

Frequency of Migraine and its Association with Physical Activity in University Students of Islamabad and Rawalpindi

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ABSTRACT

Background: Migraine is a primary headache disorder with a worldwide prevalence rate of 14.7%. The person might feel moderate or severe intensity pain that is pulsating in nature, usually on one side and it is aggravated by routine physical activity, with duration of hours to days.

Objective: To determine the frequency of migraine among university students and determine their level of physical activity and to find out the association between migraine and physical activity.

Methodology: This cross-sectional survey was conducted, in university students of twin cities of Pakistan (Rawalpindi and Islamabad) from February 2021 to July 2021. A total of 377 participants of either gender were selected through non probability convenient sampling technique on the basis of inclusion criteria of age 18-25 years. Participants with any diagnosed medical health problem, cervicogenic headache, and musculoskeletal disorders were excluded from the study. A self-structured questionnaire was used to obtain demographics; two standard questionnaires; Migraine screening questionnaire and Activity Questionnaire for Adults and Adolescents were used to identify the frequency of migraine and level of physical activity of the participants. Data was analyzed by using SPSS software version 26.

Results: The mean age of the participants was 21.10 ± 1.96 . Out of 377 participants, 78 (20.7%) were males and 299 (79.3%) were females. The overall frequency of migraine was 34% and 41% of participants reported to be involved in light intensity physical activity in twin cities. A significant association was found between migraine and physical activity with p value < 0.01.

Conclusion: The study results conclude that frequency of migraine is low among university students and majority of the participants are found to have a sedentary lifestyle. Significant association is found between migraine and physical activity.

Key words: Adults, Migraine, Physical Activity, Prevalence, Sedentary lifestyle

Introduction

According to World Health Organization (WHO) migraine is a primary headache disorder which most often begins at puberty and mostly affects those aged between 35 and 45 years.¹ Migraine is recurrent, often life-long, and characterized by recurring attacks.² During these attacks, the victim might feel headache which is of moderate or severe intensity. ² Headache is usually one-sided, pulsating in quality,

aggravated by routine physical activity, with duration of few hours to 2-3 days.² Globally Migraine has a prevalence of 14.7% with a prevalence rate of 52.3% among university students in Pakistan. ^{3,4} In the Global Burden of Disease Study in 2010 migraine was ranked as the second most disabling disorder in the world. ⁵

Migraine can occur due to several reasons, like

migraine triggers passed down to one by their parents' genes⁽⁶⁾ Fatigue, bright lights, diet, weather changes, sinusitis, flu can all be the causes of migraine^{5, 7} Women are three times more likely to have migraine than men⁸ Stress also contributes to the disorder as brain releases chemicals that can cause blood vessel changes leading to migraine⁹ Migraine reduces the work rate productivity in university students and disturb sleeping patterns hence leading to long term co-morbidities¹⁰ It also disturbs the academic performance of university students' and reduces their overall quality of life⁽¹¹⁾

Some studies suggested that physical activity serves as a trigger for migraine while the other studies showed that more physically active individuals showed less frequency of migraine¹² Multiple studies suggested that physical activity can help release stress which is a common trigger for migraine.⁸ Exercise also releases hormones that can help a person feel better.¹³ Migraine sometimes can also show negative response to exercise causing exercise induced migraine and because of this fear majority people do not prefer to do any physical activity.¹⁴ Although the association between migraine and physical activity is unclear, Rule of thumb states that never exercise during a migraine as it can worsen the pain.

In addition, most studies on the association between physical activity and primary headaches are from western nations and no study examined this association in Pakistan. People in this region usually have low physical activity and also the prevalence of primary headaches is estimated to be high among the Asian population. Therefore, the main objective of this study was to determine the prevalence of migraine among university students and determine their level of physical activity. The study also aimed to investigate the association between migraine and levels of physical activity.

Methodology

It was a cross sectional survey conducted for a time period of six months, from February 2021 to July 2021, on university students of twin cities of Pakistan in departments of Shifa Tameer-e-millet University, Islamabad Pakistan. Ethical approval was obtained from Institutional review board of Shifa International Hospital. Sample size was 377 participants calculated by using Rao software with confidence interval of 95 percent and response rate of 50 percent along with 5 percent margin of error. Non probability convenient sampling technique was used and participants were selected on the basis of inclusion and exclusion criteria. In this study participants of either gender with age range 18-25 were included and participants with any history of medical and surgical problems, neurological disorders and musculoskeletal deformities were excluded from the study.

Self-structured questionnaire along with two standard questionnaires were filled by university students with an attached informed consent. MS-Q, was used to determine prevalence of migraine. It is a valid tool with sensitivity and specificity of 0.80 consisting of 5 questions asking about migraine like headache, duration of pain, intensity of pain, whether the pain is affected by noise or light and if the pain limits any physical activity or intellectual ability. A score of less than 4 is graded as no migraine whereas a score of 4 and above 4 out of 5 are graded as migraine headaches.¹⁵

Activity Questionnaire for Adults and Adolescents (AQuAA) was used to find out level of physical activity among participants. It consists of 5 components including activities performed in the past 7 days, how much the participants were engaged in these activities per day and if applicable what was the intensity of these activities. It has reliability ranging from 0.30 to 0.59.¹⁶ AQuAA is interpreted using standard Metabolic equivalent of tasks scores (METs) for each task provided by Ainsworth.¹⁷

Frequency and percentages were calculated for qualitative variables and mean and standard deviation were calculated for quantitative variables. To find out the association between migraine and physical activity Chi-square test was applied. The data analysis was done by using IBM SPSS 26.

Results

A total of 377 participants were included in the study out of which 299 (79.30%) were female and 78 (20.70%) were male. Mean age of participants was 21.10 ± 1.96 . Majority of the participants reported no limitation of physical or intellectual activities because of migraine. Only 16.9% participants reported intake of migraine medication in their life (Table I).

Frequency of migraine was 34% among university students (Table I). Majority of the participants had sedentary lifestyle (Table II). P value was found to be less than <0.05 which showed a significant association between migraine and physical activity.

Table I: Frequency and Percentages of Demographics

Demographics	Responses	N(%)
History of headache limiting physical or intellectual activities	Yes	259 (68.7%)
	No	118 (31.3%)
History of frequent or intense headache	Yes	183 (48.5%)
	No	194 (51.5%)
Medication of migraine	Yes	64 (16.9%)
	No	313 (83%)

Table II: Association between Migraine and Physical activity			
Outcome Variable	Responses	N (%)	P Value
Migraine screening questionnaire	Yes	130 (34%)	P<0.01
	No	247 (66%)	
Activity questionnaire for adolescents and adults	Sedentary	185 (49%)	
	Light intensity	151 (41%)	
	Moderate intensity	34 (9%)	
	Vigorous intensity	7 (2%)	

Discussion

Migraine is found to be only 34% prevalent in university students of twin cities of Pakistan and majority (49%) of the young adults is having sedentary lifestyle. This study also determined significant association between migraine and physical activity. A survey conducted by Mohammad Zahid in 2014 to estimate the prevalence of migraine in university students of Khyber Pakhunkhwa population and it was found to be around 30% in students similar to our study results.¹⁸

A review study by Faisal Mohammad Amin was conducted in 2018 on migraine and physical activity and results showed a significant association between them. It was also concluded that although migraine attacks can be triggered by exercise but regular exercise may have a prophylactic effect on migraine.¹⁸ Results of this study favored our study results that also showed significant association of migraine and physical activity among young adults.¹⁹

The present study investigated the frequency of migraine in university students of twin cities of Pakistan. Further the data was used to find the association between migraine and physical activity. Winter et al conducted a study in 2011 on potential relationship between many lifestyle factors and migraine. This study included 7417 individuals. The results showed no association between risk of developing migraine attacks and level of physical activity.²⁰ Results of this study are contrary to our study results because of difference in age of participants, use of updated tool since 2011.

Varkey Hagen carried out a study in 2008 on migraine and physical activity. The group of participants selected for this study clearly reported that lower levels of activity were constantly associated with higher levels of migraine.²¹ which is coherent with findings of our research. The study results also showed that physical activity can be used as an effective treatment strategy for migraine as it shows a significant association between migraine and physical activity.

Another study was performed by D.G Rogers in 2020. The aim of this study was to objectively measure physical activity in migraine as a function of headache activity. A total of 516 observations were recorded. This was a prospective cohort study and was also performed on university students. The results concluded that individuals suffering from migraine showed lower levels of physical activity.²¹ This study favored our results and showed a significant association between migraine and physical activity levels.

A study was carried out by Farris S.G in 2019 on avoidance of physical activity in women with probable migraine. Another aim was also to find out association between exercises and migraine. The results concluded that in women; only physical activity can prove to be harmful because of a common believe that vigorous physical activity will trigger a migraine attack. but, Planned physical activities i.e. exercise can prove to be beneficial if a multidisciplinary approach is used with a psychologist guiding the participant on each step.²² The study results showed significant association between migraine and effects of migraine on daily levels of physical activity which are in favor of our study results.

Conclusion

This study concludes that migraine is relatively common among young adults of twin cities of Pakistan. Majority of the young adults do have a sedentary lifestyle and significant association between migraine and levels of physical activity is observed among them

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