

Gender-based difference in quality of life of Migraine sufferers: A Cross-Sectional Study

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Abstract

Objective: To assess gender-based differences in quality of life among individuals with migraines.

Methods: This is a cross-sectional study, that took place at the Ibn-e-Seena Hospital and Fazaia Ruth Pfau Medical College and its affiliated teaching hospital of Karachi, from Aug 2023 to Jan 2024, in which a total of 200 patients enrolled who met the ICHD-3 proposed migraine criteria through convenient sampling. Every individual was administered the MIDAS (Migraine Disability Assessment Questionnaire) questionnaire to estimate the effects of migraines on their routine activity SPSS 22 version was used for data feeding and analysis. The results of qualitative/categorical variables were given in numbers and percentages and for quantitative variables in Mean \pm S.D. A statistically significant p-value was considered as <0.05

Results: 200 participants who were enrolled in this study were with an average age of 22.7 ± 8.62 years with 65.5% being female. Among the participants, the majority (40.5%) fell into the 15-24 years of age, followed by 32% in the 25-34 years of age group. Among the participants, a MIDAS Grade score of 0–5, was achieved by 4 males and two females, indicating minimal to no disability. A MIDAS Grade score of 6–10 was achieved by 16 males and 34 females, indicating mild disability. Out of those with a MIDAS Grade score of 11–20, 29 and 51 were male and female respectively, signifying a moderate level of disability. A score of 21 or higher in MIDAS Grade, was scored by 20 males and 43 females, reflecting a more severe degree of disability. Overall data shows that disability scores get worse after 35 years of age.

Conclusion: It was concluded that females were more prone to suffer from migraine as compared to males. Migraines can indeed affect the quality of life irrespective of gender, although, males show increased disability with increasing age.

Keywords: Migraine, MIDAS Grade score, gender, quality of life

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Introduction

Headache disorders are prevalent complaints, and despite their disabling nature, they often go unnoticed and undertreated on a global scale¹. The worldwide Burden of different Disease study in 2000 surveyed various diseases, including migraine, and identified it as the 19th principal etiology of

disability throughout world, resulting all years lost to disability of 1.4%². A significant outcome of the Global Burden of Disease study in 2010 was its enhanced information, allowing the inclusion of stress related headache (TTH) alongside migraine. This updated survey revealed that migraine was positioned as the 7th premier exact cause of disability, accountable for all YLDs of 2.7% globally^{3,4}. Migraines stand as one of the most prevalent neurological conditions, and various types of headaches, particularly chronic migraines, contribute significantly to significant disabilities. Migraine represents a prevalent and incapacitating disorder on a global scale. Its classification hinges on the monthly frequency of

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attacks, leading to the distinctions of episodic migraine (EM) or chronic migraine (CM). This migraine incidence reaches its highest point initially around the age of 35, affecting approximately 25–30% of women and 8% of men⁵. A second peak is observed around the age of 50, followed by a decline in prevalence with advancing age⁵. In the elderly population, migraines occur less frequently compared to young individuals; however, secondary headaches are more prevalent. The reduction in migraine episodes is proportionate to the age, commencing during the sixth decade with additional diminishing afterward till the age of 75. Despite this, there is still a reported occurrence of new-onset migraines in 0.5% of the population after the age of 65⁶. The project of American Migraine Prevalence and Prevention (AMPP) indicated a collective lifetime incidence of migraine in both female and males upto 43% and 18% respectively⁷. However, more recent data suggest a slightly lower rate, with the risk of experiencing migraines being 3.25 times more prevalent in females compared to male^{5,8}. Gender may play a significant role in shaping the experiences, symptoms, and impact of migraines on individuals. Although chronic migraine (CM) places a substantial burden, a comprehensive measurement of this burden is still lacking. One method for assessing the impact of the disease focuses on quality of life-related to health (HRQoL). HRQoL is a part of general life quality, including an individual fitness status, efficient well-being, along with general sense of wellness. Another approach to estimate the disability is, evaluation of impact of headache Disability assessment that gauge the confinement in responsibility functioning, indicating a decrease capacity to fulfill specific tasks⁹. The MIDAS (Migraine Disability Assessment) score stands out as the most reportedly used disability tool in migraine studies¹⁰. It is comprised of five components which specifically inquire about time lost in three areas: school activities or at work, house chores and routine work, and family, social, or free time activities¹⁰. A recent population-based study suggests that disability measures may be more adept at capturing the most severe manifestations of headaches compared to Health-Related Quality of Life¹¹.

It's fascinating to hear about these research initiatives within the Mediterranean eastern region, particularly in Pakistan or KSA. The lack of comprehensive local data regarding headache disorders in Pakistan, despite its substantial affected population, underscores the importance of such investigations or surveys. Understanding the prevalence and impact of these disorders can significantly contribute to improving healthcare services and management strategies. Absolutely, conducting population-based studies in developing countries presents unique challenges, including inadequate financial support and the huge rural dwelling populations that cause structured data gathering a challenge. Additionally, the relatively insignificant profile of headache disorders as compared to other ailments may lead to a lack of prioritization in research efforts and funding allocation. Addressing these barriers is crucial for advancing our understanding of headache disorders and implementing effective healthcare interventions in these regions. Collaboration between researchers, healthcare organizations, and policymakers could help overcome these challenges and promote comprehensive studies that benefit public health initiatives. The intersection of high poverty levels and low literacy rates in Pakistan indeed adds another layer of complexity to the understanding and management of headache disorders. With economic challenges and limited education converge, individuals may be less inclined to seek medical assistance for their headaches, encountering obstacles such as financial constraints, lack of awareness, or cultural norms.

This scenario often results in a significant underreporting of headache-related disability, creating an incomplete assessment of the public health impact of these disorders. Concealing the true burden of headache disorders impedes the development of targeted interventions, appropriate healthcare policies, and the allocation of resources necessary to address the specific needs of this demographic data. Efforts aimed at raising awareness, enhancing healthcare accessibility, and implementing community-based education initiatives play a pivotal role in tackling these challenges. Collabora-

tive endeavors involving healthcare professionals, community leaders, and public health organizations are essential for overcoming barriers and fostering improved health outcomes within the realm of headache disorders.

The main objective of the current research is to investigate how gender influences the quality of life among individuals suffering from migraines. This study suggests an interest in investigating potential variations between male and female migraine sufferers. Investigating gender differences in quality of life is relevant to both clinical practice and public health, potentially informing more tailored and effective interventions. This study contributes to advancing our understanding of migraine and informs healthcare providers and policymakers regarding the importance of taking into account gender-related influences in the management and care of migraine sufferers.

Methodology:

This cross-sectional research work was carried out from Aug 2023 to Jan 2024, subsequent to receiving approval from the hospital's ethical committee. As per information, retrieved/gathered from different research studies on the topic "Migraine" the prevalence is around 14%¹². We used WHO sample size calculator 1.1 by taking a 95% confidence level and 5% absolute precision and got a minimum sample size of 186 patients. To keep ourselves precise in getting results we added a 10% Non-responsive respondents' margin in our sample size and got a sample size of around 200. With a response rate of 100 %, A total of 200 participants who fulfilled the ICHD-3 criterion of migraine and predetermined inclusion criteria were actively recruited for participation through convenient sampling from the outpatient departments of the Ibn-e-Seena Hospital and Fazaia Ruth Pfau Medical College and its affiliated teaching hospitals of Karachi. Each participant underwent thorough physical and clinical evaluations by Neurologists to ensure a comprehensive assessment. Subsequently, every individual was administered the Migraine Disability Assessment questionnaire to gauge the effect of migraines on their routine activity. Based on their responses,

participants were categorized into different MIDAS grades, providing insights into the severity of their condition. Data collection was facilitated through the utilization of a meticulously designed questionnaire tailored to capture pertinent information.

Inclusion criteria were participants with confirmed migraine disorder, according to ICHD-3 (the third edition of the International Classification of Headache Disorders). Participants of 18- 65 years of age and both male and female participants. Exclusion criteria were individuals with other primary headache disorders other than migraines, including participants with significant affective disorders (including severe depression, GAD, and bipolar disorder to meet ICHD-3 criteria) or medical neurological disorders that can result in secondary headaches (e.g., epilepsy), women who will be pregnant or in the immediate postpartum, participants with significant cognitive impairment or dementia.

Statistical software SPSS version 22 & excel version 16 were applied for data recording for further analysis. The outcomes were specified in numbers, percentages for categorical variables (like gender, and age, diabetes, hypertension, smoking, obesity, intensity of headache, disability related to migraine, etc.) and for quantitative variables (age, gender, days lost, reduced productivity and Midas score) in Mean \pm S.D. Chi-square, the fisher's exact test was used to show the relationship of qualitative variables with gender while Student t-test was used for quantitative variables with gender. A statistically significant. p-value was taken as <0.05

Results

With a response rate of 100%, a total of 200 migraine patients enrolled in this project, with a mean age of 22.7 ± 8.62 years. This study primarily consisted of female participants, with 69 (34.5%) being male and 131 (65.5%) being female. The average age for female patients was 23.3 ± 8.69 years, while male patients had an average age of 21.7 ± 8.45 year. Among our study participants, the population preponderance (81 or 40.5%) belonged to the 15-24 years of age group. In contrast, individuals aged over 35 accounted for 20 patients, representing 10.0% of the study population (Table 1).

MIDAS grading results are presented in Table 2. A total of 50 patients obtained a MIDAS Grade score of 6–10, comprising 16 males and 34 females, indicating mild disability. For those with a MIDAS Grade score of 11–20, totaling 81 patients, 29 were male and 51 were female, signifying moderate disability. Additionally, 63 patients scored 21 or higher on MIDAS Grade, with 20 males and 43 females, reflecting severe disability. The reason for more patients with moderate to severe disability scores is, as a poor economic country with a low social background, the majority of the Pakistani population prefers self-prescribed medication for most of their medical issues and migraine is one of those conditions. When a time comes, where migraine severity gets worse and affects their routine life severely due to which, they go for a consultation with a physician. Cross tabulation of age and gender with MIDAS grades showed high disability score in both genders but with significantly high in females with a P-value of (0.004). Data further showed that male has worsening of disability scores after 35 years of age. (Table 3)

The readings of visual analogue scale for headache severity assessment remained almost constant with a variation between 7.64- 9 out of 10 in all patients visiting OPD for consultation. It was a general observation in our study that none of the patients took prophylactic treatment properly for an adequate period of time while the treatment of acute attacks was either insufficient in dose or late during the course of treatment.

While considering other co-morbid associated with migraine, participants with psychiatric co-morbidities were excluded to be more accurate with diagnosis of migraine, according to ICHD-3 criteria and to avoid confounder effects of these co-morbid on quality of life. Very few numbers of participants are observed to have risk factors including obesity (1%), smoking (3.5%), hypertension (4%) and diabetes (2%).

Table 1: Distribution of patients based on age group

| Age groups in Years | Men n(%) | Women n(%) | Total n(%) |
|---------------------|------------|-------------|-------------|
| < 15 | 17 (48.5) | 18 (51.4.7) | 35 (17.5) |
| 15-24 | 26 (32.1) | 55 (67.9) | 81 (40.5) |
| 25-34 | 21 (32.8) | 43 (67.1) | 64 (32.0) |
| 35+ | 5 (25.0) | 15 (75.0) | 20 (10.0) |
| total | 69 (34.5) | 131 (65.5) | 200 (100) |
| Mean + S.D | 21.7+ 8.45 | 23.3 + 8.69 | 22.7 + 8.62 |

Table 2: Distribution of patients' disability scores on the basis of MIDAS Grade in both genders.

| Grade of MIDAS scale | Range of MIDAS Score | Definition of MIDAS Grade | Men | Women | Total | P-Value |
|----------------------|----------------------|---------------------------|-----|-------|-------|---------|
| I | <5 | Little or No Disability | 4 | 2 | 6 | 0.045 |
| II | 6 - 10 | Mild Disability | 16 | 34 | 50 | 0.01 |
| III | 11 - 20 | Moderate Disability | 29 | 51 | 81 | 0.0001 |
| IV | >21 | Severe Disability | 20 | 43 | 63 | 0.01 |
| Total | | | 69 | 131 | 200 | 0.0001 |

Table 3: Cross tabulation of age and gender with MIDAS grades

| Age (Years) | MIDAS Score (Average) | | p-value |
|--------------|-----------------------|-------------|---------|
| | Male | Female | |
| Age Under 15 | 10.4 | 16.7 | 0.004 |
| Age 15 – 24 | 20.1 | 19 | |
| Age 25 – 34 | 17.6 | 17.6 | |
| Age 35+ | 31.8 | 20 | |
| Mean ± SD | 11.9 ± 11.4 | 18.3 ± 11.1 | |

Discussion

The 2015 Global Disease Burden study ranked migraine as the fourth highest contributor to years lived with disability (YLD) for females and on eighth for male⁸. This highlights the disability attributed to the migraine, is influenced by gender-based factors. Migraine is a neurological disorder characterized by recurrent headaches that can be severe and debilitating. In Pakistan, as in other parts of the world, migraine can lead to decreased productivity, impaired quality of life, and increased healthcare utilization^{13,14}. However, due to cultural and socioeconomic factors, individuals in Pakistan may face ad-

ditional challenges in accessing appropriate healthcare and managing their migraine symptoms effectively. The current project was carried out to evaluate gender-based differences in the quality of life among individuals with migraines. In the present study, 34.5% of the patients were male, while 65.5% were female, indicating a predominance of females in this study.

Women exhibit a 1.34 times higher likelihood as compared to men (12.4% and 9.3% for women and men respectively) in reporting disability of grade-IV attributable to migraines within the previous 3 months, as assessed by the Migraine Disability Assessment (MIDAS) scores⁸. Our study was supported by the previous literature in which it was stated that the American Migraine Prevalence and Prevention (AMPP) study documented a collective frequency of lifetime occurrence of migraine at 43% and 18% for women and men respectively⁷. However, more recent data suggest a slightly lower rate, with the tendency of migraine being 3.25 times more prevalent for women compared to men^{5,15}. Another study conducted by AynurÖzge et al¹⁶, also supported our study finding in which 81.7% patients with migraine were female and 18.3% were male. Female sex hormones, particularly estrogen and progesterone, play a significant role in modulating various physiological processes, including those related to migraine onset. Migraine headaches are often influenced by hormonal fluctuations and many women experience changes in the frequency and severity of migraines during different stages of their menstrual cycle. Estrogen, in particular, has been implicated in migraine Pathophysiology. Fluctuations in estrogen levels, such as those that occur during the menstrual cycle, pregnancy, and menopause, can influence the susceptibility to migraines. So, all these statements supported our study finding in which greater number of female patients were suffering from migraine. The occurrence of migraines in the Italian population is approximated at 33% among women and 13% among men⁵. According to a recently held nationwide analysis carried out on Italian pharmacies, the prevalence of "definite migraine" was reported to be 43%, with a female-to-male ratio of 4.9:1¹⁷. The re-

sults of these surveys indicate that the occurrence of migraines in the overall population is significantly higher than what is reflected in public healthcare databases. This discrepancy can be credited to the fact that a considerable number of individuals experiencing migraines opt for self-medication instead of seeking diagnosis and treatment from headache specialists.

A number of studies also stated that there is no gender difference regarding migraine. Bolay reported that the prevalence of high-frequency migraine (more than 10 migraine days per month) is more prevalent in men than in women, with rates of 16.7% and 14.9%, respectively^{8,18}.

Migraines can affect individuals of various age groups, from children to older adults. In our study, different percentage of patients were affected by migraine in different age group. Most of the patients with migraine were belong to the age group of 15-24 year. Out of these 81 (40.5%) patients, 55 (67.9%) were female and 26 (32.1%) were male, followed by age group ranging from 25 to 34year. Migraines are often associated with a peak prevalence in individuals between the ages of 30 and 39, with prevalence decreasing in older age groups¹⁹. This statement supported our study finding. A study conducted in the United States revealed that within the age group of 50–59 years, the estimated prevalence of chronic migraine (CM) was 1.33% for women and 0.59% for men²⁰. As individuals crossed the age of 60, these proportions decreased to 0.56% (range: 0.41–0.76) for women and 0.26% (range: 0.15–0.44) for men. In contrast, when considering adjusted prevalence rates within a migraine-affected population, the figures for females were reported as 7.19% (range: 5.34–9.68) in the 50–59 years age group and 8.37% (range: 6.17–11.38) for those older than 60 years. For males, the corresponding figures were 9.80% (range: 6.02–16.03) and 11.70% (range: 7.14–19.29), respectively²⁰.

The Migraine Disability Assessment (MIDAS) questionnaire is an instrument used to evaluate the effect of migraines on an individual's everyday life and routine activity. It helps in categorizing the severity of migraine-related disability. As shown in the

study results that among the participants, 6 individuals, including 4 males and 2 females, achieved a MIDAS Grade score of 0–5, indicating minimal to no disability. Another 50 patients, consisting of 16 males and 34 females, acquired a MIDAS Grade score of 6–10, suggesting mild disability. In the category of MIDAS Grade scores ranging from 11 to 20, a total of 81 patients, out of participants, with 29 being male and 51 females, indicating a moderate level of disability. Furthermore, 63 patients scored 21 or higher in MIDAS Grade, with 20 males and 43 females, reflecting a higher degree of disability categorized as severe. These findings are consistent with findings of Munvaret al¹³. noted migraine disability in Malaysian women as severe, in grade III and IV.

It's important to note that while the MIDAS questionnaire is a valuable tool, it is just one aspect of assessing migraines. Healthcare professionals also consider other factors such as frequency, duration, and intensity of migraine attacks, along with the individual's general well-being including medical issues, when considering the most suitable treatment strategy. These grades can provide insights into the level of disability a person experiences due to migraines. Generally, as the MIDAS grade increases from I to IV, there is a corresponding increase in the severity of disability and disruption of daily activities²¹. The relationship between MIDAS grades and quality of life is evident in the sense that higher MIDAS grades often indicate a more significant negative impact on an individual's quality of life²²⁻²⁴.

The visual analogue scale for migraine severity remains steady in between 7.74 to 9 out of 10 in all patients visiting OPD for consultation. These findings were consistent with Stewart et al who reported a score of 7.3 for headache severity²⁴.

As in other studies, there are a number of factors that explain the low adherence to anti-migraine prophylactic treatment in low socio-economical conditions including financial constraints, poor health system, lack of awareness of diagnosis, side effects of medicines, and lack of response of medicines. This poor adherence to treatment needs proper follow up studies to rightly identify causative factors and is beyond the scope of this single en

counter study²⁶. The effects of other medical problems as risk factors on the occurrence of migraine and associated disability required more extensive data and workup.

Conclusion

It was concluded that there is a general trend of higher migraine prevalence in females, however, migraines can affect individuals of any gender. Migraines can indeed affect the quality of life irrespective of gender. While it's true that migraines are more prevalent in females, both men and women can experience significant disruptions to their daily lives due to migraines with increasing age.

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