Green International, Comsats, Superior, University of Lahore and University of Management and Technology were examined in this cross-sectional investigation. With a mean age of 27.5 ± 4.611 years, it was discovered that the participants' age, gender, BMI and knee angular deformities are associated with genu varum and genu valgum.

RESULTS: This study concluded that the frequency of genu varum is 35.27% and genu valgum is 34.95% in significant association with age, gender, BMI, and knee angular deformities. The correlation between genu valgum and genu varum with age, gender, BMI, and knee angular deformities in young adults is entirely independent of the age and gender.

CONCLUSION: The correlation between genu valgum and genu varum with age, gender, BMI, and knee angular deformities in young adults is entirely independent of the age and gender.

KEYWORDS: Q-angle, Genu Valgum, Genu Varum, BMI, Inteknee distance, Intermalleolar distance.

INTRODUCTION

Genu valgum is a skeletal disease causing pain due to lateral deviation of the femur and tibia, resulting from a change in the mechanical axis (1). Genu varum is a varus deformity characterized by a bowing at the knee, resulting in a medially tilted lower leg resembling an archer's bow (2). Genu valgum, a rare abnormality in knee osteoarthritis cases, is prevalent globally, with incidence varying by region. In Iran, it's found in 28% (3) of obese high school females, while in Brazil, it's 7.1% (4). Genu varum, a leg bowing condition, has varying global incidence rates, ranging from 2.53% to 16.33% across different populations, according to various studies (5). Improper knee position can lead to recurrent stress on ligaments and capsule structures, causing Genu valgum (6). Fibular hypertrophy in

achondroplasia may lead to genu varum, but studies show no significant correlation between the severities of the issue (7). Genu valgum is classified into three types based on severity: Type I (10 degrees), Type II (11-20 degrees), and Type III (21-30 degrees). Genu varum is categorized into four levels based on the space between legs when standing with legs closed: Level 1 (<2.5 cm), Level 2 (2.5-5.0 cm), Level 3 (5.0-7.5 cm), and Level 4 (>7.5 cm) (8). Risk factors for genu valgum include male sex, younger age, shorter implantation, overcorrection, and high growth velocity post-implant removal, common in cerebral palsy patients (9). The knee, the largest joint in the human body, consists of soft tissues like ligaments, tendons, capsular structures, and bony components

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like the femur, tibia, fibula, and patella. It also includes menisci, nerves, and blood vessels from the femoral and popliteal arteries (10).

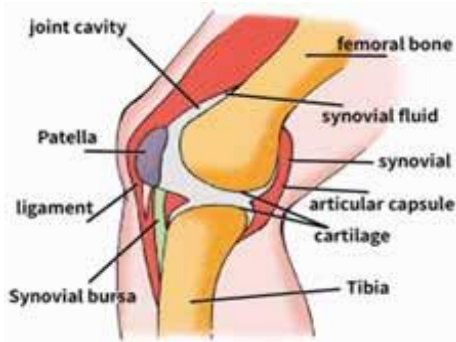


Figure 1. Knee joint structure (11)

Genu varum, a mechanism causing increased medial mechanical axis deviation, leads to abnormal forces across the knee joint, affecting contact pressures and force transmission within the knee compartments (12). Biomechanical studies show that genu varum affects pelvic, hip, and knee kinematics during activities like stair walking, increasing the risk of articular impairments due to lower limb malalignment (13). The Q angle, crucial for genu varum alignment, can be as low as 9 degrees in severe cases, such as pediatric patients with substantial genu varus (14). The study found that genu varum patients have a lower BMI, while genu valgum patients have a greater BMI (15). The inter-knee distance is crucial for monitoring lower limb alignment during walking, as it affects joint loading and osteoarthritis progression. Technological advancements like mechanical axis markers and ultrasound-based devices improve knee joint alignment precision during surgeries. Maintaining appropriate spacing between knee and hip implants prevents strain peaks and reduces fracture risks (16). The inter malleoli distance, a measure of the distance between the internal malleolus and the ground, is used to analyze leg-length discrepancy and quantify body segments (17).

The research aims to understand the prevalence and risk factors of genu valgum and genu varum in young adults, thereby aiding in the prevention and treatment of knee angular deformities. The study's operational definitions include: Genu valgum and genu varum are knee conditions with significant biomechanical and functional consequences, necessitating early detection and effective management to mitigate long-term effects. The Q-angle, formed by the lines connecting the ASIS to the patella midline and tibial tuberosity, is

a critical metric for knee alignment and patellar tracking, with normal values varying and emphasizing the need for accurate measurement. BMI, a numerical measure based on an individual's weight and height, categorizes them into different weight groups, helping identify health risks associated with being underweight, normal weight, overweight, or obese. Inter-knee distance (IKD), the distance between the medial portions of the knees, is essential for diagnosing and determining the severity of genu valgum, offering insights into knee alignment and aiding in therapeutic decision-making. Similarly, intermalleolar distance (IMD), the distance between the inner ankle bones, is a key metric for diagnosing and assessing genu valgum, providing crucial information for managing knee angular abnormalities.

METHODOLOGY

A six-month cross-sectional study with 309 participants from Green International University, University of Lahore, Comsats University of Islamabad, Superior University, and the University of Management and Technology was conducted. This study aims to study young adults aged 20-35, both male and female, who are healthy and willing to participate. Exclusions include children, older adults, and those with deformities, pathologies, or surgeries. Participants were informed about the research study, given explicit consent, and assured of confidentiality. They were also assured of the study's purpose and potential harm. This commitment to safety and well-being reflects the ethical integrity of the research process. Data was collected through questionnaires, medical tools like goniometers, measuring tapes, and height and weight scales, including Q-angle, intermalleolar and inter-knee distance, and BMI calculation. Normal Q angle ranges from 1 to 21 degrees, with greater angles being genu varum and less than 1 degree being genu valgum. By measuring the interknee distance, with a distance exceeding 3 being considered genu varum. Genu valgum is a gap of over 8 in women and 4 in men between the two medial malleoli, measured using a measuring tape. The statistical analysis of the data was conducted using IBM SPSS Statistics version 27. Continuous variables are provided as means (standard deviations), whereas categorical variables are expressed as numbers (percentages).

RESULTS

The study involved 309 young adults. Baseline characteristics for young individuals include an average age

of young adults were 309 and mean age was 27.5 with SD was ± 4.611 . The study involved a total of 309 participants, comprising 162(53.1%) males and 147(46.9%) females with an average height of 5.48 units (SD = ± 0.316). The mean weight of 63.29 units (SD = ± 10.697). The result showed that the mean BMI was 23.46 with SD was ± 4.296 . In term of mean Intermalleolar Distance, the mean Intermalleolar Distance was 5.53 units (SD = ± 2.885). The study revealed a mean Q-angle of 15.33 with an SD of ± 5.492 and the mean Interknee Distance (IKD) of 3.54 and a standard deviation (SD) of ± 2.172 .

Table 1. Demographics of study participants

Parameters	Means $\pm$ S.D	Tests
Age	27.5 $\pm$ 4.611	Independent t-test
Gender	Frequency Male 162(53.1%) Female 147(46.9%)	Independent t-test
Height	5.48 $\pm$ 0.316.	Independent t-test
Weight	63.29 $\pm$ 10.697	Independent t-test
BMI	23.46 $\pm$ 4.296.	Independent t-test
Q Angle	15.33 $\pm$ 5.492	Independent t-test
Interknee distance	3.54 $\pm$ 2.172	Independent t-test
Inter malleolar distance	5.53 $\pm$ 2.885	Independent t-test

Table 2. Questionnaire related data

Parameters	Physical activity		Smoking		Knee injury		Genu varum		Genu valgum	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Frequency	230	79	90	219	140	169	115	194	113	196
Percentage (%)	74.43	25.56	29.12	70.87	45.30	54.69	37.21	62.78	36.56	63.43
Test	Independent t-test		Independent t-test		Independent t-test		Independent t-test		Independent t-test	

The study revealed that out of 309 participants, 230 engaged in physical activities, while 79 did not engage in any physical activity, with 113 having genu valgum, 115 having genu varum, and 81 having normal knee curvature. The study revealed that 104 participants experienced rare or no pain, 123 occasionally experienced pain, 77 frequently experienced pain, and 5 consistently experienced knee pain. 147 participants experienced pain severity ranging from 1-3, 115 from 4-6, and 47 from 7-10. 104 participants had no impact, 130 had mild impact, 52 had moderate impact, and 23 had severe impact on knee angular deformity. The result showed that 90 participants were smoking and 219 participants were not smoking. The study revealed

that 140 participants experienced knee injuries, while 169 participants did not experience any knee injuries.

Table 3. Association of genu valgum with variables

Variables	Association value	P- value
Age	17.795 ^a	0.274
Gender	1.067 ^a	0.302
Height	17.696 ^a	0.408
Weight	98.797 ^a	0.000
BMI	39.190 ^a	0.019
Q- Angle	221.019 ^a	0.000
Interknee distance	278.566 ^a	0.000
Intermalleolar distance	205.806 ^a	0.000
Knee angular deformities	42.115 ^a	0.000
knee injury	8.977 ^a	0.003

Table 4. Association of genu varum with variables

Variables	Association value	P- value
Age	44.468 ^a	0.000
Gender	0.108 ^a	0.742
Height	16.316 ^a	0.502
Weight	101.928 ^a	0.000
BMI	41.063 ^a	0.012
Q- Angle	256.082 ^a	0.000
Interknee distance	280.515 ^a	0.000
Intermalleolar distance	231.309 ^a	0.000
Knee angular deformities	7.276 ^a	0.064
knee injury	1.679 ^a	0.195

DISCUSSION

The study involved 309 participants, with a mean age of 27.5 years with SD ± 4.611 , primarily young adults. The low standard deviation suggests a homogeneous sample, potentially reducing confounding variables and increasing the internal validity of the findings, as the mean age is similar to previous studies (18). The study's findings are more generalizable to young adults due to their higher likelihood of engaging in physical activities that may exacerbate knee angular deformities. The study found a slightly higher proportion of males (162, 53.1%) than females (147, 46.9%), providing a more representative sample of young adults and allowing for examination of potential gender differences in knee angular deformities (19).

The study found that the majority of participants had a normal BMI, with a mean of 23.46 (SD = ± 4.296), which falls within the World Health Organization's normal weight range. This homogeneity may reduce confounding variables and enhance the internal validity of the findings. The study examines knee angular deformities based on participants' BMI, as obesity is a risk factor for genu valgum and genu varum. Further analysis will explore the relationship between BMI, weight, and deformities (2).

The study found a mean intermalleolar distance (IMD) of 5.53 centimeters (SD = ± 2.885), among participants,

indicating moderate knee angular deformity. The mean IMD ranged from 2.885 to 2.885, indicating moderate variation in knee alignment, which is expected due to natural variations. The study examines the relationship between BMI, age, gender, and knee angular deformities using IMD values, categorizing participants as genu valgum or genu varum, and examining associations with other variables (20).

The Q-angle analysis showed a mean Q-angle of 15.33 degrees (SD = ± 5.492), indicating moderate knee angular deformity, specifically genu valgum. The range of values indicated varying severity levels, with a moderate variation in Q-angle values, indicating natural variation in knee alignment among individuals (2). The study examines the relationship between BMI, age, gender, and knee angular deformities using Q-angle values. A Q-angle of 15.33 degrees suggests a tendency towards genu valgum, potentially impacting knee pain and osteoarthritis development, which will be further explored (21).

The study found a moderate degree of knee angular deformity among participants, with a mean IKD of 3.54 centimeters (SD = 2.172), and moderate variation in IKD values, indicating natural variation in knee alignment among individuals, as indicated by the standard deviation of ± 2.172 . The study examines the relationship between BMI, age, gender, and knee angular deformities using IKD values. A mean IKD of 3.54 centimeters suggests a tendency towards genu varum, potentially impacting knee pain and osteoarthritis development, with further analysis exploring these relationships. The study found that 230 participants (74.4%) were physically active, indicating a high level of physical activity for overall health. This may be due to the age range of the sample, or concerns about knee health. The comparison between physically active and inactive participants may provide insights into the links between physical activity, BMI, age, gender, and knee angular deformities. Knee alignment also showed a diverse distribution of curvatures (20). The study found a high prevalence of knee angular deformities among participants, with a slightly higher prevalence of genu varum. Factors such as genetic predisposition, hormonal influences, and mechanical stress may contribute to these deformities. However, a significant proportion of participants had normal knee curvature, suggesting potential protective factors. Pain severity varied, with 47.6% experiencing mild, 37.2% experiencing moderate, and 15.2% experiencing severe pain. The study found that a significant propor-

tion of participants experienced some level of pain, with a slightly higher prevalence of mild pain. The high proportion of moderate to severe pain (52.4%) may be related to factors like knee angular deformities, high BMI, and physical activity levels. Nearly half of the sample experienced mild pain, suggesting unexplored pain perception or coping mechanisms (22).

The study involved 309 participants, with a mean age of 27.5 years with SD ± 4.611 , primarily young adults. The low standard deviation suggests a homogeneous sample, potentially reducing confounding variables and increasing the internal validity of the findings, as the mean age is similar to previous studies (18). The study's findings are more generalizable to young adults due to their higher likelihood of engaging in physical activities that may exacerbate knee angular deformities. The study found a slightly higher proportion of males (162, 53.1%) than females (147, 46.9%), providing a more representative sample of young adults and allowing for examination of potential gender differences in knee angular deformities (19).

The study found that the majority of participants had a normal BMI, with a mean of 23.46 (SD = ± 4.296), which falls within the World Health Organization's normal weight range. This homogeneity may reduce confounding variables and enhance the internal validity of the findings. The study examines knee angular deformities based on participants' BMI, as obesity is a risk factor for genu valgum and genu varum. Further analysis will explore the relationship between BMI, weight, and deformities (2).

The study found a mean intermalleolar distance (IMD) of 5.53 centimeters (SD = ± 2.885), among participants, indicating moderate knee angular deformity. The mean IMD ranged from 2.885 to 2.885, indicating moderate variation in knee alignment, which is expected due to natural variations. The study examines the relationship between BMI, age, gender, and knee angular deformities using IMD values, categorizing participants as genu valgum or genu varum, and examining associations with other variables (20).

The Q-angle analysis showed a mean Q-angle of 15.33 degrees (SD = ± 5.492), indicating moderate knee angular deformity, specifically genu valgum. The range of values indicated varying severity levels, with a moderate variation in Q-angle values, indicating natural variation in knee alignment among individuals (2). The study examines the relationship between BMI, age, gender, and knee angular deformities using Q-angle values. A Q-angle of 15.33 degrees suggests a tendency towards

genu valgum, potentially impacting knee pain and osteoarthritis development, which will be further explored (21).

The study found a moderate degree of knee angular deformity among participants, with a mean IKD of 3.54 centimeters (SD = 2.172), and moderate variation in IKD values, indicating natural variation in knee alignment among individuals, as indicated by the standard deviation of ± 2.172 . The study examines the relationship between BMI, age, gender, and knee angular deformities using IKD values. A mean IKD of 3.54 centimeters suggests a tendency towards genu varum, potentially impacting knee pain and osteoarthritis development, with further analysis exploring these relationships. The study found that 230 participants (74.4%) were physically active, indicating a high level of physical activity for overall health. This may be due to the age range of the sample, or concerns about knee health. The comparison between physically active and inactive participants may provide insights into the links between physical activity, BMI, age, gender, and knee angular deformities. Knee alignment also showed a diverse distribution of curvatures (20). The study found a high prevalence of knee angular deformities among participants, with a slightly higher prevalence of genu varum. Factors such as genetic predisposition, hormonal influences, and mechanical stress may contribute to these deformities. However, a significant proportion of participants had normal knee curvature, suggesting potential protective factors. Pain severity varied, with 47.6% experiencing mild, 37.2% experiencing moderate, and 15.2% experiencing severe pain. The study found that a significant proportion of participants experienced some level of pain, with a slightly higher prevalence of mild pain. The high proportion of moderate to severe pain (52.4%) may be related to factors like knee angular deformities, high BMI, and physical activity levels. Nearly half of the sample experienced mild pain, suggesting unexplored pain perception or coping mechanisms (22).

CONCLUSION

This study concluded that the 113 participant have genu valgum and 115 participants have genu varum. Frequency of genu varum is 35.27% and genu valgum is 34.95% in significant association with age, gender, BMI, and other knee angular deformities. The relationship between genu valgum and genu varum in young adults is completely independent of age, gender, BMI, and knee angular abnormalities.

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Alisha-tu-Zahra: Design of the work and the acquisition. Drafting the work.

Saleh Mushtaq: Final approval of the version to be published.

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Comparison of General and Spinal Anesthesia in Patients Undergoing Total Hip Arthroplasty**Rimsha Abid^a, Khudeeja Zameer^a**^a Bs Anesthesia at The University Of Faisalabad.Correspondence: Rimshaabid301@gmail.com**ABSTRACT**

Background and Objectives: Total hip arthroplasty can be performed under spinal and general anesthesia. The aim of this study was to compare general versus spinal anesthesia and to investigate advantages and disadvantages, the pain control, length of stay, perioperative and post operative result related to complications.

METHODOLOGY: The study was conducted in the slum vicinity near The University of Lahore adjacent to Raiwind, Lahore. The perception of health hazards among Ragpickers was assessed through a proforma before the start of the study. The Snowball technique was used to collect data. An analysis among the same population was done two weeks later after being given awareness about health hazards. The data was analyzed using chi-square and McNamara Test with p-value <0.05 considered as significant.

RESULTS: The results show that amongst the 150-sample population, the awareness level of the subjects increased by 50% about all diseases, but the knowledge about personal hygiene practices remained unchanged. Only 9% were aware of the diseases tetanus, and none of them was aware of hepatitis, etc.; however, after counseling, they became aware of the common hazards encountered during such work. The awareness level increased significantly (P<0.001). The data was analyzed using chi-square and paired sample t-tests with p-value <0.05 considered as significant.

CONCLUSION: There was a prominent lack of awareness in the ragpickers included in the study, and after the intervention, they showed a greater understanding of infectious diseases. Through health care programs sponsored by the government and NGOs, significant improvement in health among Ragpickers could be seen by following simple hygiene principles.

KEYWORDS: Disease, Needle, Garbage, Medical Waste, Awareness.

INTRODUCTION

Total hip arthroplasty (THA) is defined as complete and permanent loss of femoral head from the acetabular socket.(1, 2)There are two stages of total hip arthroplasty; Comparing one-stage bilateral THA to two-stage bilateral THA.(3)Dislocations come in two varieties: acquired and congenital. When a fetus is positioned against the mother's abdominal wall in pregnancy or when a dysplastic hip Joint is in flexion, the result is a congenital dislocation. acquired is linked to a variety of circumstances, like as motor vehicle crashes.(2)

The risk factors of total hip arthroplasty includes

osteoarthritis, inflammatory arthritis, comorbidities longer or smaller femoral head size.(4)when patient is not responding to cooperative treatment for arthritis THA is effectively reduced pain.(5)The predisposing factors of total hip arthroplasty includes lumbar spinal abnormalities, developmental hip dysplasia (DDH), osteoarthritis (OA), and HIV that are associated with this condition.(6)The main cause of pain and disability is osteoarthritis (OA), one of the main chronic diseases.(7)

The incidence of hip osteoarthritis was unimodally

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distributed in 1990 and 2019, peaking in the 60–64 age range, but the number of disability-adjusted life years (DALYs) rose with age.(8)Preoperative testing is an important part of preoperative assessment. It includes the white blood cells count (WBC) , basic metabolic panel which includes (BUN) Blood urea nitrogen, sodium and creatinine levels and Erythrocyte sedimentation rate (ESR).(9)

It is important to choose adequate anesthetic technique for THA. Historically GA was dominant but now spinal anesthesia gained popularity.(10) spinal anesthesia has been linked to a lower rate of morbidity than general anesthesia.(11, 12)Spinal anesthesia is associated with decrease in blood loss, surgical site infections, and the need for critical care services.(13, 14)Even though spinal anesthesia produces superior perioperative results than general anesthesia. Spinal anesthesia is a remarkable gold standard tool. There are some absolute contraindications to SA such as patient refusal, spinal pathology, coagulopathy) etc.(15)Neuraxial anesthesia shows significantly reduced length of stay as compared to general anesthesia.(16, 17)Neuraxial anesthesia have favorable patient outcomes in terms of the perioperative physiological parameters. Reductions in hospital stays and respiratory problems, as well as a drop in postoperative cognitive dysfunction (POCD).(18, 19)Spinal anesthesia have better results than propensity matched GA.(20).

METHODOLOGY

Comparative cross-sectional study at Orthopedic department Jinnah Hospital Lahore. The duration of the study was 6 months after approval of synopsis. The participants was selected as per the inclusion and exclusion criteria. The inclusion criteria was , both gender, age 40 to 80 years , healthy patient with no cardiopulmonary condition, no history of sleep apnoea and no history of deep venous thrombosis(DVT),no history of coronary artery disease , and no chronic history of anti-coagulation, patients willing to agree on the consent form will be included. And the exclusion criteria was patients with chronic co-morbidities , patients with ASA class 3 and 4.The sampling technique was convenient sampling technique, and the sample was calculated with 95% confidence level, by using Epitool which is 366. The outcome measures that will be used for the evaluation of study parameters. The primary outcome measures are , the assessment of duration of by time measuring, the quantity of

blood loss measured in ml, the need of of blood transfusion measuring by hemoglobin(Hb) and number of blood bag.

And the evaluation of nausea vomiting events.The secondary outcomes were the assessment of post-operative pain by numeric pain rating scale(NPRS) length of stay by counting hours and days and the evaluation of nausea and vomiting, and the evaluation of any adverse events post-operatively.

The self-structured data collection tool will consist of the questionnaire form that Contains the demographic data (age, gender, height, weight, BMI), screening tool and Outcome measures tool.

After obtaining letter from the ethical committee, the patients will be asked to sign the Consent form to enroll them into study, and then the patients will be divided into two Group i.e. group A (general anesthesia) and group B (spinal anesthesia). After Allocating the patients to the respective groups, they will be given anesthetic Technique. SPSS version 26 will be used for the analysis of data.

The normality of data will be Assessed by Shapiro-Walks test and then parametric tests (repeated measure ANOVA, Independent t-test) or non-parametric tests (Friedman test, Mann-Whitney U test) will be applied.

Prior to the study the ethical approval will be gained from The University of Faisalabad, the participants will be given the details of the study orally and the consent forms will be signed from each participants. The participants will be enrolled depending upon their own will, the benefits and risks will be briefed to them. The participants will be given assurance about the security of data that it would be lock protected into the system.

RESULTS

The results showed that Spinal anesthesia offers significant benefits specific to THA that make it a preferred choice in many cases. One of the primary advantages is its superior postoperative pain control. By directly targeting the nerves responsible for sensation in the lower body, spinal anesthesia provides effective pain relief during and after surgery, potentially reducing the need for opioid medications postoperatively. This is particularly beneficial in the context of THA, where early mobilization and pain management are crucial for recovery and rehabilitation.

Moreover, spinal anesthesia is affiliated with fewer respirator complications Contrasted to general anes

thetia. In GA, the patient is fully unconscious and reliant on artificial ventilation, which can lead to complications such as airway issues, lung Infections, and prolonged recovery times. In contrast, spinal anesthesia allows the

Patient to breathe independently and maintain natural respiratory function, lowering the risk of these complications.

Table-1: Frequency of Pain Control in patients with general and spinal anesthesia.

Surgical Technique	YES	NO	Total
GA	96	87	183
SA	125	58	183
Total	221	145	366

Table-2 Frequency of Length of stay in patients with general and spinal anesthesia

Surgical Technique	less	Increase	Total
GA	69	114	183
SA	149	34	183
Total	218	148	366

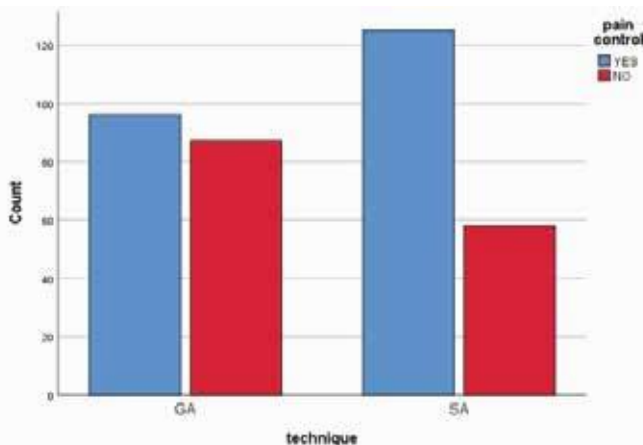


Figure-1 Determine the pain control in patients with general and spinal anesthesia.

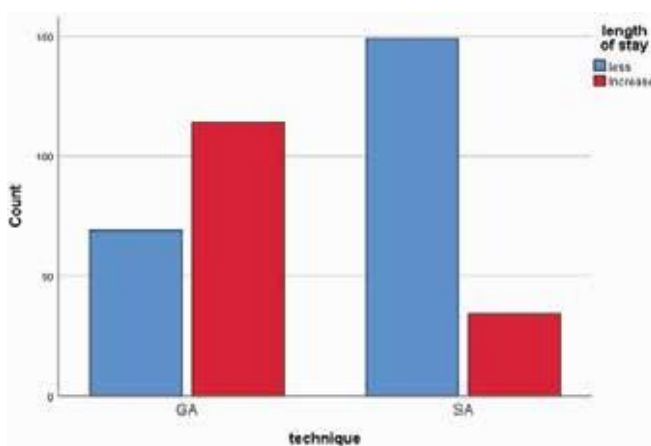


Figure-2 Determine length of stay in patients going through total hip Arthroplasty.

DISCUSSION

Total hip arthroplasty (THA) can be carried out under either spinal or general anesthesia, each with its own set of benefits and drawbacks. THA is a common surgical procedure to relieve pain and restore function in patients with severe hip arthritis, can be carried out under either spinal or general anesthesia. Spinal anesthesia has several advantages over general anesthesia for THA.

Spinal Anesthesia provides targeted pain relief by numbing the specific nerves supplying the hip, leading to superior pain control during and after surgery. This reduces the need for opioids, minimizing opioid-related side effects. It also reduces the risk of respiratory depression (use of ventilator for more than forty eight hours), as it avoids the need for endotracheal intubation and mechanical ventilation. Patients experience fewer side effects such as nausea and vomiting. Spinal Anesthesia provides more stable intraoperative hemodynamics, reducing the risk of cardiovascular complications like hypotension and arrhythmias. Faster recovery and earlier participation in physical therapy due to better pain control is seen in patients who underwent spinal anesthesia. This leads to shorter hospital stays and a quicker return to daily activities. Lower risk of postoperative cognitive dysfunction, particularly beneficial for elderly patients are found in use of spinal anesthesia. Patients remain more alert and recover cognitive functions faster in case of spinal anesthesia. General Anesthesia often results in a longer recovery period due to systemic pain management and slower mobilization, leading to extended hospital stays. Patients with general anesthesia have to take systemic pain medications postoperatively to manage pain, increasing the risk of side effects like nausea, vomiting, and opioid dependence, chronic pain and Inflammation.

General Anesthesia involves a higher risk of respiratory complications like pneumonia and atelectasis due to the use of intubation and mechanical ventilation.

Postoperative nausea and vomiting are more common. General Anesthesia can cause fluctuations in blood pressure and heart rate, increasing the likelihood of cardiovascular events during surgery.

CONCLUSION

In comparing spinal and general anesthesia for total hip arthroplasty, spinal anesthesia demonstrates clear advantages. It offers superior pain management, reduces systemic and cardiovascular complications, supports faster recovery, and preserves cognitive function. Additionally, it lowers the risk of chronic pain

and inflammation, is more cost-effective, environmentally friendly, and results in higher patient satisfaction. Although patient-specific factors must guide the final anesthetic choice, the benefits of spinal anesthesia make it a preferred option for many undergoing THA.

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Khadeeja Zameer: Substantial contributions to the conception and design of the work.

Rimsha Abid: Design of the work and the acquisition. Drafting the work. Final approval of the version to be published.

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Investigation of preferred surgical and anesthesia techniques for cataract surgery**Amna Bibi^a, Rabia Javaid^a, Jawaria Barkat^a**^a Department of Anesthesia, The University of Faisalabad.Correspondence: jawariabarkat1@gmail.com**ABSTRACT**

Background and Objectives: The review of literature to assess the ideal anesthesia and surgical techniques for cataract surgery. The surgical techniques mostly ophthalmologists prefer phacoemulsification and Extracapsular cataract extraction technique meanwhile in anesthesia preference mostly topical with intracameral anesthesia and retrobulbar is in use. Furthermore, study delves into the role of ophthalmologist's factors such as their experience, choice of surgery and anesthesia, patient safety and preference, and the changing trends between ophthalmologists. The objective of this study was to improve patient care and outcomes, this study intends to evaluate anesthetic performances and cataract surgical procedure with an emphasis on efficacy, safety, patient comfort cost effectiveness, accessibility, scalability and long-term outcomes.

METHODOLOGY: A cross-sectional survey of ophthalmology participants covered demographics, chosen surgical and anesthesia techniques for cataract surgery, factors influencing anesthesia choice, sedation use, anesthesia administration, supervision by trained personnel, and evolving anesthesia trends among surgeons.

RESULTS: According to our study most respondents were middle-aged or older, with 73.5% aged 35-55 and 26.5% over 55. The gender distribution was balanced, with Phacoemulsification (55.5%) being the most common surgical method. Most patients (84%) found the procedures very effective, preferring topical anesthesia (37%) for its convenience. Supplementary medications were widely used (85.5%), and follow-up protocols varied. The findings underscore the growing preference for Phacoemulsification and topical anesthesia, highlighting advancements in cataract surgery and patient care.

CONCLUSION: Currently, phacoemulsification is the ideal surgical technique for cataract. Topical with intracameral anesthesia is the common anesthesia for phacoemulsification while retrobulbar anesthesia is the most common for extracapsular cataract extraction.

KEYWORDS: Cataract, phacoemulsification, loss of vision, surgery and anesthesia

INTRODUCTION

Cataracts, caused by fluid buildup between lens fibers, lead to lens opacification, impaired vision, and symptoms like increased glare sensitivity and reduced color perception. Globally, cataracts and refractive errors are leading causes of vision impairment and blindness, affecting over 2.2 billion people. Only 17% of those with cataract-related vision impairment and 36% with refractive errors receive proper treatment. South Asia has the highest prevalence of visual impairment, with cataract rates in China rising significantly with age. The global cataract surgery coverage rate is 9.19%, with low complication rates due to surgical advances.

Western sub-Saharan Africa has the highest adult blindness prevalence, though significant reductions in cataract-related blindness have occurred in regions like Latin America and East Asia. Women experience cataracts at a faster rate than men, with Pakistan projecting an increase in cataract-related blindness among adults. The choice of anesthesia for cataract surgery is influenced by patient preference, medical history, and surgeon expertise. Techniques include topical, general, peribulbar, sub-Tenon, and retrobulbar anesthesia. While topical and low-volume sub-Tenon blocks are increasingly preferred due to

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their lower risk and reduced need for deep blocks, complications like needle misplacement and globe perforation can occur. Phacoemulsification has further reduced the necessity for deep anesthesia, though non-akinesia procedures may still pose surgical risks.

METHODOLOGY

Study Design: The study was cross-sectional study.

Study Population and Setting: All participants were chosen from:

- General Hospital, Lahore
- Mayo hospital, Lahore
- Sheikh Zaid Hospital, Lahore
- Jinnah Hospital
- Private Sectors

Study Duration: The study took 6 months after approval of synopsis

Selection Criteria : The participants will be selected as per the inclusion and exclusion criteria.

Inclusion Criteria:

- Male and female doctors aged (25 to onward).
- Improve visual outcomes and enhance clarity
- Long term stability of visual improvement
- Exclusion Criteria
- Only for anesthesiologist and ophthalmologists.

Sampling Technique

ECC is preferred by 48 (37.8%) of the sample's ophthalmologists. While Phacoemulsification is preferred by 78 (61.4%) of the ophthalmologists.

Outcome Measure: The primary concern is patient safety. Thus, the incidence of intraoperative and post-operative complications such as posterior capsule rupture, Endophthalmitis, or corneal edema would be a crucial primary outcome. Ophthalmologist evaluating reported results about patients' level of comfort. During surgery and their general level of satisfaction with the process and anesthetic technique.

Monitoring changes in intraocular pressure both during and right after surgery in order to assess how well anesthetic methods support stable intraocular pressure.

Statistical Analysis: Data analysis was conducted using IBM SPSS statistics version 27. Continuous variables are presented as mean (standard deviation), while categorical variables are Expressed as number (percentage). The responses to the questionnaire were kept anonymous until all participants had completed it in order to protect the privacy and confidentiality of the study and the participants. A spreadsheet was used to store The data. version 23 will be used for the analysis of data. The normality of data will be assessed by Shapiro-Wilks test and then parametric

tests (repeated measure ANOVA, independent t-test) or non-parametric tests (Friedman test, Mann-Whitney U test) will be applied.

Ethical Consideration : First of all study ethical approval will be gained from The University of Faisalabad, The applicants will be specified the details of the study orally and the consent forms Will be sign up from each participant. The participants will be enrolled depending on their own will, and the benefits and risks will be instructed to them. The members Will be given a declaration about the safety of data that it will be lock protected into the system.

RESULTS

It was indicated that (111 instances, or 55.5% of the total) were Phacoemulsification, a contemporary surgical method in which a tiny incision is used To break up and remove the hazy lens. 88 instances (44% of the total) involved the use of extra capsular cataract extraction, a conventional procedure in which the lens was removed in one price via a bigger incision.

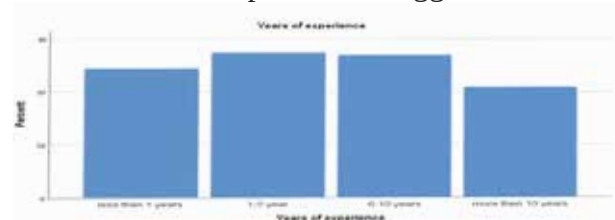


Figure 1. Type of cataract surgery and year of experience

Bar chart indicated that 84% of the 168 respondents, or a large majority, thought the surgical procedures were very effective. Significant percentage of respondents 12.5%, or 25 people rated the strategies as fairly effective, suggesting that there may be opportunity for improvement in the procedures' effectiveness. The remaining 7.5% of respondents regarded them .

Table 1: Percentage of surgical techniques in cataract Removal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly effective	168	84.0%	84.0	84.0
	Moderately	25	12.5%	12.5	96.5
	Satisfactory	7	3.5%	3.5	100.0
Total		200	100.0%	100.0	

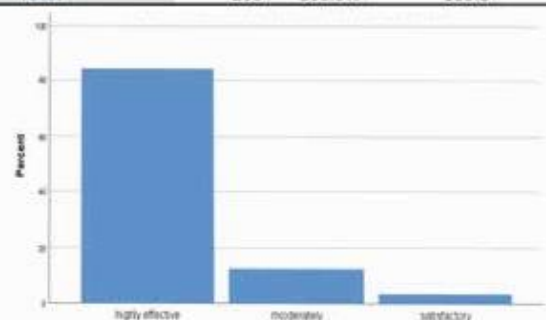


Figure 2. Rate effectiveness of surgical techniques in cataract Removal

DISCUSSION

This survey highlights recent practices in cataract surgery, focusing on anesthesia choices, surgical methods, and patient demographics. The majority of respondents were aged 35-55, with a balanced gender distribution. Phacoemulsification was the preferred surgical method (55.5%), with topical anesthesia favored by 37% due to its convenience and lower invasiveness. The study underscores the growing use of modern, less invasive techniques like phacoemulsification, often combined with intracameral anesthesia, to enhance patient comfort and surgical outcomes. Additionally, ongoing education and professional development were important to many respondents, reflecting the evolving field of cataract surgery.

The significance of prompt cataract surgery for enhancing visual function and quality of life in patients with substantial cataract-related visual impairment was examined in a study by Lundstrom et al. (2020). elements including glare, contrast sensitivity, visual acuity, and influence on day-to-day activities. The goal of this study was to carefully choose patients in order to produce the best possible visual results and patient satisfaction. Because phacoemulsification is a safe, effective, and quick recovery procedure, it is still the gold standard for removing cataracts. Modern technology includes minimally invasive procedures and femtosecond laser-assisted cataract surgery. The patient's preoperative refractive error, corneal astigmatism, desired visual outcomes, and lifestyle preferences all play a role in the intraocular lens selection process. Standard method of choice for breaking up the nucleus of the lens was ultrasonic phacoemulsification. (1)

A study conducted by investigation of using spreadsheet software by Hamid M et al. (2022) Findings revealed that most preferred anesthesia technique for cataract surgery was topical anesthesia with intracameral injection, favored by 47.9% of respondents. In contrast, retrobulbar and peribulbar blocks were the least preferred methods. Lidocaine 2% emerged as the most commonly preferred local anesthetic, chosen by 57.7% of participants. The study suggests a growing preference for topical anesthesia techniques, particularly in conjunction with intracameral injection, driven by factors such as patient comfort and procedural ease (3).

According to our data the majority of respondents were middle-aged to older adults, with 73.5% falling between 35 and 55 years old, and 26.5% over 55 years old. This demographic skew indicates a significant

representation of older individuals undergoing cataract surgery. The sample was almost evenly split between males (48%) and females (50.5%), with a small percentage (1.5%) identifying as "Other." This balanced gender distribution is notable in medical surveys where gender disparities often exist. Phacoemulsification was the predominant surgical method (55.5%), followed by extra capsular cataract extraction (44%). This reflects the trend towards modern, less invasive techniques in cataract surgery. A large majority (84%) rated the surgical procedures as very effective, highlighting a high level of patient satisfaction with the outcomes of cataract surgery: Topical anesthesia was the most preferred method (37%), indicating its popularity due to convenience and lower invasiveness compared to other methods like general anesthesia (29%). Most respondents (85.5%) reported using supplementary medications during surgery, emphasizing their role in managing patient comfort and safety.

Forty-five percent of respondents scheduled follow-up appointments, with preferences split between immediate and individualized protocols based on surgical type. A significant portion of respondents (51.5%) preferred attending conferences and seminars for professional development, highlighting the importance of ongoing education in the field. Both surgical methods and anesthetic protocols have undergone revolutionary changes in cataract surgery, greatly enhancing patient comfort and results across the globe. As a result of its less invasive technique, which permits smaller incisions and quicker recovery periods than more traditional treatments like extra capsular cataract extraction (ECCE), phacoemulsification has become the method of choice. By utilizing femtosecond laser technology, surgical precision is significantly improved, leading to improved visual results. is one safer and more patient-friendly approach that has emerged in anesthesia procedures. Topical anesthesia (TA) in combination with intracameral anesthesia are more common since it is less complicated and has a lower risk of problems than injection-based procedures. Typically, 2% lidocaine is used. Intracameral anesthesia enhances topical treatments by reducing pain and treating intraocular diseases and are more common since it is less complicated and has a lower risk of problems than injection-based procedures. Typically, 2% lidocaine is used. Intracameral anesthesia enhances topical treatments by reducing pain and treating intraocular disease.

CONCLUSION

Currently, phacoemulsification is the ideal surgical technique for cataract. Topical with intracameral anesthesia is the common anesthesia for phacoemulsification while retrobulbar anesthesia is the most common for extracapsular cataract extraction. Because of its least invasiveness, shorter recovery periods, and superior Visual results we find in our data phacoemulsification is usually the recommended surgical approach for cataract surgery. It provides less astigmatism and quicker healing when used with small incision procedures, such as clear corneal or micro incision cataract surgery. In terms of anesthesia, peribulbar or topical anesthetic combined with intracameral anesthesia is typically favored over retrobulbar anesthesia. This method ensures the best possible patient outcomes and satisfaction during cataract surgery while minimizing intraoperative and postoperative problems. To sum up, research on the best surgical and anesthetic methods for cataract surgery provides important information about how to maximize surgical efficiency and patient outcomes. It is clear from thorough investigation that crucial elements Influencing clinical decision-making include patient comfort, surgical accuracy, recuperation timelines, and complication rates. Healthcare practitioners can increase the quality of care given to cataract patients, which will eventually improve surgical outcomes and patient satisfaction, by deepening their strategies. In short, our study Provide a summary of the current procedures for routine cataract surgery, the Preferred procedure in our data is phacoemulsification under topical and intracameral anesthesia for mature cataracts, most participants chose phacoemulsification under retrobulbar anesthesia.

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Amna Bibi: Substantial contributions to the conception and design of the work.

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Satisfaction Rate in Geriatrics with Ankle Sprain to Facilitate Movement with Kinesio-Taping

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ABSTRACT

Background and Objectives: Ankle sprain is a common musculoskeletal injury characterized by damage to the ligaments supporting the ankle joint, often caused by an inversion trauma. This injury the ligament, leading to acute soft tissue swelling, pain, and potential instability in the long term. This study aims to determine satisfaction rate in geriatrics with ankle sprain to facilitate movement with kinesio taping. Kinesio taping is a therapeutic technique used in physiotherapy and rehabilitation to support injured muscles, relieve pain and prevent injury. To determine satisfaction rate in geriatrics with ankle sprain to facilitate movement with kinesio taping.

METHODOLOGY: A crosssectional study with the sample size of 289 patients with ankle sprain were recruited from the age group 55 to 70 years. SPSS version 27.0 was used for data analysis. Study completed in 6 months and a convenience sampling technique is used. The inclusion criteria for present study consider all Geriatric patient with ankle sprain and age between 55 to 70 years and exclusion criteria was Participants having history of red flags.

RESULTS: AIn current study, 289 individuals with the male participants are 54.1% and a female participant are 45.5% having a mean of 1.8 and standard deviation of 0.769. Thus it could be proving that the k taping is somehow beneficial if use alone but with manual therapy its progressiveness enhances and ankle sprain improves also with a rapid rate.

CONCLUSION: The study concludes that satisfaction rate in geriatrics with ankle sprain to facilitate movements with kinesio taping is 47.2% and 25.5% have neutral review about kinesio- taping respectively. Thus it could be proving that the k taping is somehow beneficial if use alone but with manual therapy its progressiveness enhances and ankle instability improves also with a rapid rate.

KEYWORDS: Satisfaction Rate, Geriatrics population, Ankle Sprain, Kinesio Taping

INTRODUCTION

An ankle sprain is an injury to the ligamentous structures supporting the ankle joint, typically caused by an inversion trauma of the ankle. The majority of ankle sprains affect the lateral ligaments, particularly the anterior talofibular ligament. Ligaments help to stabilize the joint. Subtalar joint is formed between inferior aspects of talus bone and the superior aspects of calcaneus. Subtalar joint provides 15 degree of eversion and 35 degree of inversion. Acute ankle sprains often result in soft tissue swelling, pain, and recurrent injuries due to instability. Fibularis muscles, located in the lateral compartment of the leg, play a role in ankle

sprains as they are forcefully stretched during inversion, leading to potential muscle injury and the development of myofascial trigger points. (1)

An ankle sprain involves excessive supination of the rear foot on an externally rotated lower leg, leading to injury of the ligaments and surrounding structures. Recurrent ankle sprains are common, with a history of previous sprains being the greatest risk factor. Frequently occurring sprain can lead to the development of chronic ankle pain, leading to altered postural control, sensorimotor deficits, and reduced physical activity. (2)

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Ankle sprains in older individuals may result from poor muscle conditioning, proprioception and strength training, leading to increased susceptibility to injury during physical activities.(3)

Ankle sprains can be classified into three major types: lateral, medial (deltoid), and syndesmotic (high) ankle sprains. Lateral sprains are the most common type, accounting for up to 80% of cases, and are often of the inversion type. (4)

Ankle sprains in the older population can lead to complications. Studies have shown that the incidence of complications is high in this population. Complications can include chronic ankle instability (CAI), osteochondral lesions of the talus (OLT), and injuries to other ligaments around the ankle. Avulsion fractures and mids substance injuries are common types of injuries associated with ankle sprains also including deep vein thrombosis (DVT) and arterial injuries. (5)

3

Older age is a risk factor for ankle sprains, with the peak incidence occurring between fifteen and nineteen years old. In addition, when it comes to ankle sprains, women over thirty experience a higher rate than men. Other intrinsic factors associated with ankle sprains include a higher body mass index (BMI) and weight. Neuromuscular stability deficits and longer time to stabilize after performing a task, such as jumping, are also risk factors for ankle sprains. Once you've sprained your ankle or had another type of ankle injury, you're more likely to sprain it again. Poor strength or flexibility in the ankles may increase the risk of a sprain. Shoes that don't fit properly or aren't appropriate for an activity, as well as high-heeled shoes in general, make ankles more vulnerable to injury. (6)

Arterial injuries, such as intimal tears of the posterior tibial artery, can occur even with minor ankle injuries, necessitating a high index of suspicion for diagnosis and prompt revascularization. (7)

One study found that up to 40% of ankle sprains develop chronic symptoms, including pain, swelling, instability, and recurrence that persists for at least 12 months' post injury. Another study reported that 72.6% of patients with ankle sprains still had residual symptoms 6 to 18 months after the injury, with 40.4% experiencing moderate to severe symptoms and limitations in daily activities. (8)

Prevalence of foot and ankle pain in middle and old age was 24% for frequent foot pain and 15% for frequent ankle pain. (9)

It was important to evaluate how the kinesio taping (KT) acts on the injured ankle. This elastic bandage

was introduced in the 1970s by Kenzo Kase and has become very popular over the last few decades, used widely in physiotherapy for musculoskeletal disorders affecting both the upper and lower limbs. Kinesiology taping (KT) is a physical therapy technique that provides support and stability to muscles and joints without restricting movement. It is a complementary treatment that is often used in combination with other interventions. KT is made of a thin, elastic tape that is applied directly onto the skin. It follows the path of muscles or nerves and can be applied to any part of the body. (10)

However, another study found that Kinesio taping did not improve balance performance in individuals with recurrent ankle sprains Kinesio taping significantly enhanced gait functions, range of motion, muscle activation, and postural sway, based to a full review and meta-analysis. older population with chronic ankle instability. Additionally, a case study reported that ankle eversion taping using Kinesio tape decreases ankle instability and pain, and hence enhances functional dynamic balance in a patient with ankle inversion sprain. (11)

METHODOLOGY

This cross-sectional study was conducted at Ali Fatima Hospital and at Mumtaz Bakhtawar Hospital, Lahore. We enrolled 289 patients and conducted a study on male and female between the age group 55 to 70 years. Such participants are excluded which have history of infection, history of fracture, history of neurological symptoms, significant visual or vestibular impairment. The study was conducted from 12 February to 5 July 2024, as the frequency of regular visits to Ali Fatima hospital and Mumtaz Bakhtawar Hospital, Lahore physiotherapy department is generally three months for osteoporosis patients. The inclusion criteria includes those geriatric patient with ankle sprain of almost 4 week ,acute and chronic ankle sprain patients Patient aged between 55 to 70 years, both male and female patients, diagnosed ankle sprain patients of grade 1 and 2.

In this study determines that the satisfaction of kinesio taping in geriatrics diagnosed with past incidence of falls in physiotherapy department of Ali Fatima Hospital, Lahore. It is common in eversion-external rotation mechanisms. It is often associated with osteochondral lesions, syndesmotic lesions, or fractures(5)Ankle sprain: Common lower limb injury in geriatric population.Majority affect lateral ligaments, especially anterior talofibular ligament.(29)

RESULTS

Out of 289 participants 41.4% population belongs to 55 to 60 years, 36.9% population belongs to 61 to 65 years and 21.4% population belongs to 66 to 70 years.

Table 1 Age (Years)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	55-60	120	41.4	41.5	41.5
	61-65	107	36.9	37.0	78.5
	66-70	62	21.4	21.5	100.0
	Total	289	99.7	100.0	
Missing System		1	.3	100.0	Mean
Total					Std.Deviation

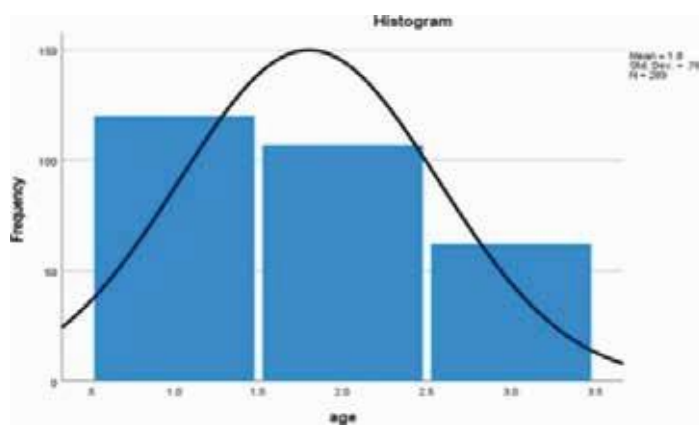


FIGURE 1 HISTOGRAM OF AGE

Table 2 Usage of kinesio taping (Weeks)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 week	73	25.2	25.3	25.3
	1-2 weeks	121	41.7	41.9	67.1
	2-4 weeks	62	21.4	21.5	88.6
	Over 4 weeks	33	11.4	11.4	100.0
	Total	289	99.7	100.0	
Missing System		1	.3		
Total		290	100.0		

Table 2 showed that Out of 289 participants 41.7% participants uses k taping for 1 to 2 weeks, 25.2% participants uses k taping for less than 1 week, 21.4% participants uses k taping for 2 to 4 week and 11.4% participants uses k taping for over 4 weeks.

Table 10 showed that Out of 289 participants, 28.6% population are satisfied with experience of using kinesio taping for ankle sprain, 24.1% have neutral comment with experience of using kinesio taping for ankle sprain, 21.4% are satisfied with your experience of using kinesio taping for ankle sprain, 14.5% popula-

tion are dis satisfied with experience of using kinesio taping for ankle sprain and 11.0% population are very dissatisfied experience of using kinesio taping for ankle sprain.

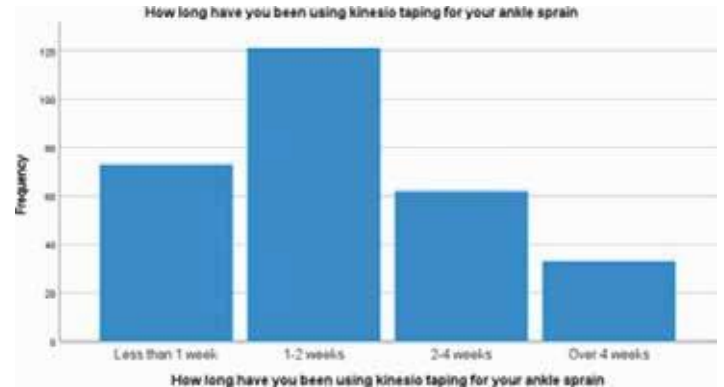


FIGURE 2 HISTOGRAM of Usage of kinesio taping (Weeks)

Table 3 Level of Satisfaction

Valid	Very Satisfied	62	21.4	21.5	21.5
	Satisfied	83	28.6	28.7	50.2
	Neutral	70	24.1	24.2	74.4
	Dissatisfied	42	14.5	14.5	88.9
	Very Dissatisfied		11.0	11.1	100.0
	Total	289	99.7	100.0	
Missing System		1	.3		
Total			100.0		

FIGURE 3 HISTOGRAM of Level of Satisfaction

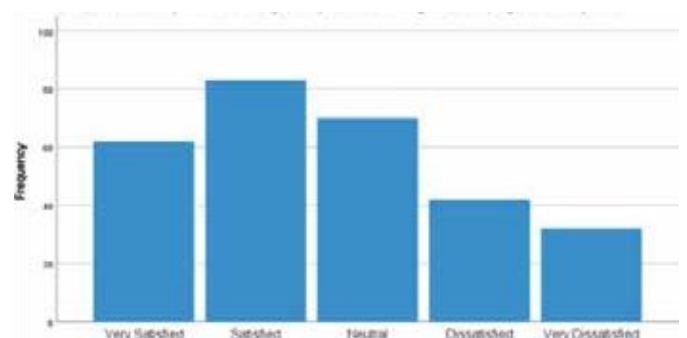


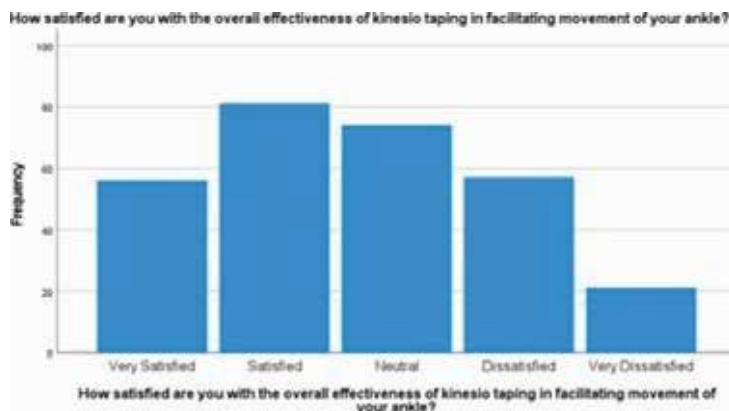
Table 4 showed that Out of 289 participants, 27.9% population are satisfied with overall effectiveness of k tape in facilitating movement at ankle joint, 25.5% population have neutral comment with overall effectiveness of k tape in facilitating movement at ankle joint, 19.7% population are dissatisfied with overall effectiveness of k tape in facilitating movement at ankle joint, 19.3% population are very satisfied with overall effectiveness of k tape in facilitating movement

at ankle joint, 7.2% population are very dissatisfied with overall effectiveness of k tape in facilitating movement at ankle joint. the quality of care given to cataract patients, which will eventually improve surgical outcomes and patient satisfaction, by deepening their strategies. In short, our study Provide a summary of the current procedures for routine cataract surgery, the Preferred procedure in our data is phacoemulsification under topical and intracameral anesthesia for mature cataracts, most participants chose phacoemulsification under retrobulbar anesthesia.

Table 4 Level of Satisfaction

Valid	Very Satisfied	56	19.3	19.4	19.4
	Satisfied	81	27.9	28.0	47.4
	Neutral	74	25.5	25.6	73.0
	Dissatisfied	57	19.7	19.7	92.7
	Very Dissatisfied		7.2	7.3	100.0
	Total	289	99.7	100.0	
Missing System Total		1 290	.3 100.0		

FIGURE 4 HISTOGRAM of Level of Satisfaction



DISCUSSION

Ankle sprain is common lower limb injury in geriatric population. Majority affect lateral ligaments, especially anterior talofibular ligament.(29)Often associated with osteo-chondral lesions, syndesmotic lesions, or fractures. In our study age group was 55 to 70 years with mean age was 62 years which is consistent with previous studies that have focused on older population with ankle sprain a study by Shame Halim Kertanegara61 et al (2016) find ankle sprain in older population of different random age group of 240 patients with mean age was 62+-1. The standard deviation of 8 years indicates

the majority of participants were 55 to 70 years old in our study which is also consistent with previous research. The standard deviation of 8 years indicates that the majority of participants were between 55 to 60 years old in our study which is also consistent with previous

research. The narrow age range in our study suggest that the participants were largely composed of individual in the early stage of older adulthood which may be implication for our findings. In comparison to other studies, our findings suggest that our sample population was slightly older than some previous studies but different to others.

Our study indicates that the mean age of ankle sprain among our population was 62 years with a standard deviation of 0.769. CAI), which comes through repeated sprains. A combination of the SPE and KT may be useful to volleyball players with CAI in enhancing their efficiency and ability while generating favorable results. Ankle sprains resulting from inversion are a common injury among basketball players. (5)

KT may be an effective choice for a safe return to activity since it may help patients with recurrent ankle sprains increase the stability of their static joints. Kinesio tape is recommended for use in clinical practice to both prevent and manage lateral ankle injuries because of its beneficial effects on proprioception, muscle endurance, and activity performance. This is because postural control is impacted. (30)

Kinesio tape, on a different conjunction, could assist with postural control during landing.(10) One typical injury that arises from a sudden supination moment is a lateral ankle sprain. It damages the lateral ligaments and cartilaginous surfaces and affects functional ankle stability and balance in multiple people. (12)

The impact of tape on functional performance has been questioned in the literature. Kinesiotaping (KT) is a new technique being used for both performance enhancement and rehabilitation. It seems that little research have examined the impact of ankle KT® on functional performance so far. KT in addition to athletic tape produced faster performance times than placebo and non-taped conditions in the single-limb hurdle test. For the benefit they provided and supporting evidence, all biomechanical or functional bandages—elastic or inelastic—applied in CAI were beneficial, emphasizing patient perception, kinematics, agility, and motor control, as well as dynamic and static balance. As a result, bandages facilitate ankle functionality. (13)

When a strong external force is applied to the ankle

joint, the ligament can tear or rupture, resulting in an ankle sprain. The aim of this study was to investigate the reaction of adult patients with chronic ankle instability to ankle eversion tape in the form of sudden inversion. For both therapeutic and preventive purposes, taping can be used with ankle injuries.

CONCLUSION

The study concludes that satisfaction rate in geriatrics with ankle sprain to facilitate movements with kinesio taping is 47.2% and 25.5% have neutral review about kinesio- taping respectively. Thus it could be proving that the k taping is somehow beneficial if use alone but with manual therapy its progressiveness enhances and ankle instability improves also with a rapid rate.

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SONOGRAPHIC ASSOCIATION OF NON – ALCOHOLIC FATTY LIVER DISEASE AND CHRONIC KIDNEY DISEASE WITH METABOLIC SYNDROME

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ABSTRACT

Background and Objectives: Metabolic syndrome, a complex cluster of metabolic disturbances, has become a global health concern due to its association with increased cardiovascular risks and organ-related disorders. Non-alcoholic fatty liver disease (NAFLD) and chronic kidney disease (CKD) are two significant conditions closely linked to metabolic syndrome, reflecting potential shared pathophysiological mechanisms. Ultrasonography has emerged as a vital tool for non-invasive assessment of NAFLD and CKD within the context of metabolic syndrome. To find the sonographic association of non – alcoholic fatty liver disease with chronic kidney disease in patients with metabolic syndrome methodology.

METHODOLOGY: This descriptive study was performed at Sharif city hospital, Lahore. Total 210 participants, age 18-80 years comprising 107 (51%) males and 103 (49%) females were scanned. The study included CKD and NAFLD patients having metabolic syndrome and patients having any other liver or kidney disease related to metabolic syndrome were excluded.

RESULTS: The study revealed significant associations between diabetes and CKD, as well as between hypertension and stages of CKD. However, no significant associations were observed between diabetes and fatty liver grading, hypertension and fatty liver grading, or obesity and stages of CKD. Similarly, no significant associations were found between obese/non-obese status and fatty liver disease or chronic kidney disease.

CONCLUSION: In conclusion, this study contributes valuable insights into the complex interplay of metabolic syndrome, NAFLD, and CKD. The significant associations observed highlight the need for comprehensive assessment and management of these conditions to reduce their individual and collective burden on global health-care systems.

KEYWORDS: Non-Alcoholic Fatty Liver Disease, Chronic Kidney Disease, Metabolic Syndrome.

INTRODUCTION

Metabolic syndrome, a multifaceted cluster of metabolic disturbances, has risen to epidemic proportions globally, warranting significant attention from the medical community. The syndrome's intricate interplay of central obesity, insulin resistance, dyslipidemia, and hypertension not only heighten the risk of cardiovascular diseases but also influences the development of specific organ-related disorders. Two such prominent conditions are non-alcoholic fatty liver disease (NAFLD) and chronic kidney disease (CKD), both closely associated with metabolic syndrome, offering a window into potential shared pathophysiological mechanisms and clinical implications.

NAFLD, characterized by lipid accumulation within hepatocytes, stands as the most prevalent chronic liver ailment across the world [1]. Concurrently, CKD, characterized by a gradual loss of kidney function, poses a formidable global health challenge with its escalating incidence [2]. The intricate ties between NAFLD, CKD, and metabolic syndrome weave a complex narrative of interconnected factors that propel disease progression.

In the realm of non-invasive diagnostic tools, medical imaging techniques, particularly ultrasonography, have emerged as indispensable assets for assessing NAFLD and CKD. Ultrasonography enables the visu-

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alization of hepatic steatosis and renal anomalies, offering pivotal insights into disease severity and advancement [3]. Moreover, it empowers clinicians to monitor alterations in liver and kidney structure, thus facilitating the evaluation of treatment effectiveness and patient well-being [4].

This article embarks on an exploration of the sonographic relationships between NAFLD and CKD in conjunction with metabolic syndrome. By meticulously surveying contemporary research and pertinent literature, we endeavor to unravel the intricate connections among these entities and their shared underlying mechanisms [5][6]. Furthermore, we will underscore the significance of early-stage identification through ultrasonographic evaluations, accentuating its pivotal role in steering therapeutic modalities and augmenting patient care [7].

The role of medical imaging, particularly sonography, in the assessment of NAFLD and CKD within the context of metabolic syndrome has witnessed remarkable advancements.[6] Ultrasonography, with its non-invasive nature and ability to provide real-time imaging of liver and kidney structures, has become an indispensable tool for early detection, risk stratification, and monitoring of these conditions [8]. The Sonographic Association of Non-Alcoholic Fatty Liver Disease and Chronic Kidney Disease with Metabolic Syndrome forms a critical nexus that demands comprehensive exploration.

Earlier studies were inconclusive of the association of CKD and NAFLD and required more research to be done in order to achieve definite results. Advances in technology help us to determine the risks of having CKD and NAFLD in patients with metabolic syndrome. It can help us to treat these conditions timely without them having to get complicated. The aim of our study is to determine the factors that closely link these three conditions together so that they can either be avoided or managed.

METHODOLOGY

Study Design: This cross-sectional study aimed to investigate the sonographic association of non-alcoholic fatty liver disease (NAFLD) and chronic kidney disease (CKD) with metabolic syndrome. Total 210 participants, age range from 22 to 80 years, out of which 103 (49.0%) were female, and 107 (51.0%) were male.

Inclusion Criteria:

Group 1: patients having metabolic syndrome and CKD

Group 2: patients having metabolic syndrome and NAFLD

Group 3: patients having only metabolic syndrome

Exclusion Criteria

Patients having any other liver or kidney disease related to metabolic syndrome

Data Collection

Clinical data were collected Department of Radiology, Sharif City Hospital, Lahore, including age, gender, presence of diabetes, hypertension, and obesity, as well as ultrasonography findings for NAFLD and CKD staging using a Toshiba Xario 100 with convex probe having frequency of 2-5 MHz by experienced sonographers

Statistical Analysis

Statistical analysis was conducted using SPSS software. Descriptive statistics were used to summarize participant characteristics. Cross-tabulations and Chi-square tests were performed to assess associations between NAFLD, CKD, metabolic syndrome components, and their respective stages. A p-value < 0.05 was considered statistically significant.

RESULTS

In table.1 out of 210 participants, 106 (50.5%) were non diabetes, while 104 (49.5%) were diabetes. 116 (55.2%) were non hypertensive, while 94 (44.8%) were hypertension. 101 (48.1%) were non obese, while 109 (51.9%) were Obese. 2 of them (1.0%) did not have Fatty Liver Disease, while 208 (99.0%), had Fatty Liver Disease. 124 (59.0%) did not had chronic kidney disease, while 86 (41.0%) had chronic kidney disease.

Table 1: Descriptive statistics.

	Frequency				
	Diabetes	Hypertension	Obesity	NAFLD	CKD
No	106 (50.5 %)	116 (55.2 %)	101 (48.1 %)	2 (1 %)	124 (59 %)
Yes	104 (49.5 %)	94 (44.8 %)	109 (51.9 %)	208 (99 %)	86 (41 %)
Total	210 (100 %)				

In Table 2 out of 124 participants without Fatty Liver Disease and 86 participants with Fatty Liver Disease. Among the observers with Fatty Liver Disease, 84 of them have chronic kidney disease, while 2 do not. There was no statistically significant association between Fatty Liver Disease and Chronic Kidney Disease (Chi-Square = 2.911, p = 0.088).

Table 2: Association of fatty liver and chronic kidney disease.

		Chronic Kidney Disease		Total	P-value
		No	Yes		
Fatty Liver Disease	No	0	2	2	0.167
		0.0%	100.0%	100.0%	
	Yes	124	84	208	
		59.6%	40.4%	100.0%	
Total		124	86	210	
		59.0%	41.0%	100.0%	

Table 3 shows the relationship between Fatty Liver Grading and Stages of Chronic Kidney Disease among the 210 participants. 2 had Fatty Liver Grading "0", in Stage 1 of chronic kidney disease. 53 had Fatty Liver Grading "1" in Stage 0, whereas 15 participants in Stage 1, and 1 participant in Stage 2 of chronic kidney disease. Fatty Liver Grading "2", there are 55 participants in Stage 0, 24 participants in Stage 1, and 13 participants in Stage 2 of chronic kidney disease. Fatty Liver Grading "3", there are 17 participants in Stage 0, 17 participants in Stage 1, and 13 participants in Stage 2 of chronic kidney disease. A significant association was found between Fatty Liver Grading and Stages of Chronic Kidney Disease (Chi-Square = 30.309, $p < 0.001$).

Table 3: Association of fatty liver grading and stages of chronic kidney disease.

		Stages of Chronic Kidney Disease			Total	P-Value
		0	1	2		
Fatty Liver Grading	0	0	2	0	2	
		0.0%	100.0%	0.0%	100.0%	
	1	53	15	1	69	
		76.8%	21.7%	1.4%	100.0%	
	2	55	24	13	92	
		59.8%	26.1%	14.1%	100.0%	
	3	17	17	13	47	
		36.2%	36.2%	27.7%	100.0%	
Total		125	58	27	210	
		59.5%	27.6%	12.9%	100.0%	

In table.4 out of the 106 non-diabetic participants, 74 (69.8%) had stage "0", 24 (22.6%) had stage "1", and 8 (7.5%) had stage "2" chronic kidney disease stage. Similarly, out of the 104 Diabetes participants, 51 (49.0%) had stage "0", 34 (32.7%) had stage "1", and 19 (18.3%) had stage "2" chronic kidney disease stage. A significant association was found between Stages of Chronic Kidney Disease and Diabetes (Chi-Square = 10.420, $p = 0.005$).

Table 4: Associa

		Stages of Chronic Kidney Disease			Total	P-Value
		0	1	2		
Diabetes	No	74	24	8	106	0.005
		69.8%	22.6%	7.5%	100.0%	
	Yes	51	34	19	104	
		49.0%	32.7%	18.3%	100.0%	
Total		125	58	27	210	
		59.5%	27.6%	12.9%	100.0%	

In table 5 out of the 106 non-diabetes participants, 2 (1.9%) had Grade "0", 39 (36.8%) had Grade "1", 48 (45.3%) had Grade "2", and 17 (16.0%) had Grade "3" Fatty Liver. Similarly, out of the 104 Diabetes participants, 30 (28.8%) had Grade "1", 44 of them (42.3%) had Grade "2", 30 (28.8%) had Grade "3" and none of them had Grade "0" Fatty Liver. No significant association was found between Fatty Liver Grading and Diabetes (Chi-Square = 6.925, $p = 0.074$).

Table 5: Associaion of diabetes with fatty liver grading

		Fatty Liver Grading				Total	P-Value
		0	1	2	3		
Diabetes	No	2	39	48	17	106	0.074
		1.9%	36.8%	45.3%	16.0%	100.0%	
	Yes	0	30	44	30	104	
		0.0%	28.8%	42.3%	28.8%	100.0%	
Total		2	69	92	47	210	
		1.0%	32.9%	43.8%	22.4%	100.0%	

In table 6, out of the 116 non-Hypertensive participants, 85 (73.3%) had stage "0", 24 (20.7%) had stage "1", and 7 (6.0%) had stage "2" chronic kidney disease. Similarly, out of the 94 Hypertensive participants 40 (42.6%) had stage "0", 34 (36.2%) had stage "1", and 20 (21.3%) had stage "2". A significant association was found between Stages of Chronic Kidney Disease and Hypertension (Chi-Square = 22.121, $p < 0.001$).

Table 6: Association of Hypertension with stages of chronic kidney disease

		Stages of Chronic Kidney Disease			Total	P-Value
		0	1	2		
Hypertension	No	85	24	7	116	0.000
		73.3%	20.7%	6.0%	100.0%	
	Yes	40	34	20	94	
		42.6%	36.2%	21.3%	100.0%	
Total		125	58	27	210	
		59.5%	27.6%	12.9%	100.0%	

In table 7 out of the 116 non-Hypertensive participants, 2 (1.7%) had Grade "0", 43 (37.1%) had Grade "1", 49 (42.2%) had Grade "2", and 22 (19.0%) had Grade "3" Fatty Liver. Similarly, out of the 94 Hypertensive participants, none of them had Grade "0", 26 (27.7%) had Grade "1", 43 (45.7%) had Grade "2", and 25 (26.6%) had Grade "3" Fatty Liver. No significant association was found between Fatty Liver Grading and Hypertension (Chi-Square = 4.516, $p = 0.211$).

Table 7: Hypertensive participants

			Fatty Liver Grading				Total
			.00	1.00	2.00	3.00	
Hypertension	No		2	43	49	22	116
			1.7%	37.1%	42.2%	19.0%	100.0%
	Yes		0	26	43	25	94
			0.0%	27.7%	45.7%	26.6%	100.0%
Total			2	69	92	47	210
			1.0%	32.9%	43.8%	22.4%	100.0%
Chi-Square Tests							
			Value	df	Asymp. Sig. (2-sided)		
Pearson Chi-Square			4.516 ^a		.211		
Likelihood Ratio			5.279		.152		
N of Valid Cases			210				

In table 8 out of 101 Non-Obese participants, 65 (64.4%) had Stages "0", 24 (23.8%) had Stages "1", and 12 (11.9%) had Stages "2" Chronic Kidney Disease. Similarly, out of 109 Obese participants, 60 (55.0%) had Stages "0", 34 (31.2%) had Stages "1", and 15 (13.8%) had Stages "2" chronic kidney disease. No significant association was found between Stages of Chronic Kidney Disease and Obesity/Non-Obesity (Chi-Square = 1.956, $p = 0.376$).

Table 8: Association of obesity with stages of chronic kidney disease

		Stages of Chronic Kidney Disease			P-Value
		00	100	200	
Non-obese	65	64.4%	23.8%	11.9%	0.376
		60	34	15	
Obese	60	55.0%	31.2%	13.8%	

In table 9 out of the 101 non-Obese participants, 2 (2.0%) had Grade "0", 53 (52.5%) had Grade "1", 35 (34.7%) had Grade "2", and 11 (10.9%) had Grade "3" Fatty Liver. Similarly, out of 109 Obese participants,

none of them had Grade "0", 16 (14.7%) had Grade "1", 57 (52.3%) had Grade "2", and 36 (33.0%) had Grade "3" Fatty Liver. A significant association was found between Fatty Liver Grading and Obesity/Non-Obesity (Chi-Square = 40.153, $p < 0.001$).

Table 9: Association of obesity with fatty liver disease

	Fatty Liver Grading				P-Value
	.00	1.00	2.00	3.00	
Non-obese	2	53	35	11	0.000
	2.0%	52.5%	34.7%	10.9%	
Obese	0	16	57	36	
	0.0%	14.7%	52.3%	33.0%	

DISCUSSION

The present study aimed to investigate the sonographic association of non-alcoholic fatty liver disease (NAFLD) and chronic kidney disease (CKD) with metabolic syndrome. The study involved a cohort of 210 participants, and various demographic and clinical characteristics were examined to understand the relationships between these conditions.

The distribution of participants based on diabetes status revealed that nearly half of the participants were diabetic (49.5%). This finding aligns with the global prevalence of diabetes and its strong association with metabolic syndrome [9]. Furthermore, the association between diabetes and CKD has been well-established, as observed in previous studies [10]. Our results corroborate these findings, showing a significant association between stages of CKD and diabetes status (Chi-Square = 10.420, $p = 0.005$), highlighting the impact of metabolic disturbances on renal health.

Hypertension, another hallmark of metabolic syndrome, was observed in 44.8% of participants. This prevalence is consistent with the known link between hypertension and metabolic syndrome, emphasizing the role of elevated blood pressure in the development of various metabolic and organ-related disorders [11]. Our study demonstrated a significant association between stages of CKD and hypertension (Chi-Square = 22.121, $p < 0.001$), underscoring the close relationship between these conditions.

The study also evaluated the influence of obesity on metabolic and organ-related health. Approximately 51.9% of participants were obese, which mirrors the global trend of increasing obesity rates and its strong association with metabolic syndrome [12]. Our results indicated a significant association between fatty liver grading and obesity/non-obesity (Chi-Square = 40.153, $p < 0.001$), confirming the intricate link between obesity and NAFLD.

Interestingly, the relationship between fatty liver grading and diabetes did not reach statistical significance

(Chi-Square = 6.925, $p = 0.074$). This finding contrasts with some previous studies that have reported a stronger association between diabetes and NAFLD [13]. However, the complex interplay of genetic, environmental, and metabolic factors may contribute to variations in these associations across different populations.

Intriguingly, our study unveiled a notable association between fatty liver grading and stages of CKD (Chi-Square = 30.309, $p < 0.001$). This finding highlights a potential shared pathophysiology underlying NAFLD and CKD, possibly related to systemic inflammation, oxidative stress, and insulin resistance[14][15]. These results align with prior research that has also suggested a significant association between NAFLD and CKD[16].

CONCLUSION

Our findings demonstrate significant associations were found between diabetes and CKD, as well as between hypertension and stages of CKD. However, no significant associations were observed between diabetes and fatty liver grading, hypertension and fatty liver grading, or obesity and stages of CKD. Furthermore, no associations were found between obese/non-obese status and fatty liver disease or chronic kidney disease.

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SONOGRAPHIC EVALUATION OF NORMAL RENAL VARIANTS IN POPULATION OF LAHORE

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ABSTRACT

Background and Objectives: Congenital renal diseases consist of a variety of entities. The age of presentation and clinical examination narrow down the differential diagnosis; however, imaging is essential for accurate diagnosis and pretreatment planning. Ultrasound is often used for initial evaluation. To evaluate the normal renal variants on ultrasound in population of Lahore.

METHODOLOGY: A cross sectional analytical study was conduct at university ultrasound clinic township University of Lahore. Total sample size was 258. SPSS version 21.0 was used for data analysis.

RESULTS: Out of total number of 258 patients, 98 (38 %) were females and 160 (62%) were males, normal variants of kidneys in which 45 (17.4 %) patients had Lobulation variant, 114 (44.1%) had column of bertin, 55 (21.3%) had dromedary hump, 23 (8.9%) had duplex collecting system and 21(8.1%) had junctional parenchymal defect. Cross tabulation shows between gender and variant, column of bertin is most frequent variant in both genders.

CONCLUSION: Study concluded that normal variants are commonly encountered on ultrasound imaging. In this study the most common normal renal variant was colomn of bertine and least common was junctional parenchymal defect. Sonography continues to occupy a central role in the evaluation and detection of different congenital normal anatomical variants due to its advantage of rapid scanning time, lack of radiation exposure, cost effective and easy feasibility

KEYWORDS: Ultrasound, Dromedary Hump, Column of Bertine, junctional parenchymal defect, cortical thickness, renal length.Introduction.

INTRODUCTION

Kidneys are the vital regulatory organs of the vertebrates and play an important role in excretion of bodily waste and regulation of water and electrolytes.¹ The kidney is the paired retroperitoneal organ that is symmetrically placed in the abdominal region. This organ is consisting of various dimensions (RD) such as renal length, renal volume, cortical volume or thickness which can be obtained with the help of ultrasound in evaluation of kidney size.²

Sonography recognized renal thickness, length as well as echogenicity of renal parenchyma separately as of its significance to detail widen collecting system.¹⁵ These details help out to identify degree of renal parenchymal harm as well as prospect of reversibility, furthermore verdict for performing renal biopsy.¹

Ultrasound is a primary imaging modality that has shown its usefulness as an essential tool in the evaluation of renal dimension. The normal renal dimensions can be demonstrated by ultrasonography, plain radiography and contrast Urographic studies. It is also employed in the diagnosis of renal diseases. The renal contour was always smooth. There was no acoustic enhancement behind a large column of Bertin. nephrotomography. The kidney is viewed in several planes and from several directions on sonography. We found the axillary view especially revealing in our search for large columns of Bertin.²

In the past few decades, ultrasonography evaluation of has emerged as a useful technique for in vivo assessment of renal size with high reliability and accuracy.

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Ultrasonographic measurement of the kidney dimensions is important in evaluation of renal disease in preterm infants who have multiple comorbidities that effect the renal function.³

Renal size is also important parameter for assessment in kidney transplant candidates. Renal sizes also facilitate differentiation between chronic and acute renal failure.¹¹ The changes in renal size can be very suggestive evidence of disease. The deviation of renal parameters from established normal values is an important criterion in diagnosing kidney disease. The renal parenchyma thickness also was found to be one of the ultrasonography renal parameters that can offer prognostic information at the end stage kidney disease. Imaging of the kidney is mainly based on morphologic evaluation of parenchyma excretory system and renal vasculature using ultrasonography, computed tomography (CT) and magnetic resonance imaging.⁴

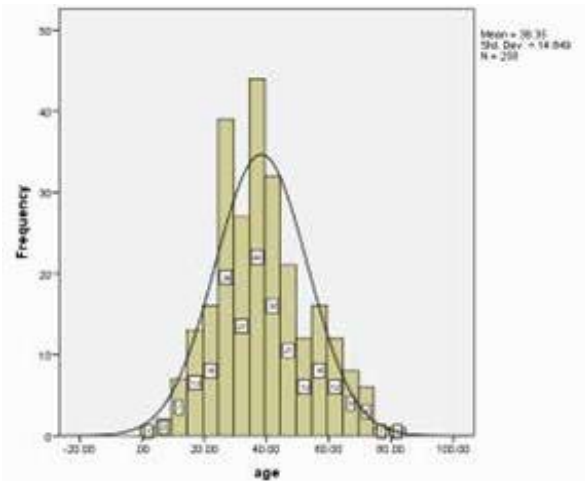
Ultrasound has shown to have good accuracy as well as inter-observer and intra-observer reproducibility for renal dimension measurement. There are a lot of benefits of ultrasonography in renal dimension determination as it is cheap, non-invasive, easily available, fast as well as portable and includes neither ionizing radiations exposure nor radiographic magnification and has no contrast related adverse effects as compared to the other imaging modalities.¹³ Ultrasound is the first line imaging modality used to assess the kidneys and renal tract due to its easy accessibility, lack of radiation and low cost.⁵ The aim of the study to create a normative database of variants in normal renal morphology in population of Lahore.

METHODOLOGY

A cross sectional analytical study was conducted after approval of Ethical Review Board at university of Lahore faculty of Allied Health sciences, Lahore. On the basis of diagnosis inclusion criteria were included adult patients of both genders for abdominal ultrasound. And patients who are willing to participate. In exclusion Criteria excluded the Patient present with any known renal pathologies. Data were collected with help of convenient sampling technique according to the age, gender and normal variants such as lobulation, dromedary hump, column of bertin and duplex collecting system. Total sample size was 258. After collection data were managed in Microsoft excel sheet and were analysed SPSS version 21 was used for data analysis.

RESULTS

Out of total number of 258 patients, 98 (38 %) were females and 160 (62%) were males, normal variants of kidneys in which 45 (17.4 %) patients had Lobulation variant, 114 (44.1%) had column of bertin, 55 (21.3%) had dromedary hump, 23 (8.9%) had duplex collecting system and 21(8.1%) had junctional parenchymal defect. Cross tabulation shows between gender and variant, column of bertin is most frequent variant in both genders. In frequency of age group, out of total number of 258 the age group between 31-40 had frequent variants.



Graph No 1

This table shows the descriptive statistics of age in which maximum age group were 84, mean 38 and standard deviation 14

Table No 1: Comparison between Gender and Variants.

		Gender		Total
		F	M	
Lobulation	Count	9	36	45
	% within Variant	20.0%	80.0%	100.0%
Column of Bertin	Count	51	62	113
	% within Variant	45.1%	54.9%	100.0%
Dromedary Hump	Count	20	35	55
	% within Variant	36.4%	63.6%	100.0%
Duplex collecting system	Count	11	12	23
	% within Variant	47.8%	52.2%	100.0%
Junctional parenchymal defect	Count	7	14	21
	% within Variant	33.3%	66.7%	100.0%
Total	Count	98	160	258
	% within Variant	38.0%	62.0%	100.0%

Cross tabulation shows between gender and variant, column of bertin is most frequent variant in both genders.

Table No 3: Comparison between Age group and variants.

		Variant					Total
		Lobulation	Column of Bertin	Dromedary Hump	Duplex collecting system	Junctional parenchymal defect	
2-10	Count	0	4	3	0	0	7
	% within AG	0.0%	57.1%	42.9%	0.0%	0.0%	100.0%
11-20	Count	5	7	4	2	1	19
	% within AG	26.3%	36.8%	21.1%	10.5%	5.3%	100.0%
21-30	Count	7	20	15	8	7	57
	% within AG	12.3%	35.1%	26.3%	14.0%	12.3%	100.0%
31-40	Count	18	35	20	4	6	84
	% within AG	21.4%	41.7%	23.8%	4.8%	7.1%	100.0%
41-50	Count	8	16	6	5	6	41
	% within AG	19.5%	39.0%	14.6%	12.2%	14.6%	100.0%
51-60	Count	4	14	4	3	1	26
	% within AG	15.4%	53.8%	15.4%	11.5%	3.8%	100.0%
61-70	Count	3	15	3	0	0	21
	% within AG	14.3%	71.4%	14.3%	0.0%	0.0%	100.0%
71-80	Count	0	1	0	1	2	3
	% within AG	0.0%	50.0%	0.0%	50.0%	100.0%	100.0%
81-90	Count	0	1	0	0	0	1
	% within AG	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
Total	Count	45	113	55	23	21	258
	% within AG	17.4%	43.8%	21.3%	8.9%	8.1%	100.0%

Cross tabulation shows the more frequent normal renal variants were found in age group between 31-40 years.

DISCUSSION

Ultrasound is most reliable methods for measurement of normal variant in different patients.

Renal measurements by sonography are important in studying renal function and its disorders, which offers the advantage of a non-invasive method. The obtained inter-observer and intra-observer variations in renal length and parenchymal thickness measurements showed that the degree of variation is similar whether the left or right kidney is measured or the measurements are made by one or multiple sonographers. This suggests that determining renal length and parenchymal thickness by sonography of normal adult kidneys are reasonably reliable. Assessment of kidney size should also be made individually because many factors like BMI, height, gender, and age affect the measurements. There are metric and non-metric differences in body components among populations and these variations relate to genetic and environmental factors. The anthropometric profile, such as body weight and height of the samples showed a significant difference between genders, and it has shown that these data are typical of the population. 6,7

In current study, attempt was made to evaluate the normal renal variants on ultrasound in population of Lahore. Data was collected according to the variable of the age, gender, height, weight, renal length and normal renal variants was observed and recorded. we analyzed renal size in terms of length and parenchymal thickness, in Lahore population by using ultrasound. The evaluations of these parameters are simple, reproducible, reliable, and objective. Data of out of total number of 258 patients, 98 were females and 160 were males. 7,8,9

The age-related changes of the renal length are well known. In another study, an increase in renal length was found from 18-29 years old up to the fourth decade of life ($P=0.007$). The increase in the renal length in men up to their fifties has already been documented. Both right and left kidneys length decrease significantly after 50 ($P=0.008$). Previous study reported that kidney's length decreases after age 60. 10,11 The normal ranges of kidney lengths are wide. Within the standard deviation of renal length, there are values less than 100 mm in slim youngest and oldest women and up to 120 mm for both men and women in their thirties and forties. The influencing factors for renal length such as height and BMI must be viewed individually to arrive at relevant conclusions. The mean (SD) parenchymal thickness was found to be

1.76(0.16) cm (range=1.30-2.30 cm) as against 1.89(0.36) cm (range=1.10-2.90 cm) was reported. This implies that the lower normal limit for parenchymal thickness in our study group is 1.30 cm. Values less than 1.30 cm indicate reduced parenchymal thickness as against less than 1.10 cm. According to result of our study, frequency of age group, out of total number of 258 the age group between 31-40 had frequent variant. 12

A study was conducted that Bertin column is mostly located on the left side, in the middle 1/3 section and is observed bilaterally in 18% of the cases. The most significant types of Bertin column are the normal variant and the pseudo-lesion aspect mimicking the renal mass. However, it is characterized by 5 types according to its shape and type 3 is related with a double collecting system. In the proportion of the Bertin column was 30%, the segmented-shaped kidney and the double collecting system were calculated as 4% and 26% respectively. In 495 Bertin column patients, 16% of double collecting system was detected and this is less than in the normal population. Observations of hypoechoic thick cystic areas in the US, cambering in the contour of the kidney, and irregularity were accepted as suspicious findings in favor of the Bertin column. According to the result of our study, out of total number of 258 patients, kidneys shows variant in which 45 patients had cobulation variant in their kidneys, 114 had column of Bertin, 55 had dromedary hump, 23 had duplex collecting system, 21 had junctional parenchymal defect. 13,14

Dalla Palma et al measured the obliquity of the junction between the two reniculi. Marked obliquity of the right was noted in 42% and of the left in only 10% of cases. This marked obliquity between the superior and inferior reniculi probably accounts for the ease of its demonstration on the right. When no or only a slight obliquity is present, the fusion of the superior reniculus to the inferior reniculus is probably more complete, and the JPD and IRS are not as apparent. 15,16 In the series of Dalla Palma et al., an interface was noted between the two reniculi in 57% of right kidneys, as compared with 46% in our series, and in 29% of left kidneys, as compared with 9% in our series. The higher detection rate of the interradicular junction by their data could be explained by the different imaging techniques or perhaps by the different age groups. Adults often have more echogenic perinephric and hilar tissue than infants or children. 17 Dromedary hump appears as a focal bulge on the lateral border of the left kidney (Fig. 2). It forms as a result of the adaptation of the kidney to the adjacent spleen. It can usually

be easily diagnosed on sonography and has the same perfusion as the surrounding renal parenchyma on contrast-enhanced sonography. 18,19 Out of total number of 258 patients, kidneys shows variant in which 45 patients had Lobulation variant in their kidneys, 114 had column of bertin, 55 had dromedary hump, 23 had duplex collecting system, 21 had junctional parenchymal defect.

CONCLUSION

Study concluded that normal variants are commonly encountered on ultrasound imaging. In this study the most common normal renal variant was column of bertin and least common was junctional parenchymal defect. Sonography continues to occupy a central role in the evaluation and detection of different congenital normal anatomical variants due to its advantage of rapid scanning time, lack of radiation exposure, cost effective and easy feasibility.

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Effect of Pre-operative Anxiety on Post-operative Analgesia and Anesthesia Recovery in patients undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Background and Objectives: Preoperative anxiety is common among surgical patients and affects various perioperative domains. This study investigates how preoperative anxiety impacts postoperative analgesia and anesthetic recovery in patients undergoing laparoscopic cholecystectomy.

METHODOLOGY: A comprehensive literature review was conducted to identify relevant studies published between 2010 and 2023. We focused on studies examining the relationship between preoperative anxiety and postoperative outcomes, including pain intensity, analgesic consumption, recovery time from anesthesia, and patient satisfaction. Data synthesis and analysis were performed to understand possible mechanisms and assess evidence quality.

RESULTS: Fifteen studies met the inclusion criteria. Results consistently showed that higher preoperative anxiety was associated with increased postoperative pain, greater need for analgesics, prolonged recovery from anesthesia, and lower patient satisfaction. Potential mechanisms include alterations in stress hormone levels, increased pain sensitivity, and psychological factors affecting healing.

CONCLUSION: Preoperative anxiety significantly influences postoperative analgesia and anesthetic recovery in laparoscopic cholecystectomy patients. Implementing anxiety-reducing strategies, such as psychological counseling, patient education, and pharmacological interventions, could enhance perioperative outcomes and patient care. Further research is needed to clarify the underlying mechanisms and optimize strategies for managing preoperative anxiety.

KEYWORDS: Preoperative anxiety, postoperative pain, analgesia, anesthesia recovery, laparoscopic cholecystectomy.

INTRODUCTION

Anxiety during the preoperative phase, due to uncertainties and stress, can cause complications like surgery cancellations and adverse hemodynamic reactions (1).

The 7-item Generalized Anxiety Disorder Scale (GAD-7) is an effective tool for Preoperative anxiety ranges from 11% to 80%, varying by surgery type, demographics, and prior experiences. Children show higher anxiety (16%-81%), influenced by age and parental anxiety (2)

Preoperative anxiety often coexists with postoperative pain, affecting recovery. Techniques like guided imagery and traditional preoperative treatments can help

alleviate both preoperative anxiety and acute postoperative pain in both adults and children (3).

The 7-item Generalized Anxiety Disorder Scale (GAD-7) is an effective tool for assessing anxiety, with high sensitivity (89%) and specificity (82%) for generalized anxiety disorder (GAD).(4)Both the course of the surgery and the recuperation period following it are significantly impacted by anxiety during the perioperative phase. (5)

The GAD-7 is a seven-item scale that assesses anxiety over the past two weeks, with scores from 0 to 3. It classifies anxiety as mild (≥ 5), moderate (≥ 10), or severe (≥ 15). It has 89% sensitivity and 82% specific

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ity for generalized anxiety disorder (GAD) and identifies social anxiety disorder, panic disorder, and post-traumatic stress disorder with reasonable accuracy (6).

Anesthesiologists assess preoperative anxiety using questionnaires and discussions, with 60% interested in these methods, and employ strategies like tours and mental health referrals (7).

Non-pharmacological methods are increasingly preferred over pharmacological treatments, with a significant number of anesthesiologists in Korea and the UK favoring reassurance and dialogue to reduce anxiety (8).

Additionally, a single 150 mg dose of oral pregabalin before surgery has been shown to effectively reduce anxiety and postoperative pain (9).

A review and study showed that opioid-avoidance protocols are effective for pain management after laparoscopic cholecystectomy, helping reduce prolonged admissions and opioid use (10).

Researchers suggested that combining opioid and non-opioid analgesics through a multimodal approach improves postoperative pain management by targeting various pain pathways (11).

Recommendations include using paracetamol with NSAIDs or cyclooxygenase-2 inhibitors, local anesthetics at the surgical site, and avoiding opioids as a primary strategy unless necessary (12).

Laparoscopic cholecystectomy (LC) is preferred for acute cholecystitis, especially in older adults with gallstones. Alternatives like Percutaneous Transhepatic Gallbladder Drainage (PTGBD) can delay surgery in high-risk cases (13).

Pharmacological options for pain management during LC include NSAIDs, lidocaine, and pregabalin, among others, though more robust clinical trials are needed to establish the best pain management protocols (14).

Laparoscopic cholecystectomy is the most common laparoscopic procedure and generally superior to open cholecystectomy, though it has a higher risk of bile duct injuries (15).

Cholecystectomy, for gallbladder issues, can be done laparoscopically or openly. Preoperative education improves outcomes and reduces complications (16).

Lower intra-abdominal pressures (7–10 mmHg) during LC may reduce postoperative pain and benefit high-risk patients (17).

METHODOLOGY

Study Design: The study was a cross-sectional study.

Study setting: All participants were chosen from Ali

Fatima Hospital and Jinnah hospital Lahore.

Data Collection Tool: The data collection tool consists of the questionnaire form that contains the demographic data (age, gender, surgery, types of anesthesia and residents).

Study Duration: The study took 6 months after approval of synopsis.

Sampling technique: A convenience sampling technique was used.

Sample size: Sample size is calculated with 95% confidence level, by using Epitool which is 348.

Statistical Analysis: SPSS version 25 will be used for the analysis of data. Chi Square test is applied.

RESULTS

A sample of 348 was determined with 95% confidence. SPSS version 25 will be used for analysis, focusing on Chi-Square tests. Anxiety was measured with the Beck Anxiety Inventory, and pain with the Visual Analogue Scale. Preliminary findings show males reporting higher postoperative outcomes than females. The Chi-Square test will evaluate these differences.

Table 1: Cumulative Frequencies

		Responses		
		N	Percent	Percent of Cases
Pre-opera	Numbness or	117	3.7%	33.6%
tive	tingling			
Anxiety	feeling hot	197	6.2%	56.6%
	wobbliness in legs	176	5.6%	50.6%
	unable to relax	194	6.1%	55.7%
	fear of worst happening	222	7.0%	63.8%
	dizzy or light headed	14	0.4%	4.0%
	heart pounding	258	8.2%	74.1%
	Unsteady	279	8.8%	80.2%
	terrified or afraid	1	0.0%	0.3%
	Nervous	15	0.5%	4.3%
	feeling of choking	17	0.5%	4.9%
	hands trembling	123	3.9%	35.3%
	shaky/ unsteady	250	7.9%	71.8%
	fear of losing control	125	4.0%	35.9%
	difficulty in breathing	220	7.0%	63.2%
	fear of dying	121	3.8%	34.8%
	Scared	214	6.8%	61.5%

Table 2: Dichotomy group tabulated at value 1

Descriptive Statistics		Mean	Std. Deviation
	N		
Numbness or tingling	348	1.68	.493
feeling hot	348	1.10	.652
wobbliness in legs	348	1.41	.569
unable to relax	348	1.44	.497
fear of worst happening	348	.78	.591
dizzy or lightheaded	348	2.19	.483
heart pounding	348	1.28	.492
unsteady	348	1.18	.407
terrified or afraid	348	2.20	.404
nervous	348	2.11	.434
feeling of choking	348	.05	.216
hands trembling	348	.35	.479
shaky/ unsteady	348	1.28	.450
fear of losing control	348	.36	.480
difficulty in breathing	348	1.37	.586
fear of dying	348	.55	.736

High Severity Symptoms: The highest mean scores are for "dizzy or light-headed" (Mean = 2.19), "terrified or afraid" (Mean = 2.20), "nervous" (Mean = 2.11), and "faint/lightheaded" (Mean = 2.26), indicating that these are the most severe symptoms.

Low Severity Symptoms: "Feeling of choking" (Mean = 0.05), "Hands trembling" (Mean = 0.35), "Fear of losing control" (Mean = 0.36), and "Face flushed" (Mean = 0.34) had the lowest mean scores, indicating that they are the least serious symptoms.

Variability: Symptoms such as "Fear of dying" (Stand-

dard Deviation = 0.736) and "Feeling hot" (Standard Deviation = 0.652) are more variable, indicating that patients have a wider range of experiences. Symptoms such as "unsteady" (Standard Deviation = 0.407) and "terrified or afraid" (Standard Deviation = 0.404) are less variable, indicating more consistent patient experiences. This data illustrates the range and intensity of pre-operative anxiety symptoms, giving healthcare providers useful information into how to effectively address and manage these symptoms.

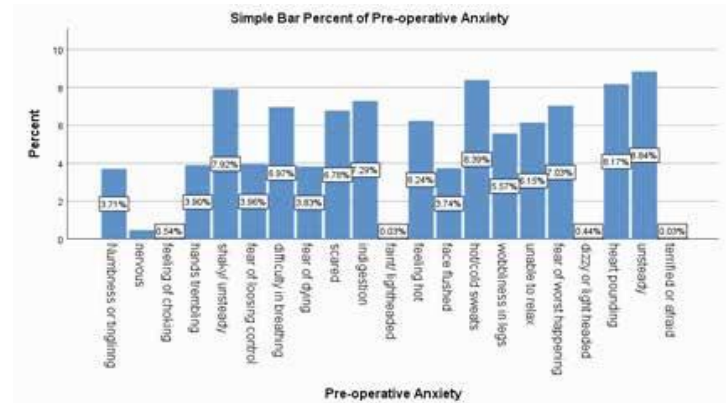


Figure 1: Simple Bar percent of Pre-operative anxiety

The most prevalent symptoms are bodily feelings (unsteadiness, heart palpitations, hot/cold sweats). Psychological symptoms such as "fear of the worst happening" and "scared" are also common, albeit to a lesser extent. Less common symptoms include more severe or bodily manifestations, such as "feeling of choking" and "dizzy or lightheaded." "This information helps identify which symptoms are most common and may necessitate more focused attention in pre-operative care and anxiety management strategies.

DISCUSSION

The aim of the study is to examine the frequency of preoperative anxiety and how affects the results of surgery or examine evaluation instruments such as the BAI scale and anxiety management strategies. Our sample size is 348 while in parent article sample size is 80 both uses Beck's Anxiety Inventory (BAI) scale and Visual Analogue Scale (VAS) to analyze result. Our participants' age group is 20-60 years old.

It is thus stated that, Preoperative anxiety affects 11% to 80% of adults and 16% to 81% of children. Hence, various factors, including gender, kind of surgery, and prior experiences, may contribute to this common issue. (2) Interestingly, with minimal side effects and comprehensive approach, non-pharmacological techniques including guided imagery, cognitive behavioral therapy, and therapeutic interactions are becoming more and more popular for controlling anxiety prior to surgery. For instance, studies have demonstrated the efficacy of

guided imagery in reducing acute postoperative pain and anxiety, encouraging relaxation, and possibly reducing medical expenses. (7)

For further discussion, it is elaborated that giving a single 150 mg dose of oral pregabalin before surgery reduces anxiety, intraoperative hemodynamic anomalies, and postoperative discomfort. (9)

Thus, Laparoscopic cholecystectomy (LC) pain treatment is best achieved with multimodal analgesia using dexamethasone, NSAIDs, paracetamol, and local anesthetics.

Hence, Anesthesiologists play a crucial role in assessing and managing preoperative anxiety through questionnaires and discussions. They tend to prefer non-pharmacological methods to minimize opioid use and improve surgical outcomes. A multimodal approach, integrating both pharmacological and non-pharmacological strategies, enhances pain management and overall patient care. (11)

High levels of anxiety prior to surgery have been linked to unfavorable surgical outcomes, including more pain following surgery, longer hospital stays, and lower patient satisfaction. Lowering anxiety can enhance these results. (17)

CONCLUSION

Anxiety levels that are too high prior to surgery have a negative impact on anesthetic recovery and postoperative pain management. It is important to appropriately address the increased need for postoperative analgesia in this patient population.

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Original Article

Prevalence of Pes Planus and Pes Cavus among Students of Physical Therapy: A Descriptive Cross-sectional Study

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ABSTRACT

Background and Objectives: This study investigated the prevalence of two common foot conditions, flat feet (pes planus) and high-arched feet (pes cavus), among Doctor of Physical Therapy (DPT) students. Foot arches play a vital role in distributing weight and absorbing shock during activities. Understanding the prevalence of these conditions in this population can be beneficial for early detection and management.

METHODOLOGY: A cross-sectional study was conducted among DPT students at Green International University. Data collection involved a two-pronged approach: a self-administered questionnaire gathering information on demographics and foot health, and a footprint analysis to classify foot arch type (normal, pes planus, pes cavus).

RESULTS: The investigation revealed results which showed that pes cavus (high arches) was significantly more prevalent (54%) compared to pes planus (flat feet) (26%) and even normal foot arch (20%). Interestingly, females exhibited a higher prevalence of both pes cavus and pes planus compared to males.

CONCLUSION: These findings suggest that pes cavus might be more common than pes planus in DPT students, particularly among younger females. This highlights the importance of regular foot screening and early intervention strategies for DPT students to manage and prevent potential complications associated with these conditions.

KEYWORDS: Pes Planus, Pes Cavus, Foot Arch, Prevalence.

INTRODUCTION

The human foot is an intricate and vital component of the musculoskeletal system, comprising 26 bones, ligaments, intrinsic muscles, and extrinsic tendons. It plays a fundamental role in daily activities, counterbalancing body weight and distributing pressure across the body. As a segmented structure, the foot facilitates crucial functions such as weight transfer, propulsion, shock absorption, and adaptability on uneven surfaces. The arches of the foot, including one transverse arch and two anteroposterior arches (the lateral and medial arches), are essential for maintaining balance and stability. Any disturbance in these arches can lead to tension within the foot, potentially affecting the entire lower limb and leading to various musculoskeletal issues(1).

Among these arches, the medial longitudinal arch (MLA) is particularly significant. This arch, supported by the navicular, talus, calcaneus, and first three metatarsals, along with the ligamentous networks and plantar fascia, serves as a dynamic foundation that is both

flexible and strong. The MLA's proper function is critical for efficient foot propulsion and shock absorption during activities such as walking, running, and jumping. Its functionality relies heavily on the coordinated action of muscles, adequate innervation, and a robust blood supply, provided by the anterior tibial, posterior tibial, and peroneal arteries(2). Any congenital abnormalities or acquired damage to this arch can have clinical implications ranging from mild discomfort to severe mobility issues.

Foot conditions such as pes planus (flat foot) and pes cavus (high arched foot) are directly related to abnormalities in the MLA. Pes cavus is characterized by an exaggerated plantar concavity, resulting in a high arch and a foot structure that is less capable of absorbing shock(3). This condition is found in approximately 10% of adults(4) and is frequently associated with neurological disorders(5), though it can also result from non-neurological causes. The rigid nature of pes cavus often leads to poor shock absorption, which can

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cause additional stress on the lower limb joints and spine, potentially leading to secondary conditions such as arthritis(6).

Conversely, pes planus is marked by a collapse of the MLA, leading to a foot that is in full or nearly full contact with the ground(7). This condition is common in both children and adults, with prevalence rates influenced by factors such as obesity, posterior tibial tendon dysfunction, and congenital ligamentous laxity(8). Pes planus can result in a variety of lower extremity injuries due to altered foot biomechanics and postural stability, impacting activities like walking and running(7).

The significance of understanding foot arch structure and function, particularly in relation to common conditions like pes planus and pes cavus, cannot be overstated. These conditions not only affect foot health but also have broader implications for overall musculo-skeletal health. In developing countries like Pakistan, foot health is often neglected, despite its critical role in preventing injury and maintaining mobility(9). Therefore, this study aims to assess the prevalence of pes planus and pes cavus among Doctor of Physical Therapy (DPT) students, providing valuable insights into the importance of foot health in this population.

METHODOLOGY

This descriptive cross-sectional study was conducted among undergraduate students in the Doctor of Physical Therapy (DPT) program at Green International University, Lahore. A total of 50 students from various academic years participated. Data were collected using a self-administered questionnaire via Google Forms, along with footprint analysis to evaluate the foot arch index (AI).

Inclusion criteria included students aged 18–35 enrolled in the DPT program. Exclusion criteria ruled out individuals with musculoskeletal or neurological diseases, congenital foot/leg deformities, or prior lower extremity surgeries.

A standardized 24-question survey was used to gather information on demographics, medical history, footwear habits, physical activity, and previous physiotherapy treatments. Additionally, participants' footprints were collected using an ink method. The Foot Arch Index (FAI) was calculated using the formula: $AI = B / (A+B+C)$, where A, B, and C represent specific areas of the foot. Based on AI values, footprints were categorized as follows:

- Pes Cavus (High-Arched Foot): $AI < 0.21$
- Normal: $AI = 0.21-0.28$
- Pes Planus (Flat Foot): $AI > 0.28$

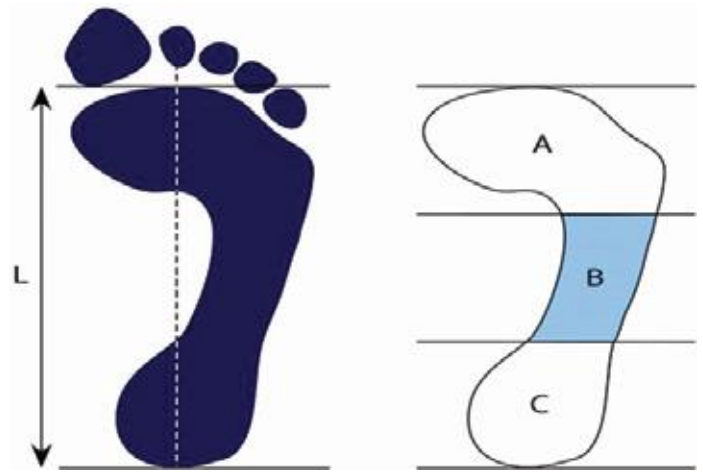


Figure 1. Foot print of foot.



Figure 2. Types of foot.

Participants completed the questionnaire through a Google Form link circulated via email and social media. The data collection phase lasted two weeks, ensuring participant anonymity.

Data were analyzed using SPSS version 26.0, focusing on the prevalence rates of pes planus and pes cavus. Descriptive statistics were used to determine these rates, while crosstabulation analysis examined the relationships between foot conditions and variables such as gender, weight, and footwear type.

Ethical guidelines were followed, with informed consent obtained from all participants. Participation was voluntary, and participants could withdraw at any time without consequences.

RESULTS

The study included 50 participants: 36 females (72.0%) and 14 males (28.0%). The majority of participants (88.0%) were aged 18-24 years, while the remaining 12.0% were aged 25-35 years.

Footprint analysis revealed that 54% of participants had pes cavus (27 out of 50), 20% had normal feet (10 out of 50), and 26% had pes planus (13 out of 50). Among participants aged 18-24 years, pes cavus was the most prevalent condition (50%), followed by pes planus (24%) and normal feet (20%). In the 25-35 age group, pes cavus was significantly more common (83.3%) compared to normal feet and pes planus.

Females were more likely to have both pes cavus and pes planus compared to males. Overall, pes cavus is more prevalent among DPT students, particularly in

younger age groups and among females. The study found no significant correlation between the type of foot deformity and age.

Table 1. Demographics of study participants

Gender * AI * Age Crosstabulation							
Age				Pes Cavus	AI Normal Foot	Pes Planus	Total
18-24	Gender	F	Count	16	8	10	34
			% within AI	72.7%	80.0%	83.3%	77.3%
	M		Count	6	2	2	10
			% within AI	27.3%	20.0%	16.7%	22.7%
	Total		Count	22	10	12	44
			% within AI	100.0%	100.0%	100.0%	100.0%
25-35	Gender	F	Count	2		0	2
			% within AI	40.0%		0.0%	33.3%
	M		Count	3		1	4
			% within AI	60.0%		100.0%	66.7%
	Total		Count	5		1	6
			% within AI	100.0%		100.0%	100.0%
Total	Gender	F	Count	18	8	10	36
			% within AI	66.7%	80.0%	76.9%	72.0%
	M		Count	9	2	3	14
			% within AI	33.3%	20.0%	23.1%	28.0%
	Total		Count	27	10	13	50
			% within AI	100.0%	100.0%	100.0%	100.0%

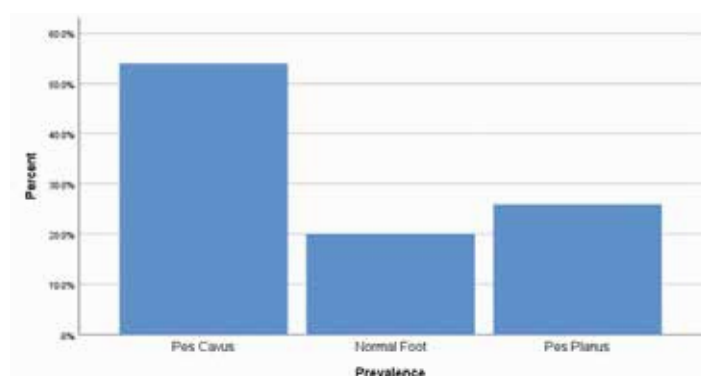


Figure 1

CONCLUSION

This study provides valuable insights into the prevalence of pes planus and pes cavus among DPT students and identifies associated factors. The findings indicate that pes cavus is more prevalent, particularly among females and younger age groups. Regular screening and early intervention are crucial for managing and preventing foot abnormalities in this population. Continued research will further refine best practices for the treatment and prevention of foot abnormalities in young adults.

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Authors Contributions:

Muhammad Nabeel Shah: Substantial contributions to the conception and design of the work.

Syeda Nida Fatima Bukhari: Design of the work and the acquisition. Drafting the work.

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