Volume: 1, Issue 2
July 2021

ISSN: 2709-5134

Foundation University Journal of Rehabilitation Sciences

Foundation University Islamabad, Defence Avenue
DHA Phase-I, Islamabad 44000, Pakistan
www.fui.edu.pk, 0092-51-111 384 111

FUJRS

FUJRS
Foundation University Journal of Rehabilitation Sciences

ISSN: 2709-5134
Volume: 1, Issue No: 2
July 2021

PUBLISHER:
Foundation University Institute of Rehabilitation Sciences
Foundation University Islamabad
Defense Avenue DHA Phase I, Islamabad, Tel 051-5788171 Ext 602,626.

FUJRS
Foundation University Journal of Rehabilitation Sciences

ISSN: 2709-5134
Volume: 1, Issue No: 2
July 2021

"Foundation University Journal of Rehabilitation Sciences (FUJRS)" is the official journal of Foundation University Institute of Rehabilitation Sciences (FUIRS), Islamabad. FUIRS is affiliated with Foundation University Islamabad and located at Defense Avenue, DHA Phase-I, Islamabad Pakistan.

Foundation University Journal of Rehabilitation Sciences (FUJRS), is a multidisciplinary rehabilitation sciences journal with the aim and scope:

1. To publish evidence based research in the domain of physical therapy, occupational therapy, speech and language pathology, prosthetics and orthotics, rehabilitation medicine, rehabilitation psychology and other sub-specialties.
2. To provide quality literature published in FUJRS as open access vital to rehabilitation research and clinical practice as well as for teaching and reference purposes. FUJRS open access will give the opportunity to retrieve the published literature for research. FUJRS aims to stimulate latest ideas, innovation and critical thinking among researchers.

FUJRS is a peer reviewed journal and follows the uniform requirements for manuscripts submitted to biomedical journals. FUJRS has a large readership that includes academicians, clinicians, rehabilitation professionals, healthcare professionals and researchers.

For Online Issue Available and Manuscript Submission visit: fujrs.fui.edu.pk

Free Access Permission

FUJRS is a bi-annual, non-political Rehabilitation Sciences Journal, being published for improvements and sharing of the knowledge with the aim to publish evidence based researches in the domain of Rehabilitation and providing barrier free access to quality literature to stimulate latest ideas, innovation and critical thinking among researchers. Everybody is allowed free access to all parts of published material. It is hoped to improve the understanding of health conditions & care of ill and ailing people.

CORRESPONDENCE ADDRESS:
Editorial Office
Foundation University Journal of Rehabilitation Sciences (FUJRS)
Foundation University Institute of Rehabilitation Sciences (FUIRS)
Foundation University Islamabad Campus (FUIC); Defense Avenue, DHA Phase-I, Islamabad Pakistan
Tel: +92-51-5788171-602; Email: fujrs@fui.edu.pk

FUJRS
Foundation University Journal of Rehabilitation Sciences

Volume 1 | Issue 2 | July 2021

TABLE OF CONTENT

OPEN ACCESS

EDITORIAL

Rehabilitation research challenges and recommendations during COVID-19

Arshad Nawaz Malik

Clinical rehabilitation research is complex, challenging, and it requires appropriate adaptations in methodology for better health outcomes while fulfilling the standard of clinical trials at the same time. Rehabilitation research plays a significant role in understanding the effectiveness of rehabilitation interventions, improving the quality of care through evidence-based decisions and contributing to the body of knowledge in rehabilitation.(1) Rehabilitation research has gained considerable attention in the past two decades, aiming to enhance the community's functional status and activity level through different innovative rehabilitation approaches. However, these approaches require long-term assessment and observation to document changes and clinical improvement through various objective measurement tools. The assessment methods and interventions used in rehabilitation research are often complex and time-consuming. Unlike the usual clinical research methods, there are a few concerns that the researchers need to consider during the design and conduct of rehabilitation research using the existing models of clinical research. These include, but not limited to the presence of a true control group, appropriate expertise, environmental factors, face-to-face interaction, physical contact, frequency of visits, and long term follow-ups.(2)

During the pandemic across different countries, the full or partial lockdown has substantially reduced face-to-face interaction with patients for clinical and research purposes. This has led to limited patient availability to participate in the randomized control trials and other studies, not meeting the required sample size according to the recommended guidelines. COVID-19 has also, directly and indirectly, compromised the mobility, participation, and activity levels of healthy and diseased populations.(3) The patients are at an increased risk of developing functional deficits, balance impairments and undergoing deconditioning and experiencing falls.(4) The clinical research studies cannot be put on hold for a long time as they are a dire need during this pandemic to guide the efficacy of different interventions and preventative measures to reduce the adverse effects of both COVID infection and long term isolation. Proper rehabilitation reduces complications and hospital admission and improves the quality of life in patients.(5) On the other hand, using the traditional methods of conducting face-to-face clinical research during the pandemic will put the participants and research staff at risk of getting the infection. Therefore, it is crucial for rehabilitation researchers to continue the clinical research studies whilst following all standard operating procedures (SOPs) for COVID-19, improvising their methods and minimizing the face-to-face contact between participants and research staff.

Considering the current pandemic and social distancing, clinical researchers can adopt the following recommendations to continue clinical research, which can help clinicians make evidence-based decisions during this pandemic and help improve patient care and quality of life.

I). Digital assessment and data collection tools: The traditional consent forms and assessment tools can be converted to electronic consent forms, online assessment and screening tools or digital calculators. Software or mobile applications can be developed and used to record and compare evaluations and observations. Furthermore, researchers can use online survey forms and social media platforms for recruitment and data collection.

II). Tele-rehabilitation /video conferencing: Telerehabilitation or video conferencing should be adopted by the researchers to intervene remotely, monitor the participant's progress, and address their issues. Remote interventions involving video consultations also reduces the risk of depression amongst self-isolated or homebound patients. Group therapy via telerehabilitation is also an effective strategy to engage multiple participants in physical activity simultaneously and improve their motivation levels.(6)

Affiliations: Riphah College of Rehabilitation & Allied Health Sciences
Correspondence: Prof. Dr. Arshad Nawaz Malik
Email: arshad.nawaz@riphah.edu.pk
DOI: https://doi.org/10.33897/fujrs.v1i2.246

How to Cite: Malik AN. Rehabilitation research challenges and recommendations during COVID-19. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 37-8

III). Home-based interventions: Supervised/ unsupervised simple and easy interventions should be promoted at home during research to prevent unnecessary physical contact and risk.(3)

IV). Risk prediction models: These models can be used for secondary data analysis and predict health outcomes according to the trends and existing available data.

V). Qualitative Interviews: The perceptions and opinions of the participants should also be incorporated in clinical studies through online semi-structured interviews regarding the interventions to address the specific issues during this pandemic.

VI). Protocol deviations and Ethical permissions: There must be some flexibility to do minor changes in protocol according to situation during this pandemic. The procedure of ethical approval should also be quick to facilitate the initiation and conduct of research to prevent unnecessary delay and waste of time.

VII). International collaboration: It is possible to do research collaborations with international researchers during this pandemic to achieve similar targets and provide a complete insight to the target population.(2)

References:

1. Carter R, Lubinsky J. Rehabilitation research: principles and applications. Elsevier Health Sciences; 2015 Jul 20.
2. Markar SR, Martin G, Penna M, Yalamanchili S, Beatty JW, Clarke J, Erridge S, Sounderajah V, Denning M, Scott A, Purkayastha S. Changing the paradigm of surgical research during a pandemic. Annals of surgery. 2020 Aug;272(2):e170.
3. De Biase S, Cook L, Skelton DA, Witham M, Ten Hove R. The COVID-19 rehabilitation pandemic. Age and ageing. 2020 Aug 24;49(5):696-700.
4. Copeland JL, Ashe MC, Biddle SJ, Brown WJ, Buman MP, Chastin S, Gardiner PA, Inoue S, Jefferis BJ, Oka K, Owen N. Sedentary time in older adults: a critical review of measurement, associations with health, and interventions. British journal of sports medicine. 2017 Nov 1;51(21):1539-1539.
5. Sun T, Guo L, Tian F, Dai T, Xing X, Zhao J, Li Q. Rehabilitation of patients with COVID-19. Expert Review of Respiratory Medicine. 2020 Dec 1;14(12):1249-56.
6. Thomas E, Gallagher R, Grace SL. Future-proofing cardiac rehabilitation: transitioning services to telehealth during COVID-19. European journal of preventive cardiology. 2020 Jan 1:2047487320922926.

OPEN ACCESS

RESEARCH ARTICLE

Frequency of hypertension risk factors and level of knowledge among university students

Mehwish Waseem[1], Hafsa Siqqidui[1], Maham Fazal[1], Ifrah Laiq[1], Iqbal Tariq[1]

ABSTRACT

Background: In Pakistan there is a high prevalence of hypertensive individuals. Identification of risk factors and their knowledge in young population could be advantageous.

Objectives: To find the frequency of hypertension risk factors and level of knowledge among university students of twin cities within Pakistan.

Methods: A cross sectional observational study was conducted among university students in twin cities of Pakistan. The sample size was 475. Male and female students with ages ranging from 18 to 30 years with no diagnosed cases of pulmonary and cardiac issues, cancer, physically disabled and impaired cognition were selected to fill the questionnaire. The WHO STEPS instrument was used to get the relevant information needed for this study which included demographics, tobacco use, diet, physical activity, and history of raised blood pressure, history of diabetes and also height and weight.

Results: Out of 475 participants there were 235 (49%) males and 240 (51%) females. Knowledge score of 460 (96.8%) university students was poor. On the other hand, the frequency of risk factors was not found to be significant in this population.

Conclusion: The study concluded that, although the frequency of risk factors for hypertension is low, university students of twin cities have poor knowledge regarding modifiable and non-modifiable risk factors of hypertension.

Key words: hypertension, knowledge level, risk factors, university students

DOI: https://doi.org/10.33897/fujrs.v1i2.242

Introduction:

The normal blood pressure levels are vital for adequate and appropriate functioning of the most important body organs which include heart, kidneys, lungs and brain. According to world heart federation (WHF), annually 9.4 million of global deaths are caused by hypertension. It also adds to the fact that hypertension is very important risk factor in developing other diseases especially elevated risk of developing cardiovascular risk factors which can lead to raised morbidity and mortality rates of diabetic patients especially. Hypertension is dangerous because it is a silent killer as it shows very few symptoms.(1, 2)

Blood pressure ranging from diastolic consistently above 90 mmHg and systolic above 140 mmHg is regarded as hypertension.(3) Hypertension is regarded as one of the non-communicable diseases.(4) The prevalence of hypertension among males in developing and developed countries was found to be 32.2% and 40.8% while in females, it's 30-33%.(5) According to National Health Survey, the prevalence of hypertension in Pakistan was 19.1%. Hypertension patients have lesser awareness and knowledge about the diseases in Pakistan. There was 30-50% ratio of people who were hypertensive and were unaware of them having it.(6,7)

There are higher risks of hypertension among young adults aged from 20-30 as compared to older adult population. In different countries it is established as 40-50%.(8) In 2018 it was estimated that environmental factors are causing hypertension in Americans.(9) According to WHO, hypertension has resulted in 7.5 million deaths which make up 12.8% of total world population.(10,11)

Affiliations: [1]Riphah College of Rehabilitation & Allied Health Sciences
Correspondence: Mehwish Waseem
Email: mehwish1waseem@gmail.com
Received: February 16th 2021; **Revision:** May 29th 2021
Acceptance: June 09th 2021

How to Cite: Waseem M, Siqqidui H, Fazal M, Laiq I, Tariq I. Frequency of hypertension risk factors and level of knowledge among university students of twin cities in Pakistan. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 39-44.

There are two types of risk factors for hypertension. One is modifiable and other is non-modifiable. The factors included in non-modifiable risk factors are age, race, history, gender, and family.(6) Obesity, alcohol consumption, diet, diabetes, level of physical activity are the elements included in modifiable risk factors. Hypertension mostly remains undiagnosed due to absence of signs and symptoms. In 40% patients suffering from heart failure in Mulago hospital, it was found that elevated blood pressure was the risk factor for cardiac conditions.(12)

According to WHO, hypertension cases in young adult population are increasing and mostly remain unnoticed due to lack of proper screening. But, cases are increasing in young adults according to studies.(4) Thus, knowledge about hypertension must be given to patients before they develop the disease for the purpose of making them more compliant to treatment after developing disease.(6) Non communicable disease surveillance tool is recommended by WHO in its stepwise approach to surveillance (STEPS).This approach constitutes the concept that the surveillance system must involve standardized data collection and flexibility. A complex and comprehensive system relaying on local needs can be developed through this approach. Physical measurements like weight, height, blood pressure, waist circumference are included in interview based questionnaires.

A measure of total blood cholesterol levels of >240mg/dL comes under the category of elevated cholesterol. Diabetes mellitus is condition when the glucose levels in blood become elevated .It is also known as hyperglycemia. In order to reduce the risk of cardio vascular diseases, a diet consisting up of vegetables, fruits, fish, grains and nuts is considered beneficial . Foods such as soya dark chocolates, grapes, etc are rich in flavonoids which enhance the endothelial function and help in lowering of blood pressure. Family history of high blood pressure is one of the non-modifiable risk factor because there is about 5 fold increase in risk of developing hypertension when family history for the disease is positive. First degree relatives like parents, siblings who have experienced any cardiovascular disease before the age of 65 in females and 55 in males come in positive family history.(13) Physical inactivity, consumption of tobacco and diet rich in fats are the factors that predispose an individual to cardiac conditions.(14)

Hypertension is a vital health issue worldwide including Pakistan. According to literature, the incidence is rising not only in elderly but in youngster as well. Knowledge of hypertension risk factors and frequency is essential to control the incidence of hypertension. In accessible literature no study reported knowledge status of hypertension risk factors among university students of twin cities and frequent risk factors, so the current study aimed to enlighten the knowledge of students regarding all these risk factors and also the frequency of these factors among them.

Methods:

It was a cross-sectional survey conducted on male and female university students from the twin cities (Rawalpindi and Islamabad) enrolled in Riphah International University, National University of Modern Languages (NUML), National University of Sciences and Technology, Arid Agriculture University, and National Defense University. Data was collected from March 2019 to June 2019. The targeted sample size was 375 calculated through Raosoft while total number of subjects who participated in the study was 475. Students of both genders with age group 18 to 30 years participated. None of them had a history of or diagnosis of hypertension. Any female or male students with a diagnosed respiratory or cardiac issue were excluded. The STEPS survey instrument was used with its core items (step 1 and 2). Core items from section 3 (biochemical measurements e.g., blood lipids and glucose profile) were not used. The section 1 for the core items consisted of demographic information and behavioral measurements (e.g. smoking, dietary habits, level of physical activity and raised blood pressure and diabetes history). Frequency of risk factors was determined according to percentage of participant's responses. The section 2 comprised physical measurements (height and weight). A measuring tape was used to measure height of the participants in centimeters. A mechanical weighing scale was used to measure the weight of the participants. Knowledge of risk factors was assessed through number of correct modifiable and non-modifiable risk factors of participants enlisted in questionnaire. Those who enlisted 1-5 correct factors categorized in poor knowledge and 6-11 in good knowledge.

Ethical approval was obtained from ethical research committee of Riphah International University, Islamabad (Ref#Riphah/RCRS/REC/Letter-00647) and informed written consent was taken from each participant prior to data collection. Before participation, rational was explained and consent was taken from

students. The questionnaire was explained to the participants before it was filled by them. Data was analyzed using SPSS-21. Descriptive statistics were employed for means and frequencies and data was presented in tables, and pie charts.

Results:

Total number of subjects who participated in the study was 475 in which the frequency of male participants was 240 (51%) and of females were 235 (49%). Mean age of the participants was 21.06±2.07 years and mean BMI 21.12±3.41. Majority of the students (71%) had normal BMI range. (Figure 2) The estimated mean knowledge score is 1.37±1.75. Regarding knowledge of risk factors, 460 (96.8%) students lie in the category of poor knowledge and 15 (3.2%) in good knowledge. (Figure 1)

Table 1: WHO Step Instrument (Core)

CATEGORY	Yes n(%)	No n(%)
SMOKING		
Do you currently smoke any tobacco products such as cigarettes, cigars or pipes?	89 (18.7%)	386 (81.3%)
Do you currently smoke tobacco products daily?	68 (14.3%)	407 (85.7%)
PHYSICAL ACTIVITY		
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously?	171 (36%)	304 (64%)
Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously?	288 (39.4%)	187 (60.6%)
HISTORY OF RAISED BLOOD PRESSURE		
Have you ever had your blood pressure measured by a doctor or other health worker?	310 (65.3%)	165 (34.7%)
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	98 (20.6%)	377 (79.4%)
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker?	20 (20.4%)	78 (79.6%)
HISTROY OF DIABETES		
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	28 (5.9%)	447 (94.1%)
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	8 (28.6%)	20 (71.4%)
HISTORY OF RAISED TOTAL CHOLESTROL		
Have you ever been told by a doctor or other health worker that you have raised cholesterol?	34 (7.2%)	441 (92.8%)
In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker?	9 (26.5%)	25 (73.5%)
HISTORY OF CARDIOVASCULAR DISEASE		
Have you ever had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident)?	48 (10.1%)	427 (89.9%)

DIET	**Number of Days**		
	1-2	**3-4**	**5-7**
In a typical week, on how many days do you eat fruit?	165 (34.7%)	140 (29.5%)	170 (35.8%)
In a typical week, on how many days do you eat vegetables?	172 (36.2%)	203 (42.7%)	100 (21.1%)

How often is salt, salty seasoning or salty sauce e.g. soya sauce added in your cooking or preparing food in your household?

Always	**Often**	**Sometimes**	**Rarely**	**Never**
13 (2.7%)	51 (10.7%)	153 (32.2%)	138 (29.1%)	120 (25.3%)

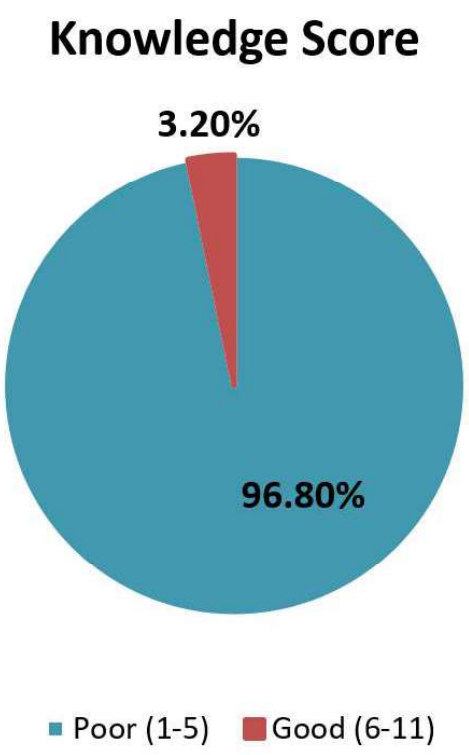

Figure 1: Percentage of knowledge score among students

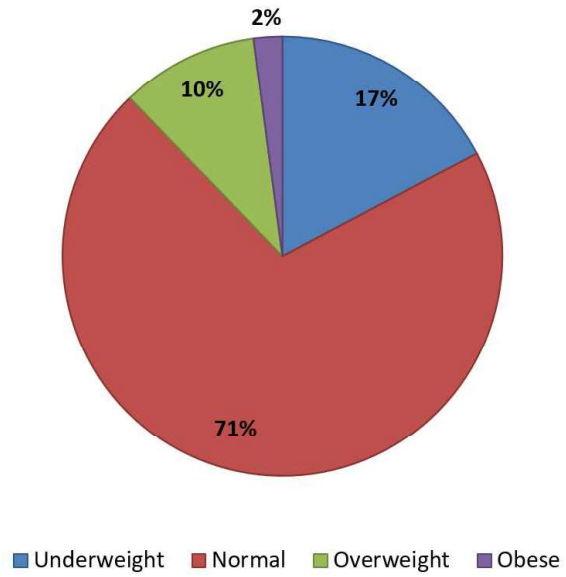

Figure 2: Percentage of BMI categories among students

Discussion:

The study was conducted among the university students to assess their knowledge and risk factor frequencies. The results indicated that although risk factors are not frequent but the respondents have poor knowledge regarding that. The current study demonstrated that 96.8% of students have poor knowledge regarding hypertension risk factors. Another study conducted in DI Khan to determine the distribution of knowledge regarding hypertension among the university students demonstrated that 72.4% students were having good knowledge.(15) Another similar study was conducted to explore the three-dimensional knowledge level of hypertension risk factors in city of Abha, Saudi Arabia. The respondents had a high level of knowledge regarding the risk factors.(16) Both populations demonstrated good knowledge contrary to our population. Awareness programs are required to be conducted in our educational institutes to improve knowledge level of our students so that they can consider these to avoid adopting the disease.

In the present study, 18.7% were smoking tobacco products daily and 64% denied that their work involves vigorous intensity and 60.6% denied that their work involves moderate intensity activity. In an another study conducted among students at Central University in the West Bank the prevalence for the smokers was found to be 29.3% of the 553 students with median age of 21 years. This difference in prevalence of smoking can be because of the reason that in Pakistan females smoke rarely and the data was collected from 42.5% females.(17)

The results of current study indicated that 165 university students were eating fruits for 1-2 days, 140 for 3-4 days and 170 for 5-7 days. Similarly 172 participants were taking vegetables for 1-2 days, 203 for 3-4 days and 100 for 5-7 days. A study on assessment of salt intake among undergraduate health care students studying in London indicate that a frequency of 86 students was taking fruits for more than three days and 46 for less than three. While 40 students were eating vegetables for less than three days in a week; whereas 92 were taking vegetables for more than three, so in both the studies the majority of the population takes fruits for more than three days a week.(18)

Salt is considered one of the major risk factor for hypertension and processed food consist of high level of salt which makes adult population prone to high blood

pressure. In present study we determined the usage of salty sauce in young adults was 32% which indicates that they sometimes use salty sauce in their food. While the study conducted in London reported that about 53% respondents always added salty sauce salt to their food. This shows that there is an increased usage of salt among students in London. This difference can be because of the reason that Pakistani cuisine rarely incorporates salty sauces.(18)

In the same study the frequency for physical activity level was also included , the individuals were grouped into vigorous, moderate, and low physical activity levels whose values are as follows 20.2%, 14.8% and 65.1%. In contrast, the present study assessed that 36% were doing vigorous and 60.6% were doing moderate physical activity. In our study we assessed the number of students who had their blood pressure measured by a doctor were 65.3% and those diagnosed with high BP were 20.6% .Whereas the study on assessment of salt intake behavior among under graduate students studying in London were 93% who have their BP measured, and the subjects diagnosed with high blood pressure were 23%. In a national cohort study of Thai Open University students, the diagnosed cases of hypertension was 4.6%.(19) Mental stress was a factor not included in the current study. Mental stress is a prevalent issue in young population especially students and it also plays a major role in developing hypertension. STEPS survey instrument was used with its core items (step 1 and 2) only. Missing factors e.g. socioeconomic status, renal insufficiency and psychological well-being can be added in future studies as these are also evident to be the risk factor for high blood pressure. Awareness programs regarding knowledge of hypertension risk factors should be conducted in educational institutes to increase awareness of students.

Conclusion:

In this study it was concluded that there was poor knowledge of modifiable and non-modifiable hypertension risk factors among university students of twin cities. None of the risk factor was found much frequent among students which can make them liable to suffer from hypertension in future.

Acknowledgment: We acknowledge all the university admins who allow us to collect data from their students.

Disclaimer: It is the part of undergraduate thesis.

Conflict of interest: None to report

Funding source: None to report

References:

1. AlWabel AH, Almufadhi MA, Alayed FM, Aloraini AY, Alobaysi HM, Alalwi RM. Assessment of hypertension and its associated risk factors among medical students in Qassim University. Saudi J Kidney Dis Transpl. 2018;29(5):1100–8.
2. Osman HM, Mohamed A, Salum AM, Zakaria KMA, Salum MA. Assessment of Knowledge about Hypertension. Diagn Pathol Open. 2018;3(142):2024–476.
3. Shafi ST, Shafi T. A survey of hypertension prevalence, awareness, treatment, and control in health screening camps of rural central Punjab, Pakistan. J Epidemiol Glob Health. 2017;7(2):135–40.
4. Gyamfi D, Obirikorang C, Acheampong E, Danquah KO, Asamoah EA, Liman FZ, et al. Prevalence of pre-hypertension and hypertension and its related risk factors among undergraduate students in a Tertiary institution, Ghana. Alexandria J Med. 2018;54(4):475–80.
5. Kilic M, Uzunçakmak T, Ede H. The effect of knowledge about hypertension on the control of high blood pressure. Int J Cardiovasc Acad. 2016;2(1):27–32.
6. Lugo-Mata ÁR, Urich-Landeta AS, Andrades-Pérez AL, León-Dugarte MJ, Marcano-Acevedo LA, Guillen MHJL. Factors associated with the level of knowledge about hypertension in primary care patients. Med Univ. 2017;19(77):184–8.
7. Musemwa, N. and Gadegbeku, C.A., 2017. Hypertension in African Americans. Current cardiology reports, 19(12), pp.1-11.
8. Peltzer K, Pengpid S, Sychareun V, Ferrer AJG, Low WY, Huu TN, et al. Prehypertension and psychosocial risk factors among university students in ASEAN countries. BMC Cardiovasc Disord. 2017;17(1):230.
9. Carey, R.M., Muntner, P., Bosworth, H.B. and Whelton, P.K., 2018. Prevention and control of hypertension: JACC health promotion series. Journal of the American College of Cardiology, 72(11), pp.1278-1293.
10. Booth III JN, Li J, Zhang L, Chen L, Muntner P, Egan B. Trends in prehypertension and hypertension risk factors in US adults: 1999–2012. Hypertension. 2017;70(2):275–84.

11. Riley L, Guthold R, Cowan M, Savin S, Bhatti L, Armstrong T, et al. The World Health Organization STEPwise approach to noncommunicable disease risk-factor surveillance: methods, challenges, and opportunities. Am J Public Health. 2016;106(1):74–8.
12. Amanyire J, Tumwebaze M, Mugisha MK, Bright LW. Prevalence and Risk Factors for Hypertension, Diabetes and Obesity among Lecturers and Support Staff of Bishop Stuart University in Mbarara, Uganda. Open J Appl Sci. 2019;9(3):126–37.
13. Andrew C, Hiles-Gaddy D, MacRitchie ML, Abraham S. College Students' Knowledge of Risk Factors Related to Cardiovascular Disease. Int J Stud Nurs. 2017;2(2):11.
14. Twinamasiko B, Lukenge E, Nabawanga S, Nansalire W, Kobusingye L, Ruzaaza G, Bajunirwe F. Sedentary lifestyle and hypertension in a periurban area of Mbarara, South western Uganda: a population based cross sectional survey. International journal of hypertension. 2018 May 6;2018.
15. Rashid, S.A., Awan, S.B., Ullah, H., Haroon, M., Latif, M.S. and Mehmood, S., 2017. Assessment of knowledge regarding hypertension among university students Gomal Journal of Medical Sciences, 15(1)
16. Asiri, A.A., Asiri, S. and Asiri, H., 2020. Knowledge Related to Hypertension Risk Factors, Diet, and Lifestyle Modification: A Comparative Study Between Hypertensive and Non-Hypertensive Individuals. Cureus, 12(8).
17. Tayem YI, Yaseen NA, Khader WT, Abu Rajab LO, Ramahi AB, Saleh MH Prevalence and risk factors of obesity and hypertension among students at a central university in the West Bank. Libyan Journal of Medicine. 2012 Jan 1;7(1):19222.
18. Kabir R, Ozkaya A, Ozkaya S. Assessment of salt intake behaviour among undergraduate health care students studying in London. International Journal of Community Medicine and Public Health. 2016 Oct;3(10):2734.
19. Thawornchaisit P, De Looze F, Reid CM, Seubsman SA, Sleigh A, Thai Cohort Study Team. Health-risk factors and the prevalence of hypertension: cross-sectional findings from a national cohort of 87 143 Thai Open University students. Global journal of health science. 2013 Jul;5(4):126.

Authors Contribution:
Mehwish W: Methodological design, Data analysis, Interpretation, Critical revision & final approval
Hafsa S: Conception, Design, Data collection and assembly, Drafting
Maham F: Conception, Design, Data collection and assembly, Drafting
Ifrah L: Conception, Design, Data collection and assembly, Drafting
Iqbal T: Draft review, Critical revision & final approval

OPEN ACCESS

RESEARCH ARTICLE

Association of body mass index with fitness index among male and female physical therapy students in Lahore

Tahir Mahmood[1], Umer Maqsood[2], Shah Zaib Raza[3], Hashim Zaka[4], Asad Aziz[5], Nadia Saleem[6]

ABSTRACT

Background: Body Mass Index is an important predictor of physical fitness that needs to be addressed in job-related work in physical therapy profession.

Objectives: To determine the association of BMI with Fitness Index among physical therapy students.

Methods: This was a cross-sectional associational study. The Sample of 156 undergraduate students between the ages of 20 to 30 years was included. By using a convenient sampling technique, data was collected from Azra Naheed Medical College and the Institute of Child Health and Children Hospital Lahore after ethical approval on 30th January 2018 from Azra Naheed Medical College. Harvard Step Index was used for measuring Fitness Index and Body Mass Index was measured using height and weight. SPSS 22 version was used for the analysis of outcomes of interest.

Results: In our study 85 (54.4%) females and 71 (45.51%) males students with mean age of 25.4±4.6 participated. In male physiotherapy students, 11 (17.18%) out of 64 were excellent in physical fitness, 12 (18.75%) were good, 4 (6.25%) were average, 4 (6.25%) were low average and 54 (57.44%) were poor. While in female physiotherapy students only 6 (6.59%) out of 91 were excellent, 18 (19.78%) were good, 5 (5.49%) above average, 2 (2.19%) were low average and 40 (43.95%) were poor. Regarding BMI and Fitness Index, 47 (30.12%) had poor, while 28 (17.94%) had good and 14 (8.94%) had excellent fitness level.

Conclusion: The study concluded that Physical therapy students were not having good fitness level. The male students were found fit compared to females, but they were also not to optimum required level of fitness. P value calculated through chi square test was 0.00 showed BMI and physical fitness was associated to each other.

Key words: body mass index, physical fitness index, physiotherapy student

DOI: https://doi.org/10.33897/fujrs.v1i2.243

Introduction:

Physical fitness is the physical capacity to perform the daily task efficiently and deal with emergencies as well as physical well-being. It is not considered that the absence of deformity or disease is physical fitness.(1) There is a negative association of hypertension with BMI (Body Mass Index) and low aerobic capacity.(2) A meta-analysis among adults showed that the adults having low fitness are at greater relative risk for Cardiovascular Disease (CVD) as compared to those who were at a higher level of fitness index distribution.(3)

Moreover, the U.S. Centers for disease control and prevention contrasted health-related components and performance-related components. Diminished levels of fitness and obesity in children started at level of adulthood and resulted in conditions ranging from discomfort at work to the development of metabolic disorders and heart diseases.(4,5) Most commonly used measurements for adiposity in puberty includes BMI , circumference of waist and its ratio to the body.(6,7) The foregoing studies that interpret the alliance between body composition indices and fitness in adolescent used variables such as BMI.(8) An individual, who can accomplish a particular task or activity with a reasonable degree of efficiency without immoderate fatigue and with fast recovery from the effects of exertion, is considered to be physically fit.(9,10) Physical fitness leads to enhancement in the capacity for

Affiliations: [1]Agile Institute of Rehabilitation Sciences, Bahawalpur, [2]Azra Naheed Medical College, Superior University, Lahore , [3]Exeter Bone & Joint, Abu Dubai, [4]Mulk Physiotherapy & Home care Center, [5]Eureka clinics, [6]Bakhtawar Amin Medical & Dental College.

Correspondence: Tahir Mahmood

Email: tahirmahmoodphysio@gmail.com

Received: February 17th 2021; **Revision:** June 05th 2021

Acceptance: June 11th 2021

How to Cite:

Mahmood T, Maqsood U, Raza SZ, Zaka H, Aziz A, Saleem N. Association of body mass index with fitness index among male and female physical therapy students in Lahore. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 45-9 .

skilled performance and rapid recovery from fatigue. The estimated physiological effort can be measured from the magnitude of change in heart rate and its change to normal state during exercise.(11) If demographic variations are taken, rural and urban students have difference in fitness level but still optimum level was also not scored.(12)

Regarding profession of physiotherapy, Potter and Jones stated that entry level of physiotherapy students should be dependent on screening the risk level of injury and their work-related performance. Their service is dependent on their optimum level of health and self-management strategies of maintaining BMI, being fit, having good endurance to perform clinical tasks.(13) The executive strains of physiotherapy profession in need of the therapist to engross in activities , demanding good amount of endurance, flexibility and strength. A physiotherapist requires reasonably high level of physical fitness to perform routine job tasks efficiently. However, in physiotherapy curriculum, no attention is paid to the importance of physical fitness of physiotherapy students. Therefore, being students of physiotherapy it is more crucial that they take into account the chief demands of profession and their physical well-being.

The need of time is the fitness level of physiotherapy students for upcoming professional demands. Due to lack of such study addressing the fitness as a component of the physical therapy students' evaluation, the basic aim was to measure out the fitness level and its association to BMI as both of these can affect the performance of Physiotherapist. This will help to develop education, awareness, and self–management strategies among the students after selecting this profession as career.

Methods:

This cross sectional study was conducted after thorough evaluation of risk benefits and standards of research conduction set by Ethical Review Committee (Ref#SU/ANCRD/IERC/19). The sample size was 164 calculated using Raosoft, keeping 5% margin of error, confidence level 95%, 500 population size in both institutes 80% response distribution. However, due to missing data, study was carried out in Lahore on 156 Students in Azra Naheed Medical College and Children Hospital Lahore, from February 2018 to July 2018 after approval from Ethical Review committee of Research. Non probability convenient sampling technique was used. After signing informed consent, the researchers included willing students of undergraduate program, both males and females, between 20 to 30 years from 3rd to 5th year of physiotherapy program.

Participants with any injury in last six months, systemic disease, muscular disease of hereditary nature and any surgery in last six months were excluded. Calculation of BMI was used to categorize research participants as underweight, normal, over-weight and obese.(14) Harvard step index was used as measure of fitness assessment. It has correlation r=0.64 which can be used to assess functional status.(15) The fitness test was explained to the participants to make sure that it is being performed in efficient way. The subjects performed test with step up and down for at least five minutes or until exhaustion at heighten stool of 33 cm. The participants were advised to step up and down, at the rate of 30 steps per minute for 5 minutes, with total of 150 steps or until exhaustion. Rest was given to the subjects for 5 minutes after the step test. Then after one, three and five minutes (in sequence) pulse was measured in resting position. Then their fitness Index was calculated.

Figure 1: Harvard Step -Test

In order to measure physical fitness index (PFI%), the researchers used Formula, PFI = Exercise duration in seconds x 100 / 2 (Resting pulse 1+2+3). According to Arnot and Gaines, criteria subjects were classified into categories. The male gender was classified as excellent if they have scoring >47, good 39-47, above average 30-39, average 17-29, below average 10-16 and poor 4-9 and very poor<4 similarly, females were categorized separately because there exists a difference between gender as excellent if they have scores>36, good 30-36, above average 23-29, average 12-22, below average 7-11 and Poor 0-1.(16) All the data had confidentiality with an independent assessor and subjects' names were not disclosed to anyone .The data from females were also collected by female physiotherapist after her

training from researcher (for their comfort). The researchers used SPSS version 22.0 for data entry and analysis. The data is presented in form of frequency tables and graph. The association between fitness index and BMI of the participants was measured using chi square test.

Results:

In our study 85 (54.4%) females and 71 (45.51%) males' students with mean age of 25.4 ± 4.6 participated. While the researchers measured fitness levels, results show that male physiotherapy students were less in poor category than females. While in female physiotherapy students more in poor than in good category and rest were in above average and average**.** Only 17 (22.54%) students were in excellent category of fitness index, while 94 (60%) of the students were in poor category of fitness index**.** (Table No. I)

Table.No 1:Comparison of Fitness Level & Association between BMI and Fitness Level

Variables		Poor	Average	Above Average	Good	Excellent	Chi square*/ p-value
Gender X Harvard Step Index Results (N=156)	Male	35 (49.29%)	2 (2.81%)	5(7.04%)	18(25.35%)	11(15.49%)	0.002
	Females	59 (69.41%)	04(4.70)	04(4.70)	12(14.11%)	06 (7.05%)	
BMI X Fitness Index(N=156)	Underweight	37(23.17%**)	03(1.92%)	01(.64%)	01(.64%)	01(.64%)	0.001
	Normal	47(30.12%)	0	2(1.28%)	28(17.94%)	14(8.94%)	
	Overweight	08(5.12%)	02(1.28%)	6(3.84%)	01(.64%)	2(1.28%)	
	Obese	2(1.28%)	01(.64%)	0	0	0	
	Total	94(60.25%)	6(3.84%)	9(5.76%)	30(19.23%)	17(10.89%)	

*= Asymp. Sig. (2 sided) at df. = 4
**=%age is according to BMI categories

Discussion:

The cross-sectional study was aimed to find out fitness index and its association with BMI among the undergraduate students of physiotherapy in Lahore. There were 11 males out of 64 and 6 females out of 91 were excellent in physical fitness. More females were present in overweight and underweight category as compared to males. In the current study, students were not having optimum fitness level related to their BMI. P value was found (0.001) predicting an association between BMI and physical fitness. Results of recent study concluded that fitness was less among undergraduate students. 2 out of 19 were in excellent, while only 1 was in good category of fitness index, in contrast to normal BMI category students. Comparing it's CFS (Children Fitness Screening), the prevalence of overweight children increased between 20 to 30 %.

The study indicates the negative correlation between BMI and physical fitness with more projections in older children.(17) BMI was related to decrease in fitness Cardiorespiratory fitness and strongly associated with obesity, which highlights the importance of increasing CRF for a protective effect even in youth. No associations were found for Physical activity and BMI.(18) The researchers found association p <0.03 between both sexes showing that there was a positive relationship between BMI and fitness level of our participants .The average estimation of VO_{2max} as predictor of fitness index showed decline in both genders (p<.001).The observed BMI trend p=0.77 and p=0.2.25 for males and females respectively and association between body fat and VO_{2max} .The findings suggested reduction of BMI is associated to physical fitness.(19) The results of fitness index measured by Harvard step test showed that 7% male physiotherapy students were excellent in physical fitness, 5.1% were in good, while in female physiotherapy students only 2.7% were excellent, 4.6% were good. The researchers found that fitness was lacking in all domains including gender, demographic base as well as on the basis of BMI.

All the subjects were not at level that can be considered as significant level if we consider them as fit for their professional demands. In studies on BMI and cardiorespiratory fitness (CRF) by Bonney in 2018 among female students with age of 13-16, overweight girls were not having good CRF as well as musculoskeletal fitness, but p value was <0.05 . Further their BMI was negatively associated with CRF.(20) The researchers found that in normal BMI 8.94% and 17.94% were in category of good and excellent level of fitness but underweight only 2 of them were in same

category of fitness. It states that Normal BMI can be a key predictor of fitness. The obesity (body fat) and fitness is high among the students with significant gender differences. There is a dire need of awareness, education and exercise teaching is required among the students.(21)

In the current study, the over-weight and obese students were less, compared to another local study stating it as highly prevalent among physiotherapy students but this study included only female students.(22) The male physiotherapy students were having better fitness compared to females**.** Only 17 (22.54%) out of 156 students were in excellent category of fitness index, while 94 (60%) of the students were in poor category of fitness index which is very alarming for the professional demands. The current study was similar in findings with that of an international study about fitness index of physiotherapy students. They found fitness index was not optimum and further found fitness index different among the students having overweight and normal BMI of the students.(23) It is important to discuss the musculoskeletal issues due to decreasing optimum level of fitness among physical therapy students. There should be evaluation as well as fitness training of students so that they can reach optimum level of their BMI and fitness .The future of physiotherapist depends on the optimum fitness level and physical endurance. It is necessary to keep themselves involved in physical activity, weight reduction and fitness programs as well.

Conclusion:

The study concluded that physical therapy students were not having good fitness level. Despite of this male were found to be fitter compared to females, but they were also not to the optimum required level of fitness. P value calculated through chi square test, 0.001; show BMI and physical fitness was associated to each other.

Disclaimer: None to declare

Funding: None to declare

Conflict of Interest: None to declare

References:

1. Evans RR, Sims SK. Health and physical education for elementary classroom teachers: An integrated approach. Human Kinetics; 2021 Feb 23
2. Crump C, Sundquist J, Winkleby MA, Sundquist K. Interactive effects of physical fitness and body mass index on the risk of hypertension. JAMA Intern. Med. 2016 Feb 1; 176 (2):210-6.
3. Pescatello LS, Riebe D, Thompson PD, editors. ACSM's guidelines for exercise testing and prescription. Lippincott Williams & Wilkins; 2014.
4. American College of Sports Medicine, editor. ACSM's health-related physical fitness assessment manual. Lippincott Williams & Wilkins; 2013 Jan 21.
5. Velasquez-Mieyer P, Perez-Faustinelli S, Cowan PA. Identifying children at risk for obesity, type 2 diabetes, and cardiovascular disease. Diabetes Spectrum. 2005 Oct 1; 18 (4):213-20.
6. Multani NK, Singh E. Level of physical fitness among physiotherapy students a study of Punjab and Haryana. 2013
7. Goulding A, Taylor RW, Grant AM, Parnell WR, Wilson NC, Williams SM. Waist-to-height ratios in relation to BMI z-scores in three ethnic groups from a representative sample of New Zealand children aged 5–14 years. Int J Obes. 2010 Jul;34 (7):1188-90.
8. O'Brien W, Belton S, Fitzpatrick B, Shannon S, Brennan D, Chambers F, O'Donovan K, Breslin G. Relationship between gender, physical activity, screen time, body mass index and wellbeing in Irish children from social-disadvantage. Child Care in Practice. 2021 Mar 12:1-5
9. Ortega FB, Tresaco B, Ruiz JR, Moreno LA, Martin-Matillas M, Mesa JL, et al. Cardiorespiratory fitness and sedentary activities are associated with adiposity in adolescents. J. Obes 2007 Jun;15(6):1589-99.
10. Sattar A, Ehsan S, Mahmood T, Khalil R, Arshad S. Physical activity and health-promoting practices among female medical students Isra Med J. 2019; 11(4)-Part B: 334-337.
11. Chinagudi S, Badami S, Herur A, Patil S, GV S, Ankad R. Immediate effect of short duration of slow deep breathing on heart rate variability in healthy adults. Natl J Physiol Pharm Pharmacol. 2014;4 (3):233-5.
12. Mahmood T, Mujahid Z, Mahmood W, Tariq K, Salam A. Comparison of Physical Fitness Between Rural and Urban Physical Therapy Students Studying in Lahore, Pakistan. Annals of Punjab Medical College. 2018 Apr 12;12(2):112-6.

13. Potter M, Jones S. Entry-level physiotherapists' strategies to lower occupational injury risk in physiotherapy: a qualitative study. Physiotherapy theory and practice. 2006 Jan 1;22 (6):329-36.

14. Parmar D, Vaghela V. Study of physical fitness index using Modified Harvard Step Test in relation with body mass index in physiotherapy students. Int J Recent Adv Multidiscip Res. 2015 Oct 31;2:1075-7.

15. Kopeikina EN, Drogomeretsky VV, Kondakov VL, Kovaleva MV, Iermakov SS. Modification of Harvard step-test for assessment of students' with health problems functional potentials. Physical education of students. 2016 Aug 28;20(4):44-50.

16. Mehmood T, Mehmood W, Maqsood U, Salam A, Sefat N. Level of Actual Physical Fitness and its Perception among Students of Physiotherapy in Lahore. Journal of Liaquat University of Medical & Health Sciences. 2019 Apr 10;18(01):60-4.

17. Brunet M, Chaput JP, Tremblay A. The association between low physical fitness and high body mass index or waist circumference is increasing with age in children: the 'Quebec en Forme'Project. Int J Obes. 2007 Apr; 31(4):637-43.

18. Aires L, Silva P, Silva G, Santos MP, Ribeiro JC, Mota J. Intensity of physical activity, cardiorespiratory fitness, and body mass index in youth. *J* Phys Act Health T 2010 Jan 1;7 (1):54-9.

19. Joshi P, Bryan C, Howat H. Relationship of body mass index and fitness levels among schoolchildren. J Strength Cond Res. 2012 Apr 1;26(4):1006-14.

20. Bonney E, Ferguson G, Smits-Engelsman B. Relationship between body mass index, cardiorespiratory and musculoskeletal fitness among South African adolescent girls. Int. J. Environ. es. Public Health. 2018 Jun; 15(6):1087.

21. Habib SS. Body composition analysis and estimation of physical fitness by scoring grades in Saudi adults. JPMA. 2013;63(1285).

22. Ali B, Ansari MA, Qambrani MR, Memon AR, Ahmed I, Memon AU. Association of body mass index, cardiorespiratory fitness, and their correlates among female physiotherapy students in Nawabshah. JPMA. 2020 Sep 4;2019.

23. Parmar D, Vaghela V. Study of physical fitness index using Modified Harvard Step Test in relation with body mass index in physiotherapy students. Int J Recent Adv Multidiscip Res. 2015 Oct 31;2:1075-7.

Authors Contribution:

Tahir M: Conception & Design, Final approver and guarantor of the article

Umer M: Conception & assembly of data and Drafting of the article.

Raza SZ: Critical revision of the article for important intellectual content

Hashim Z: Analysis & Interpretation

Asad A: Literature search & Statistical expertise

Nadia S: Content writing, Discussion & Critical revision of the article for important intellectual content

OPEN ACCESS

RESEARCH ARTICLE

Prevalence and risk factors of postpartum depression

Maria Liaqat[1], Mubarra Afzal[1], Sania Manzoor[1], Asad Gul[1]

ABSTRACT

Background: People in Pakistan do not take postpartum depression as a serious disease, and in Pakistan limited data is available on postpartum depression**.** The purpose of this study was to find out the prevalence and risk factors associated with postpartum depression.

Objectives: To find out the prevalence and risk factors of postpartum depression.

Methods: A cross-sectional survey was conducted in Al Nafees Medical College and Hospital. 400 participants fulfilling the inclusion criteria were recruited in the study. A self-structured questionnaire was used for demographic details and for risk factors. Beck's inventory depression questionnaire was used as a standard scale.

Results: Out of 400 participants, 95 (23.75%) of the participants showed mild mood disturbance ranging from 11 to 16. 43 (10.75%) of the participants showed borderline clinical depression from 17-20. 45 (11.25%) of the participants showed moderate depression ranging from 21 to 30. 21 (5.25%) showed severe depression ranging from 31 to 40. 13 (3.25%) of the participants showed extreme depression ranging over 40. The mean age of the participants was 28.06 from 18 to 45 years. The major risk factors responsible for the effect are previous history of depression (10.635%), infants with anomaly (2.122%), any co-morbidity in mother (1.409%), baby aged below 5 months(1.049%).

Conclusion: The study concluded that, majority of the participants has postpartum depression. The major risk factors that can affect the results are previous history of depression, gestational diabetes and any anomaly (infant).

Key words: postpartum depression, gestational diabetes

DOI: https://doi.org/10.33897/fujrs.v1i2.226

Introduction:

Postpartum depression is not a psychological or mental illness.(1) It is associated with physical, emotional and behavioral changes that occur in a women after delivery. Postpartum depression is a major form of depression that occurs within four to six weeks after childbirth.(2) As depression is more common in women as compared to men during the age of parturition and discussion has made over whether the postnatal duration is a time of greater risk for mood disorders.(3) Surprisingly, little is known about how function of social status changes the rate of postnatal depression. While it remains a key job of social psychiatry to understand the role of poverty in mental health disorders. Social status is not well described as a risk factor for postpartum depression. Poor females living with chronic stressors like insufficient pay, lower housing and unreliable public transport.(4) In past researches, the importance of social status as s predictor for postpartum depression has been highlighted. The stress process is theoretically associated with social status with different exposures to stress and differential access to assets such as cash, prestige and authority .(5)

Some studies showed that hormonal changes occur during antenatal and postnatal period act as a risk factor for depression. Estrogen, progesterone, thyroid, testosterone, corticotrophin and cortisol are the hormones that the research studies include.(3) The appropriate cause of postpartum depression is not known. The main cause is considered as the combination of physical , emotional and hormonal factors.(1) Evidence showed that the following are the common risk factors that strongly predicted the postpartum depression: Antenatal mood disturbances or anxiety, any stressful event during pregnancy or after childbirth, poor financial status and a prior history of depression,(4) sleeping disorders, manic-depressive

Affiliations: [1]Isra university, Islamabad
Correspondence: Maria Liaqat
Email: maria_liaqat@hotmail.com
Received: October 22nd2020; **Revision:** June 09th 2021
Acceptance: June 14th 2021

How to Cite:
Liaqat M, Afzal M, Manzoor S, Gul A. Prevalence and risk factors of postpartum depression. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 50-4.

illness, depression related to family, mental stress ,postnatal complications, drug use disorder.(2) Some researches' results defined that unplanned pregnancy and unemployment is also considered as a risk factor for having a postpartum depression.(6) Although the incidence of postpartum depression in general population has been empirically defined.(5) A study conducted by Beck 2001(7) has also defined thirteen important risk factors that increase the risk for developing of postpartum depression : self-respect , marital relationship , marital status, maternity blues, child development and care stress, social status, previous history of depression, depression before pregnancy, anxiety before child-bearing age , infant having any anomaly, unwanted pregnancy.(8)

While most women undergo with a short duration of sadness or hopelessness after child birth, but when symptoms become severe and longer than two weeks are diagnosed as postpartum depression.(2) Depression comes into sight as commonness during pregnancy as it is in the postpartum after pregnancy. A cross-sectional study conducted in 1989 by Whiffen et al in St. Joseph's Hospital London, Ontario, Canada included 360 pregnant women. They were chosen to investigate both depressive symptomatology and diagnostic status during pregnancy and after delivery by using Beck Depression Inventory questionnaire. They concluded that only 6.8% of women were depressed postpartum; the remaining women receiving a diagnosis in the postpartum had additionally been depressed throughout gestation.(9) A study was carried out by Karkun S. et al in 2005, to find out the prevalence of postpartum depression and depressive symptoms in far range of countries. A survey on 143 studies reported prevalence in 40 countries. Study revealed that there is a huge range of prevalence of postpartum depression (0% to 60%) in countries like Italy, Brazil, Guyana, Costa Rica, Brazil, Chile, Guyana and Korea . Although some countries e.g. Denmark, Austria, Singapore, Malta and Malaysia generally outlined postpartum depressive symptoms.(10)

Methods:

This is a cross-sectional survey in which data was collected from Al Nafees Medical College and Hospital from 1st May-23th July 2019 .400 participants satisfying the inclusion criteria were recruited in the study were from postpartum upto 1 year and age ranging from 18 to 45 years and a questionnaire based survey was carried out. A self-structured questionnaire was used for demographic details and for risk factors. Beck's Inventory Depression Scale was used as data collection tool. The data was analyzed by using SPSS 21.

Results:

Results showed that total sample size of 400 participants was included in this study calculated from Raosoft calculator to find out the prevalence and risk factors of postpartum depression. Out of 400 participants, 95 (23.75%) of the participants showed mild mood disturbance ranging from 11 to 16. 43 (10.75%) of the participants showed borderline clinical depression from 17-20. 45 (11.25%) of the participants showed moderate depression ranging from 21 to 30. 21 (5.25%) showed severe depression ranging from 31 to 40. 13 (3.25%) of the participants showed extreme depression ranging over 40. The mean age of the participants was 28.06 from 18 to 45 years. The majors risk factors responsible for the effect are previous history of depression (10.635), gestational diabetes (4.078),any anomaly infants (2.122), any co-morbidity in mother (1.409),baby aged below 5 months (1.049), unplanned pregnancy (0.317) and mother aged below 40 (0.182).

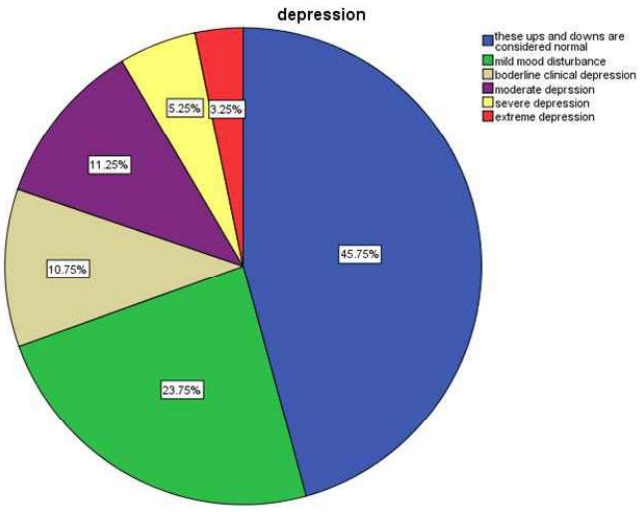

Figure 1 Percentage/frequency of depression

Figure 1 concludes that out of 400 participants 183 are considered normal, 95 mild mood disturbance, 43 had borderline clinical depression, 45 had moderate depression, 21 had severe depression, and 13 had extreme depression.

Discussion:

The aim of this study was to determine the prevalence and risk factors of postpartum depression after pregnancy in females from age group 18 to 45

TabIe 1.Risk factors of postpartum depression

VariabIes	Odd ratios
Previous history of depression	10.635
GestationaI diabetes	4.078
Any anomaIy(infant)	2.122
Any other comorbidity	1.409
Baby age beIow 5 months	1.049

years. In general, the results regarding the postpartum depression in females confirmed that majority of females is in moderate state of depression. Study conducted in 2020 considered that around 40 ladies out of 100 ladies were enduring from PPD and the related hazard components were current work inclusion, work misfortune due to pregnancy, history of unsuccessful labor, still birth and child death, unintended pregnancy, taken a toll of conveyance overseen from borrowing/selling asset/mortgage, depressive side effect amid pregnancy period, seen antenatal stretch, destitute conjugal relationship with spouse, and insinuate accomplice savagery(18). The results confirm with study conducted by Whiffed et al, which verified the same results(11), the same phenomenon was observed in other study conducted by A. Kathleen Atkinson et al showing the high rate of postpartum depression and the possible cause of this is the unsettling of parents performance by the baby care taking demands.

The finding of this study indicates the most important and frequent risk factor to postpartum depression was age of baby, this result favors the finding in the literature which indicates children behavioral problems related to mothers postpartum depression.(12) The predominance of PPD in turkey was found to be higher in rustic region or in creating zones of the nation. Major hazard variables are destitution, deficient instruction, early age relational unions , moo financial status , unplanned pregnancy, any stressful occasion amid pregnancy , well-being issues with new born child , history of psychiatric sickness in family of mother , relations with companion and family , need of social back amid pregnancy ,misery or uneasiness amid pregnancy, all considered as the variables that can lead to PPD.(19)

A. Jofesson et. al. conducted a study in 2007 to investigate the prevalence of depressive symptoms in women who are approximately 6 times more likely to have recurrent depressive symptoms (OR = 5.82, 95% CI: 3.79-8.93), compared with those women without postpartum depressive symptoms. Whereas in mothers postpartum depressive symptoms were elaborate in explaining the behavioural problems in their four year old children, children behavioural problems were seen with mothers having current depressive symptoms (OR = 4.71, 95% CI: 1.88-11.78).(14) Similarly, previous history of depression is the main risk factor for post-partum depression. The study conducted by Michael W. O'Hara revealed the same result that stronger predictor of postpartum depression is the past history of depression. These results are because of mental disturbance during pregnancy and low social support.(7)

While this result contradicts the findings in literature that anemia and depletion of iron stores are the leading risk factors to postpartum depression.(15) Andreanne wassef et. al. in contrast, the present study updates the literature by mode of deliveries especially c-section that can lead the female towards postpartum depression. This may be because of long hospital stays, lower competencies for interaction and suicidal thoughts. Josefsson A et al. study showed that mainly the risk factors are anxiety, obsessive and post –traumatic disorders or a child's relationship impaired of the participant.(13) O'Hara MW at el. study conducted in 1984 showed similar risk factors like previous history of depression, stressful event, prepartum depression symptoms and obstetric risk factor.(16) Vigod SN at el. study also have same results of high percentage of prevalence postpartum depression and risk factors similar to the current currant study are infant illness/disability. Others are premature delivery, low birth weight and lack of social support.(9) Grekin R at el. study also have same risk factors that include depression history, previous history or psycho pathology, child's complications and others are interaction with medical staff.(18) However, study showed the four main variables that explained the risk associated with risk factors to postpartum depression like unplanned childbirth, unemployed women, not breast feeding.(17)

This study favors the results of contradict study shows that thirteen significant predictors of postpartum depression were revealed. Ten of the 13 risk factors had moderate effect sizes while three predictors had small effect sizes. The mean effect size indicator ranges for each risk factor were as follows: prenatal depression (0.44 to 0.46), self-esteem (0.45 to 0. 47), childcare stress (0.45 to 0.46), prenatal anxiety (0.41 to 0.45), life

stress (0.38 to 0.40), social support (0.36 to 0.41), marital relationship (0.38 to 0.39), history of previous depression (0.38 to 0.39), infant temperament (0.33 to 0.34), maternity blues (0.25 to 0.31), marital status (0.21 to 0.35), socioeconomic status (0.19 to 0.22), and unplanned/unwanted pregnancy (0.14 to 0.17).(19)

Limited transportation resources, patient's uncooperative attitude, language barrier are some the limitations of this study. However, study needs to be conducted at the larger scale with wider time frame so that more generalizability of the results can be obtained on large sample size with multiple settings.

Conclusion:

The study concluded that majority of the participants has postpartum depression. The major risk factors that can affect the results are previous history of depression, gestational diabetes and infants with anomaly.

Disclaimer: None to declare

Funding: None to declare

Conflict of interests: None to declare

References:

1. Beck CT. Postpartum Depression: It isn't just the blues:. AJN The American Journal of Nursing. 2006 May 1;106(5):40-50.
2. Fishbein CR. Screening Mothers for Postpartum Depression at Well-Child Visits in a Private Pediatric Clinic: An Evidence-Based Practice Improvement Project.
3. Soares CN, Zitek B. Reproductive hormone sensitivity and risk for depression across the female life cycle: a continuum of vulnerability?. Journal of psychiatry & neuroscience. 2008 Jul.
4. Stewart DE, Robertson E, Dennis CI, Grace SI, Wallington T. Postpartum depression: literature review of risk factors and interventions. Toronto: University Health Network Women's Health Program for Toronto Public Health. 2003 Oct .
5. Segre IS, O'Hara MW, Arndt S, Stuart S. The prevalence of postpartum depression. Social psychiatry and psychiatric epidemiology. 2007 Apr 1;42(4):316-21.
6. Chaaya M, Campbell OM, El Kak F, Shaar D, Harb H, Kaddour A. Postpartum depression: prevalence and determinants in lebanon. Archives of women's mental health. 2002 Oct 1;5(2):65-72.
7. Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: a synthesis of recent literature. General hospital psychiatry. 2004 Jul 1;26(4):289-95.
8. Agoub M, Moussaoui D, Battas O. Prevalence of postpartum depression in a Moroccan sample. Archives of Women's Mental Health. 2005 May 1;8(1):37-43.
9. Navarrete IE, Iara-Cantú MA, Navarro C, Gómez ME, Morales F. [Psychosocial factors predicting postnatal anxiety symptoms and their relation to symptoms of postpartum depression]. Rev Invest Clin. 2012 Nov-Dec;64(6 Pt 2):625-33
10. Halbreich U, Karkun S. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. Journal of affective disorders. 2006 Apr 1;91(2-3):97-111.
11. Josefsson A, Berg G, Nordin C, Sydsjö G. Prevalence of depressive symptoms in late pregnancy and postpartum. Acta Obstetricia et Gynecologica Scandinavica. 2001 Mar;80(3):251-5.
12. Josefsson A, Sydsjö G. A follow-up study of postpartum depressed women: recurrent maternal depressive symptoms and child behavior after four years. Archives of women's mental health. 2007 Aug 1;10(4):141-5.
13. Wassef A, Nguyen QD, St-André M. Anaemia and depletion of iron stores as risk factors for postpartum depression: a literature review. Journal of Psychosomatic Obstetrics & Gynecology. 2019 Jan 2;40(1):19-28.
14. C. Dunkel Schetter and I. Tanner, "Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice," *Current Opinion in Psychiatry*, vol. 25, no. 2, pp. 141–148, 2012.
15. Alipour Z, Kazemi A, Kheirabadi G, Eslami AA. Relationship Between Marital Quality, Social Support and Mental Health During Pregnancy. Community Ment Health J. 2019 Aug;55(6):1064-1070
16. Grekin R, O'Hara MW. Prevalence and risk factors of postpartum posttraumatic stress disorder: a meta-analysis. Clinical psychology review. 2014 Jul 1;34(5):389-401

17. Beck CT. Predictors of postpartum depression: an update. Nursing research. 2001 Sep 1;50(5):275-85.

18. Azad R, Fahmi R, Shrestha S, Joshi H, Hasan M, Khan AN, Chowdhury MA, Arifeen SE, Billah SM. Prevalence and risk factors of postpartum depression within one year after birth in urban slums of Dhaka, Bangladesh. PloS one. 2019 May 2;14(5):e0215735.

19. Özcan NK, Boyacıoğlu NE, Dinç H. Postpartum depression prevalence and risk factors in Turkey: a systematic review and meta-analysis. Archives of psychiatric nursing. 2017 Aug 1;31(4):420-8.

Authors Contribution:
Maria L: Acquisition, Analysis, Interpretation of Data
Mubarra A: Analysis, Manuscript writing
Sania M: Data collection, Manuscript writing
Asad G: Data collection

OPEN ACCESS

RESEARCH ARTICLE

Patients satisfaction after primary total hip arthroplasty

Hina Gul[1], Sadaf Awan[2], Roohi Waqas[1], Aymun butt[3], Zurriat Fatima[3], Sobia Kanwal[4]

ABSTRACT

Background: Total hip arthroplasty is a surgery in which the diseased ball and socket of the hip joint is completely removed and replaced with artificial materials and satisfaction is a state felt by a person who has experienced a performance or an outcome that fulfill his or her expectation. Prevalence of total hip arthroplasty is 5.26%.

Objectives: The objective of the study was to determine the patient satisfaction level after primary total hip arthroplasty.

Methods: This was a descriptive cross sectional study with a sample size of 51 patients. Both genders are included with an age range of 45-65years and the patients who enrolled six months after surgery. Those patients were excluded who refused to participate in the study, those patients undergoing revision hip arthroplasty and patients who have any congenital deformity of lower limb. A self-administrated patient-satisfaction questionnaire was used. The questionnaire was valid and reliable and used in a previous study. Data was analyzed by using Statistical Package of Social Sciences (SPSS). Value of Cronbach's alpha was 0.86 which was considered highly reliable. Informed consent was obtained from every single patient.

Results: Mean age of patients was 55.72, with range minimum 46 years to maximum 65 years. Satisfaction after six months of total hip arthroplasty in patients was somewhat high, 46.1% and the percentage of patients who were dissatisfied was 8.8%.

Conclusion: Patient satisfaction is higher after total hip arthroplasty. Patients are satisfied with the result of the surgery, improving pain and improving functional activities.

Key words: musculoskeletal, physical therapy, satisfaction, total hip arthroplasty

DOI: https://doi.org/10.33897/fujrs.v1i2.244

Introduction:

Satisfaction is a state felt by a person who has experienced a performance or an outcome that fulfills his or her expectation.(1) Patient hopes are progressively more significant factor in present quality concepts, in the light of recent guiding principles. Now a days, many hospital managements are using patient satisfaction as a key factor in order to screen and increase excellence of quality services besides patient's improvement in health quality. If we look from patient's point of view, then psychological satisfaction is necessary to decrease the time period of rehabilitation and return to normal daily living activities after surgery. Satisfaction level varies from person to person and includes many domains. Satisfaction of the patient also provides a mean to rule out individual's problems and also to find a way out.(2)

Total hip arthroplasty (THA) is one of the most efficacious orthopedic reconstructive procedures and is often indicated to improve function and ameliorate degenerative symptoms in patients who failed non-operative management.(3) Total hip arthroplasty is a surgery in which the diseased ball and socket of the hip joint are completely removed and replaced with artificial materials.(4) The prevalence of total hip arthroplasty in USA population increasing day by day as 1.52% in 2011, this prevalence reached 5.26% in 2015. With increasing age and late stage arthritis, joint replacements are very common. Joint replacements are commonly used to improve the quality of life and to be independent in daily living activities. But pre-decided plan of care is required after surgery throughout an individual's life span.(5)

Hip arthroplasty provides excellent pain relief and improves functional status. Patient's satisfaction is the

Affiliations: [1]Lahore Medical & Dental College, [2]Allama Iqbal Medical College, [3]Ghurki Trust Teaching Hospital, [4]Ittefaq Hospital

Correspondence: Hina Gul

Email: hina.gul@lmdc.edu.pk

Received: March 24th 2021; **Revision:** May 24th 2021

Acceptance: June 20th 2021

How to Cite:

Gul H, Awan G, Waqas R, butt A, Fatima Z, Kanwal S. Patients satisfaction after primary total hip arthroplasty. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 55-7.

most important measure of success for today's patient-centered model of care.(1) Several extrinsic and intrinsic etiological factors affect the surgical procedures and activities of daily living of the patients who performed hip arthroplasty. Rehabilitation after total hip arthroplasty is important to return into activities of daily living. Physical therapist plays an important role in reduction of pain, good range of motion, and minimum disruption of muscle tissues after surgery.(2) Presence of risk factors before hip replacement like advance age, female sex, increase body mass index and limited mobility contribute to poor satisfaction of the patient and late recovery.(6)

Methods:

This study was carried out at Ghurki Trust Teaching Hospital, Lahore over the period of 6 months after approval of synopsis. The sample size was 51 collected through non-probability convenience sampling. Sample size was calculated by using World Health Organization (WHO) software under this formula with 5.26% prevalence (P), 0.09 precision (d) and 95% confidence interval (1-α). Patients of both genders who undergo total hip arthroplasty, aged 45-65 and who enrolled six months after surgery were included. Patients who refused to participate in the study, the patients undergoing revision hip arthroplasty and those with any congenital deformity of lower limb were excluded. A self-administrated patient-satisfaction questionnaire was used. The questionnaire was valid and reliable as it was used in a previous study. Value of Cronbach's Alpha was 0.86 which was considered highly reliable. Informed consent was obtained from every single patient. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 21. The study variables were presented in the form of descriptive statistics e.g. tables, bar charts, graphs. The numeric data like age was presented in the form of Mean±S.Dev.

Results:

Table-1 shown below indicates that total number of patients is 51, mean age is 55.72, standard deviation is 6.132, and maximum age of patients is 65.

Table-1: Mean age Distribution among target population

Sample Size	51
Mean	55.72
Std. Deviation	6.132
Minimum	46
Maximum	65

Figure-1 indicates patient's satisfaction after total hip arthroplasty. Patient who are very satisfied having frequency 17 (33.3%), partially satisfied having frequency 19 (37.3%), partially dissatisfied having frequency 12 (23.5%), very dissatisfied were 3(5.9%).

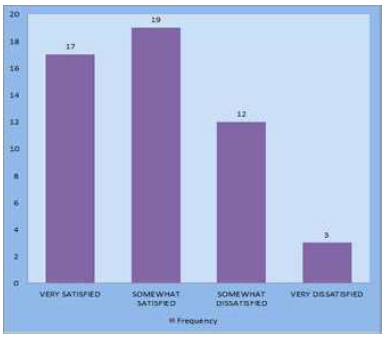

Figure 1: How satisfied are you with the result of your surgery?

Figure-2 shows that overall satisfaction in all patients who are satisfied is 27.43, patients who are partially satisfied are 46.1, patients who are partially dissatisfied are 24.5 or those who are totally dissatisfied are 8.8.

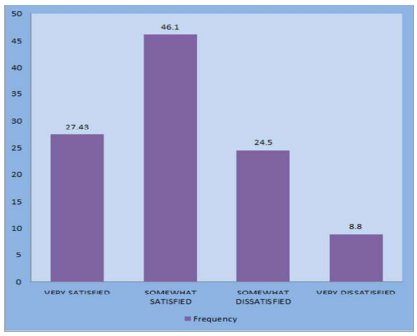

Figure 2: Patient's Total Satisfaction after Total Hip Arthroplasty

Discussion:

Tom schaal along with his fellow colleagues, conducted a research in 2016 to rule out the determinants of patient satisfaction and their willingness to return after primary total hip replacement.(1) They concluded a high level of satisfaction. According to this study, patients who were very satisfied with the results of their surgery were having frequency 17(33.3%) and those fall in somewhat satisfied category are having frequency 19(37.3%). On the other hand, satisfaction with the results of surgery for improving pain were having frequency 28(54.9%). This study also establishes an overall patient satisfaction that is 75% after six months of total hip arthroplasty. In 2014, quality of life after total hip replacement showed a high level of patient satisfaction.(7) The current study also supports this study by an overall 75% patient satisfaction after six

months of total hip arthroplasty. Raymond , along with his fellows conducted a prospective cohort study in 2011, concluded that satisfaction relates intensely with postoperative functional scores, pain score and functional restoration. The results of the current study also proves these factors.(8)

Harbinson GJ et al. in 2014 concluded that THA single stage is safe for the management of bilateral hip disorders with over all only 0.5% complications.(9) According to Tang H et al. in 2014 in china 8.1% patients were not satisfied with this surgery and the strongest risk factor for dissatisfaction was muscle weakness.(10)

Another research in 2015 by K Osmanski-Zenk with his fellows on Quality of Outcome after Primary Total Hip Replacement at a Maximum Care Hospital in Relation to Preoperative Influencing Factors concluded that the quality of results after primary THR depends on preoperative factors(6); this is one of the limitation of the current study that we did not measure the preoperative influencing factors before measuring the patient satisfaction. The other limitation of the study was that it was done in a single hospital setting and due to which sample size of the study remained too small owing to shortage of time duration.

Conclusion:

According to results, patients' satisfaction after six months of total hip arthroplasty was high. Patients are satisfied with the result of the surgery, improving pain, improving home and yard activities and also satisfied with recreational activities.

Disclaimer:

The study is part of research project carried out for DPT degree program in UHS Lahore.

Conflict of interest: None to report

Funding source: None to report

References:

1. Schaal T, Schoenfelder T, Klewer J, Kugler J. Determinants of patient satisfaction and their willingness to return after primary total hip replacement: a cross-sectional study. BMC musculoskeletal disorders. 2016;17(1):1-9.
2. Šťastný E, Trč T, Philippou T. Rehabilitation after total knee and hip arthroplasty. Casopis lekaru ceskych. 2016;155(8):427-32.
3. Jaleel Zubair A, Mahmood SUB, Ali M, Noordin S. Improvement in quality of lifesix months after primary total hip arthroplasty in a Pakistani population. JPMA: Journal of Pakistan Medical Association. 2016;66(10):S99.
4. Bourne RB, Chesworth BM, Davis AM, Mahomed NN, Charron KD. Patient satisfaction after total knee arthroplasty: who is satisfied and who is not? Clinical Orthopaedics and Related Research®. 2010;468(1):57-63.
5. Kremers HM, Larson DR, Crowson CS, Kremers WK, Washington RE, Steiner CA, et al. Prevalence of total hip and knee replacement in the United States. The Journal of bone and joint surgery American volume. 2015;97(17):1386.
6. Osmanski-Zenk K, Steinig N, Glass Ä, Mittelmeier W, Bader R. Quality of outcome after primary total hip replacement at a maximum care hospital in relation to preoperative influencing factors. Zeitschrift fur Orthopadie und Unfallchirurgie. 2015;153(6):624-9.
7. Palazzo C, Jourdan C, Descamps S, Nizard R, Hamadouche M, Anract P, et al. Determinants of satisfaction 1 year after total hip arthroplasty: the role of expectations fulfilment. BMC musculoskeletal disorders. 2014;15(1):1-9.
8. Anakwe RE, Jenkins PJ, Moran M. Predicting dissatisfaction after total hip arthroplasty: a study of 850 patients. The Journal of arthroplasty. 2011;26(2):209-13.
9. Harbison GJ, Andrews SN, Nakasone CK. Safety of Single-Stage Bilateral Direct Anterior Approach Total Hip Arthroplasty Performed in All Eligible Patients at a Honolulu Hospital. Hawai'i journal of health & social welfare. 2020;79(3):71.
10. Tang H, Du H, Tang Q, Yang D, Shao H, Zhou Y. Chinese patients' satisfaction with total hip arthroplasty: what is important and dissatisfactory? The Journal of arthroplasty. 2014;29(12):2245-50.

Authors Contribution:
Hina G: Critical revision of the article for important intellectual content
Sadaf A: Data collection
Roohi W: Design of the work
Aymun B: Statistical analysis
Zurriat F: Statistical analysis
Sobia K: Conception of the work

OPEN ACCESS

REVIEW REPORT

Comparison of medial tibial stress syndrome and its severity in regular runners vs treadmill runners

Faiza Shafiq[1], Tayyaba Sultan[1], Khushboo Nadeem[1], Amna Khalid[1], Bisma Mazhar[1]

ABSTRACT

Medial Tibial Stress Syndrome (MTSS) usually known as shin splints is an exercise related overuse injury of lower extremity. It mostly affects athletes and military recruits. The incidence of MTSS is 16-44% in a variety of sports, such as field events and long-distance running. Contributing factors for MTSS are female gender, increased BMI, increased navicular drop, poor running kinematics and previous history of MTSS. Most common symptom in MTTS is pain across the posteromedial border of the tibia which is increased by activity and relieved through rest. It can be reliably diagnosed with a history and clinical examination. MRI and CT scan are used to rule out other conditions which have similar symptoms. The severity of condition is determined through MTSS score. Management of MTSS includes rest, icing, massage, acupuncture, leg braces and modalities; whereas surgery is reserved for refractory cases.

Key Words: bone mineral density, computer tomography, magnetic resonance imaging , medial tibial stress syndrome, runners.

DOI: https://doi.org/10.33897/fujrs.v1i2.224

Introduction:

Distance running is a sport that is enjoyed by people of all ages. It has known cardiovascular benefits. While running, great amount of strain is placed on lower extremity. Due to the repetitive overloading, distance runners can sustain overuse injuries. One of the most common injuries sustained by distance runners is medial tibial stress syndrome also known as shin splints.(1) Shin splints occur in 13-17% of all sports-related injuries and slightly more in aerobic dancers; its prevalence in runners and in military recruits 13.6-35.(2-4) Gender distribution of MTSS is 10.7% of males and 16.8% of females. Posteriorly, the leg is comprised two compartments, one is superficial, and the other is deep. The muscles of superficial group include the gastrocnemius, plantaris and soleus. They are supplied by the branches of the posterior tibial and peroneal arteries, and they are innervated by tibial nerve. Posteriorly crural fascia and anteriorly the deep transverse fascia contain the superficial posterior compartment.(5) The deep posterior compartment is surrounded by posterior surface of tibia, interosseous membrane, and anteriorly posterior surface of fibula and posteriorly by deep transverse fascia that arches between the medial border of tibia and posterior fibular borders.(6)

The muscles of deep posterior compartment include flexor hallucis longus, flexor digitorum longus and tibialis posterior. These muscles receive blood supply from either the peroneal or posterior tibial arteries and are innervated by tibial nerve.(6) MTTS or shin splints is defined as the pain or sensation of discomfort which arises in leg due to continuous running on tough planes or by extreme use of flexors. It is commonly described as a pain induced by repetitive training or exercise.(7) Several factors cause the medial tibial stress syndrome in which lower extremity alignment, life style, decreased bone mineral density and weak tibialis posterior muscle are prone to develop MTSS.(8,9) Medial Tibial Stress Syndrome has complex mechanism of injury, however; the exact etiology is still unknown. Some studies suggest it is either a crural fasciopathy, overload injury of tibia or combination of

Affiliations: [1]Fauji Foundation Hospital
Correspondence: Faiza Shafiq
Email: faizashafiq111@gmail.com
Received: November 3rd 2020; **Revision:** June 11th 2021
Acceptance: June 14th 2021

How to Cite:
Shafiq F, Sultan T, Nadeem K, Khalid A, Mazhar B. Comparison of medial tibial stress syndrome and its severity in regular runners vs treadmill runners. Foundation University Journal of Rehabilitation Sciences. 2021 July;1(2): 58-61.

both. In a retrospective study, biopsies were taken from the painful area of athletes having medial tibial stress syndrome to evaluate the micro-cracks, diffuse micro damage and remodeling, that suggests the collection of unhealed micro damage can be the pathophysiological cause of MTSS. It is characterized by palpable pain and tenderness along the posteromedial border of the tibia.(10)

Generalized symptoms of shin splints include a sudden pinching pain caused by touching the affected area, sometimes followed by swelling of muscle which leads to a difficulty in jogging and occasionally in walking, too.(11) At an early stage, the sensation of ache is usually worst at the beginning of physical activity and gradually decreases during workout and training.

Physical examination and a comprehensive medical history are important for diagnosis of MTSS. Shin Palpation Test (SPT) and Shin Oedema Test (SOT) are the best possible tests that can identify individuals who are at a higher risk of developing MTSS.(12)The main goal for the treatment of MTSS is pain relief and return to daily activities. In an acute stage rest, cryotherapy, electrotherapy and analgesics such as acetaminophen and anti-inflammatory drugs are usually prescribed. This study proposed several conservative means for the treatment of MTSS including extracorporeal shock wave therapy, pneumatic leg braces, heel cord stretching and calf muscles strengthening exercises can be used to treat MTSS.(13) Strengthening of the tibialis anterior muscle and stretching of the calf muscles as well as core stability exercises are often helpful during its sub-acute phase. Hyperbaric Oxygen Therapy is another treatment option, sports compression stockings neuromuscular education including proprioceptive balance training is necessary to prevent the reoccurrence of MTSS.(14)

The prefabricated foot orthoses (left) and flat insole (right) prior to being heat moulded to a participant's foot(15). Facial distortion model is an effective method for pain relief and to restore the exercise tolerance. Other surgical options consist of posterior fasciotomy with and without cauterization of the posteromedial ridge of tibia as it has reduced the pain in athletes by 72% on visual analogue scale. The prognosis of the condition is good. With adequate rest and activity modification, full recovery is expected.(4)

Methods:

The researchers did research on multiple promising articles and studies with regard to various biometric variables and their coalition with the MTSS. Detailed criteria for the diagnosis of MTSS should be illustrated in copious and ample detail in each document to eliminate the causes of stress fracture and ischemia. The articles researched were centered on runners or participants involved in some sports that comprise of and require running. All participants must be asymptomatic at the point of reference. PubMed, Medline and Google Scholar were scoured for articles and literature and only articles and studies from the time period 2000-2020 were considered. Only articles secured with various specified keywords, definitive and satisfactory sample size, sampling technique, and relevance to the MTSS were incorporated.

Discussion:

One of the most common lower leg syndrome that mainly affects runners is medial tibial stress syndrome. Although novice and recreational runners are often affected, this is the narrative review focus on this topic. The researchers have summarized the intrinsic and extrinsic factors for specific preventive strategies include navicular drop, pelvic drop, walking distance and peak hip internal rotation knee flexion. Runners with MTSS have higher values of navicular drop that is a foot indicator comparative to their uninjured peers. Over pronation in running causes compensatory mechanism of abductory twist an early heel lift which increases the load on posterior tibial tendon that promotes overuse injuries.(16) Moreover, during the stance phase of running, higher pelvic drop and lower knee flexion cause the runners to suffer from MTSS that influences other overuse injuries in this group.(3) The muscles responsible for sustaining the arch of the foot cause stress by excessive pronation during motion and increase the maximum voluntary isometric contraction torque of the first metatarsophalangeal joint in plantar flexion, which has been seen among runners with a MTSS history.(17)

Considering the factors analyzed, it should be noted that none of the studies assessed the body mass index despite its high association with the occurrence of injuries in beginner runners. Nielson at all showed that extrinsic factor of MTSS is distance running. Runners were divided into three groups based on their increase or decrease in weekly running distance and found that those expanding their runs had a prevalence rate of >30% for this injury.(18) The fact that a history of previous trauma and injuries and long distance training every week serve as stimulative and affective factors for injuries that collaborate and coincide with these

findings.(19) It was discovered by Loudon and Reiman that the symptoms of MTSS vary in men and woman with higher pelvic drop surveyed and scrutinized in women while running.(20) Because there is an immediate relationship between the biomechanics of running and tendency as well as frequency of injuries, precise and unambiguous training in running routines and techniques should be implemented to cause a decline in the risk factors leading to injuries. There are three consequential points that are considered for recreational and amateur runners, out of which two points are designated to prevention and one for rehabilitation. Biomechanical investigations on running activities can play an important role in ruling out the causes of the injury. By doing particular running activities, running kinematics can be enhanced. To make it more effective, strengthening, and neuromuscular control exercises should be done along with this protocol. The training program must be set in a manner that will slowly recover the patient by managing pain and by inhibit the recurrence of injury.

Conclusion:

Medial Tibial stress syndrome is more common in regular runners as compared to treadmill runners.

Disclaimer: None to report

Conflict of interest: None to report

Funding: None to report

References:

1. Soria A, Coburn JW, Brown LE, Kersey R. Hip Abductor and Adductor Strength and Medial Tibial Stress Syndrome in Collegiate Distance Runners.: 3475 Board# 236 May 30, 800 AM-930 AM. Medicine & Science in Sports & Exercise. 2015;47(5S):943.
2. Sharma BB, Bhardwaj N, Dewan S, Sharma S, Ramachandran P, Kakria HL, et al. Fredericson type III medial tibial stress syndrome (shin splints): a case report. European Journal of Medical Case Reports. 2017;1:126-30.
3. Okunuki T, Koshino Y, Yamanaka M, Tsutsumi K, Igarashi M, Samukawa M, et al. Forefoot and hindfoot kinematics in subjects with medial tibial stress syndrome during walking and running. Journal of Orthopaedic Research®. 2019;37(4):927-32.
4. McClure CJ, Oh R. Medial Tibial Stress Syndrome. StatPearls [Internet]: StatPearls Publishing; 2019.
5. Bisschops JC, Lavallee ME. Anatomy of the Leg. Muscular Injuries in the Posterior Leg: Springer; 2016. p. 3-12.
6. Drake R, Vogl AW, Mitchell AW, Tibbitts R, Richardson P. Gray's Atlas of Anatomy E-Book: Elsevier Health Sciences; 2020.
7. Valderrabano V, Easley M. Foot and ankle sports orthopaedics: Springer; 2017.
8. Chesergon FK. Factors associated with injuries among marathon runners in Eldoret, Kenya. 2017.
9. Reinking MF, Austin TM, Richter RR, Krieger MM. Medial tibial stress syndrome in active individuals: a systematic review and meta-analysis of risk factors. Sports health. 2017;9(3):252-61.
10. Winters M, Burr DB, van der Hoeven H, Condon KW, Bellemans J, Moen MH. Microcrack-associated bone remodeling is rarely observed in biopsies from athletes with medial tibial stress syndrome. Journal of Bone and Mineral Metabolism. 2019;37(3):496-502.
11. Lohrer H, Malliaropoulos N, Korakakis V, Padhiar N. Exercise-induced leg pain in athletes: diagnostic, assessment, and management strategies. The Physician and sportsmedicine. 2019;47(1):47-59.
12. Zimmermann WO, Helmhout P, Beutler A. Prevention and treatment of exercise related leg pain in young soldiers; a review of the literature and current practice in the Dutch Armed Forces. BMJ Military Health. 2017;163(2):94-103.
13. Alfayez SM, Ahmed ML, Alomar AZ. A review article of medial tibial stress syndrome. Journal of Musculoskeletal Surgery and Research. 2017;1(1):2.
14. Rai S, Raman V, Varma R, Mohanty C. Hyperbaric oxygen therapy: An effective conservative treatment in medial tibial stress syndrome. IJOS. 2017;3(1):534-6.
15. Bonanno DR, Murley GS, Munteanu SE, Landorf KB, Menz HB. Effectiveness of foot orthoses for the prevention of lower limb overuse injuries in naval recruits: a randomised controlled trial. British journal of sports medicine. 2018;52(5):298-302.

16. Ross MH, Smith MD, Mellor R, Vicenzino B. Exercise for posterior tibial tendon dysfunction: a systematic review of randomised clinical trials and clinical guidelines. BMJ open sport & exercise medicine. 2018;4(1).

17. Saeki J, Nakamura M, Nakao S, Fujita K, Yanase K, Morishita K, et al. Ankle and toe muscle strength characteristics in runners with a history of medial tibial stress syndrome. Journal of Foot and Ankle Research. 2017;10(1):1-6.

18. Brund RB, Rasmussen S, Kersting UG, Arendt-Nielsen L, Palsson TS. Prediction of running-induced Achilles tendinopathy with pain sensitivity–a 1-year prospective study. Scandinavian journal of pain. 2019;19(1):139-46.

19. Becker J, Nakajima M, Wu WF. Factors Contributing to Medial Tibial Stress Syndrome in Runners: A Prospective Study. Medicine and science in sports and exercise. 2018;50(10):2092-100.

20. Winkelmann ZK, Anderson D, Games KE, Eberman LE. Risk factors for medial tibial stress syndrome in active individuals: an evidence-based review. Journal of athletic training. 2016;51(12):1049-52.

Authors Contribution:
Faiza S: Study concept, Article writing
Tayyab S: Literature review formatting
Khushboo N: Study concept and formatting
Amna K: Study concept and formatting
Bisma M: Study concept and formatting

Manuscript Submission Checklist

- Author Declaration Document
- Ethical Approval
- Complete Manuscript
- Tables
- Figures
- Clinical trial registration number in case of Experimental/Interventional studies

Title page

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

Manuscript Formatting – General Overview

Lower case Calibri font should be used for writing the manuscript, with text size 14 (centralized and bold) for title, 12 (left Indented and bold) for headings and 12 (justified) for body of the manuscript. A spacing of 1.5 should be used between lines of the text, and no extra spacing should be used before or after the para. A 1-inch margin page margin should be used and pages should be numbered using Arabic numerical (1, 2, 3, 4, etc.)

Manuscript Formatting - Tables

Data should be presented clearly and concisely to enable the reader to comprehend easily. Tables should be numbered consecutively in Arabic numerals (i.e. 1, 2, 3, 4 etc.) and cited in the text. The tables should be placed along with the results where they are being stated along with text. Tables should be added/provided in editable format (MS Word). Tables should be centralized with short and self-explanatory legends/title and should be written on top of the table and should be centralized. If any data or table has been included from a published article or source, the source should be properly cited and author should seek proper admissions

Manuscript Formatting - Figures and Photographs

Figures and photographs should clarify and augment the text. The selection of sharp, high-quality illustrations with at least 300 dpi or greater resolution. Internal scale markers. Symbols, arrows, or letters used in photographs for measurements should stand out on the background. Figures should be centralized and legends/titles should be placed below the figure along with detailed explanations, which should also be centralized. Figures/pictures included from a published article or source, should be cited along with proper permission.

Manuscript Formatting - Abbreviations and Units

Except for units of measurement, the first time an abbreviation appears, it should be preceded by the words for which it stands. System International (S.I.) Unit measurement should be used.

Manuscript Formatting - Abstract

An abstract should briefly state the objective, time and location of the study, basic procedures, main findings and principal conclusions. Mention the clinical trial number after the abstract in case of randomized controlled trials. Do not use references in abstracts. Structure of an abstract should be in accordance to the article type:

Structured Abstracts (Original Research, Systematic Reviews & Meta-Analysis):

Word Count: 250 words

A structured abstract should consist of four paragraphs, under the following headings: objective, methods, results and conclusion.

Unstructured Abstracts (Case reports, case series, narrative reviews, and special communications):

Word Count: 150 words

An unstructured abstract should follow a logical sequence but does not require headings to be mentioned.

Manuscript Formatting - Body of the manuscript

Body of the manuscript should contain Introduction, Methods, Results, Discussion and Conclusion. Other additional information included should be Acknowledgement, Disclaimer, Conflict of Interest, and Grants & Funding Disclosure.

Methods should constitute of ethical review statement, study design, description of selection of the observational or experimental subjects such as randomization protocol and Inclusion and exclusion criteria, Study setting and duration, Sample size calculation and justification with references, Follow-up period, outcome measurement tool and data collection procedures, and statistical procedures applied for data analysis.

Present the results in a logical sequence in the text, tables and illustrations and do not repeat all the data of the tables or illustrations in the text. Emphasize or summarize important observations. Frequencies and percentages both should be mentioned. Exact p values

should be reported and decimal figures should be presented up to 2 decimals only.

Discussion should begin with a summary of the main results which are then discussed with results of previously published relevant studies. Any new findings of the research should be emphasized and the relevance should be stated. Limitations of the study should be stated at the end of the discussion in a separate paragraph.

Conclusion should be a brief summary of the study. Neither state any findings which have not been presented in the results, nor do state any benefits which have not been studied.

Authors are strongly encouraged to refer to the scientific reporting guidelines for health research, hosted by the EQUATOR Network as mentioned below.

Study Design	Checklist
Observational Studies in Epidemiology(cohort, case-control, and cross-sectional studies)	STROBE
Case Reports	CARE
Randomized Control Trials	CONSORT
Non-Randomized Controlled Trials	TREND
Diagnostic Accuracy Studies	STARD
Reliability and Agreement Studies	GRRAS
Systematic Reviews and Meta -Analyses	PRISMA
Meta-Analysis of Observational Studies	MOOSE
Qualitative Research Studies	SRQR
Qualitative Research (focus groups and interviews)	COREQ

Manuscript Formatting according to article category

Manuscript Type	Abstract Structure	Abstract Word Count	Maximum Authors*	Word Count	Number of References	Total tables and Figures
Case Report/ Case Series	Unstructured	150	6	1,250	10	3
Letter to the Editor	N/A	N/A	3	500	5	1
Systematic Review and Meta-Analysis	Structured	250	6	4,000	50	5
Original Article	Structured	250	6	3,000	35	4
Special Communication	Unstructured	150	6	3,000	30	4
Narrative Review	Unstructured	150	6	4,000	40	5

*additional authors need to be justified with details of authorship criteria and contributorship

Acknowledgement

Contributors who do not meet the ICMJE criteria for authorship, but helped in the study, may be listed in the acknowledgement section. These may be named and their function or contribution should be defined. Authors are responsible for obtaining written permission from person acknowledged by name.

Disclaimer

Nonmonetary disclosures regarding being part of a thesis or dissertation, a pilot project or an ongoing study should be made explicitly at the time of submission.

Conflict of Interest

Conflict of interest should be clearly stated by all authors. This may include grants or honorarium, credits and promotions, memberships or any personal or professional relationships which may appear to influence the manuscript. Such competing interests are not unethical but should be declared.

If there are no conflict of interests, authors should still include this in the manuscript and write "none to declare" or "Authors declared no conflict of interest".

Grants and Funding

Any organization, university, governmental organization, company or institution that has financially contributed to the study must be acknowledged.

Patient Consent

Authors should explicitly state that the consent of the patient/guardian was taken prior to the inclusion of participants in the study.

References

References should be mentioned at the end of the manuscript and must be listed in the Vancouver Style. All references should be numbered sequentially in the text and listed in the same numerical order in the reference section.

The Journal follows Index Medicus style for references and abbreviated journal names according to the list of Journals indexed in Index Medicus: http://www.ncbi.nlm.nih.gov/nlmcatalog/. Authors may use the NLM guide which gives details regarding each citation: http://www.ncbi.nlm.nih.gov/ books/NBK7256/ .

Journals Published by FUI

1. Foundation University Medical Journal (FUMJ) - ISSN 2312-6531
2. Foundation University Journal of Business & Economics (FUJBE) - ISSN-P: 2414-4770; ISSN-E: 2519-0172 (HEC Recognized - "Y" Category)
3. Foundation University Journal of Psychology (FUJP) - ISSN-P: 2519-710X; ISSN-E: 2520-4343 (HEC Recognized - "Y" Category)
4. Foundation University Journal of Engineering & Applied Sciences (FUJEAS) - ISSN 2706-7351
5. Foundation University Journal of Rehabilitation Sciences (FUJRS) - ISSN 2709-5134
6. Foundation University Journal of Dentistry (FUJD) ISSN P: 2710-0545

Foundation University Islamabad Campus
Defense Avenue, DHA Phase I, Islamabad, Pakistan
Website: fujrs.fui.edu.pk; Email: fujrs@fui.edu.pk
UAN: 0092-111-384-111

FUJRS