Severity and Quality of Life of Migraine among Patients on Migraine Prophylactic Medications: A Cross Sectional Study at King Abdulaziz University Hospital, Jeddah

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Abstract

Background: Migraine was found to impact the patients' quality of life, resulting in significant disability. Objectives: To assess the quality of life (QoL) of migraine patients on migraine prophylactic medications at King Abdulaziz University Hospital, Jeddah, Kingdom of Saudi Arabia.

Methods: A cross-sectional study was conducted and data were collected through patient interviews and from hospital records. A questionnaire was used to collect demographic data, patient medical history related to migraine and a Migraine Specific Quality of Life Questionnaire (MSQ) was used to assess QoL. A Migraine Disability Assessment Score (MIDAS) was used to assess the number of days patients missed or lost productivity and any migraine related disability.

Results: 64.2% of respondents had been diagnosed with migraine for more than 5 years, and 35.8% were diagnosed between the ages of 18 and 29. 5.7% were using a prophylactic supplement or herb, while the majority (56.6%) were not on any current prophylactic. About 45.3% and 26.4% respectively, had little or no disability and mild disability while 15.1% and 13.2% of the study group, respectively, had moderate and severe disabilities. Participants taking Ketamine and having only one attack per month had significantly higher mean MSQ scores, suggesting a higher quality of life. Whereas, participants taking Topamax and having only one attack monthly had a much higher proportion of those who had little or no disability.

Conclusion: 15.1% and 13.2% of the participants had moderate and severe migraine disability. To give appropriate migraine headache management, a comprehensive examination must be performed, including a focus on mental health, well-being, and real-life effects on the patient.

Keywords: QoL, migraine, severity, prophylactic, medications, KAUH

Introduction

Migraine is a neurological disorder that is considered to be the third most common cause of disability among individuals below the age of 50. According to the 2015 global burden of disease report, 14.7% of people worldwide suffer from migraines (1,2). In Saudi Arabia (SA), a survey of 4,943 people revealed that 1,333 (26.77%) had migraines, with a male to female ratio of 1: 2.9. (3).

Migraines are distinguished by recurring headaches commonly accompanied by nauseousness, vomiting, photophobia, and phonophobia (1). According to the number of headache days per month, migraine is either chronic or episodic according to an international categorization of headache diseases (4).

Previous research demonstrated that migraine is frequently associated with disability and a reduced quality of life (QoL), as well as interference with work-related productivity and occasionally sleep (1). Preventive treatments for episodic migraine can lessen the frequency and intensity of attacks as well as potentially enhance the quality of life for people who suffer from migraines (5).

Despite this heavy burden and the availability of efficient and safe medications, migraine is nevertheless underdiagnosed and undertreated (antimigraine). Although there are a variety of drugs used to prevent migraines, including b-blockers, calcium channel blockers, and anticonvulsants, most patients have to test a variety of drug classes before finding the right one for them(6,7).

Finding the best preventive medication is a useful migraine prevention technique. Local research is scarce in KSA, therefore, the aim of this study was to measure the quality of life among patients at King Abdulaziz University Hospital, Jeddah, SA who had been diagnosed with migraine and who were taking migraine prophylactics.

Subjects and Methods

Study design, setting and time frame: A cross-sectional study was completed at King Abdulaziz University Hospital Jeddah, SA from February to May 2022.

Study participants: The data of patients diagnosed with migraine was collected through patient interviews and hospital records.

Study instrument: A validated questionnaire was used that had 4 sections. The first section consisted of demographic data. The second section was designed to ask about a patient's medical history related to migraine. The third section was the Migraine Specific Quality of Life Questionnaire (MSQ), version 2.1. The (MSQ) is a 14-item questionnaire that is designed to measure how migraines affect and/or limit daily functioning. Participants respond to items using a 6-point scale: "none of the time," "a little bit of the time," "some of the time," "a good bit of the time," "most of the time," and "all of the time," which are assigned

scores of 1 to 6, respectively. Raw dimension scores were computed as a sum of item responses and rescaled from a 0 to 100 scale such that higher scores indicate a better quality of life. Multiple studies have demonstrated good reliability and validity of the MSQ in subjects with migraine (8,9,10).

The last section consisted of another validated questionnaire Migraine Disability Assessment Score (MIDAS). It is a numerical score representing the number of days patients missed or identifying lost productivity at work or school. In addition, the number can also include missed days from family and social events. The MIDAS is scored as the sum of the first five questions, each measured as days in the last 3 months, and then categorized into four disability grades: Grade I: Little to no disability (0–5 days); Grade II: Mild disability (6–10 days); Grade III: Moderate disability (11–20 days); Grade IV: Severe disability (21þ days). Two additional questions assess the number of days with headaches in the last 3 months (item A) and a scale of the painfulness of the headaches (item B) (11).

Ethical considerations: The ethical approval for the study protocol was obtained from the Unit of Biomedical Ethics Research Committee, Faculty of Medicine, King Abdulaziz University (Ref. no. 500-21).

Data analysis: Data were analyzed statistically using (SPSS) version 26. To test the relationship between variables, qualitative data were expressed as numbers and percentages, and the Chi-squared test (χ2) was used. Quantitative data were expressed as mean and standard deviation (Mean ± SD), and variables were tested using the One-Way ANOVA test and the independent sample t-test. Correlation analysis was performed using the Spearman's test, and a p-value of less than 0.05 was considered statistically significant.
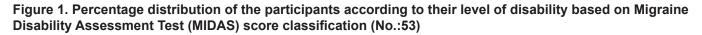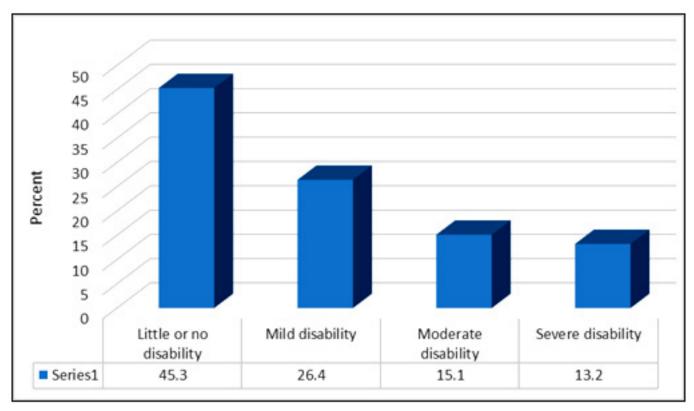
Results

(Table 1) shows that half of the participants had an age that ranged from 30-39 or 40-49 years. Of them, three quarters were females, 81.1% were Saudi nationals, more than half of them had a higher than the secondary school education and 62.3% were not working. About 64.2% had been diagnosed with migraine for >5 years and 35.8% were diagnosed in an age that ranged from 18-29 years. More than half of them were not on any current prophylactic medication. However, 17% were on Amitriptyline, 7.5% were on Topamax and 5.7% were taking a prophylactic supplement or herb. Almost 60% had a one attack monthly.

The mean MSQ and MIDAS scores were 37.04 ± 16.58 and 8.54 ± 10.57 respectively. (Figure 1) illustrates that 45.3% and 26.4% of the participants had little/ no disability and mild disability, respectively. While 15.1% and 13.2% had moderate and severe disability, respectively based on the MIDAS score classification.

(Table 2) shows that participants who were on Riboflavin and who had only one attack per month had significantly higher mean MSQ scores indicating a better quality of life (p=< 0.05). On the other hand, a non-significant relationship was found between the MSQ mean scores and participants' demographics or other clinical data (p=> 0.05).

(Table 3) shows that participants who were on Topamax and who had only one attack monthly had a significant higher score than those who had little or no disability based on MIDAS classification (p=< 0.05). On the other hand, a non-significant relationship was found between the MIDAS levels and all participants' demographics or other clinical data (p=> 0.05).

(Figure 2) shows that a significant positive correlation was found between the MSQ and the MIDAS scores (r=0.85, p-value = < 0.001).

Figure 1. Percentage distribution of the participants according to their level of disability based on Migraine Disability Assessment Test (MIDAS) score classification (No.:53)

	Little or no disability	Mild disability	Moderate disability	Severe disability
■ Series1	45.3	26.4	15.1	13.2

Table 1. Distribution of studied participants according to their demographics and clinical data (No.: 53)

Variable	No. (%)
Age	
18-29	9 (17)
30-39	14 (26.4)
40-49	14 (26.4)
50-59	7 (13.2)
≥60	9 (17)
Gender	
Female	42 (79.2)
Male	11 (20.8)
Nationality	
Non-Saudi	10 (18.9)
Saudi	43 (81.1)
Educational level	
Non educated	9 (17)
elementary	2 (3.8)
Intermediate	4 (7.5)
Secondary	10 (18.9)
Higher	28 (52.8)
Employment status	
Not working	33 (62.3)
Part time	2 (3.8)
Full time	18 (34)
Number of children	
None	8 (15.1)
1	13 (24.5)
2	11 (20.8)
3	9 (17)
>3	12 (22.6)
Time of diagnosis	
6m-12m	5 (9.4)
1-5 years	14 (26.4)
>5 years	34 (64.2)
Age at diagnosis	
18-29	19 (35.8)
30-39	16 (30.2)
40-59	18 (34)
Current prophylactic Medication	
None	30 (56.6)
Amitriptyline	9 (17)
Ketamine	2 (3.8)
Keppra	2 (3.8)
Riboflavin	1 (1.9)
Topamax	4 (7.5)
Amerol	1 (1.9)
Topiramate	2 (3.8)
Valproic acid	2 (3.8)

Table 1. Distribution of studied participants according to their demographics and clinical data (No.: 53) (continued)

Attacks per month	
1	27 (50.9)
1-3	20 (37.7)
>3	6 (11.3)
Taking any prophylactic supplement or herb	
No	50 (94.3)
Yes	3 (5.7)

Table 2. Relationship between Migraine-Specific Quality of Life Questionnaire, version 2.1 (MSQ) mean scores and participants' demographics and clinical data (No.: 53)

	Migraine-Specific Quality of Life Questionnaire, version 2.1(MSQ)	t-Test	p value
Age 18-29	40.89 ±15.26		
30-39 40-49	41.36 ±19.29 39.57±12.55	1.71*	0.161
50-59	33.29 ±19.01		
≥60	25.44 ±14.12		
Gender Female Male	37.02 ±17.22 37.09 ±14.64	0.01**	0.176
Nationality Non-Saudi Saudi	39.8 ±19.26 36.04 ±16.09	0.58**	0.839
Educational level Non educated Elementary Intermediate Secondary Higher	32.22 ±14.42 49 ±9.89 32 ±12.54 38.1 ±11.22 38.07 ±19.53	0.56*	0.693
Employment status Not working Part time Full time	33.97 ±16.18 46 ±9.89 41.67 ±17.1	1.59*	0.214
Number of children None 1 2 3 >3	32.63 ±17.13 30.23 ±16.54 38.18 ±19.5 42 ±16.45 42.58 ±12.32	1.26*	0.294
Time of diagnosis 6m-12m 1-5 years >5 years	38 ±21.9 39.86 ±18.68 35.74 ±15.25	0.3*	0.737
Age at diagnosis 18-29 30-39 40-59	43.74 ±17.29 35.38 ±12.44 31.44 ±17.39	2.84*	0.086

Table 2. Relationship between Migraine-Specific Quality of Life Questionnaire, version 2.1 (MSQ) mean scores and participants' demographics and clinical data (No.: 53) (continued)

Current prophylactic Medication		2.18*	0.047+
No	31.23 ±14.04		
Amitriptyline	42.11 ±13.39		
Ketamine	58 ±0.001		
Keppra	50 ±4.24		
Riboflavin	74 ±0.001		
Topamax ,	34.75 ±29.7		
Amerol	45 ±0.001		
Topiramate	42 ±15.55		
Valproic acid	44.5 ±13.43		
Attacks per month		12.33*	< 0.001+
1	51 ±10.41		
1-3	27.93 ±14.3		
>3	45.15 ±13.99		
Taking any prophylactic supplement or herb		1.4**	0.125
No	50 ±8		
Yes	36.26 ±16.68		

N.B.: * = One Way ANOVA test   ** = Independent sample t-test

Table 3. Relationship between participants', level of disability based on The Migraine Disability Assessment Test (MIDAS) classification and participants' demographics and clinical data (No.: 53)

Variable	Little or no disability	Mild disability	Moderate disability	Severe disability	x^2	p value
Age					16.01	0.19
18-29	4 (44.4)	4 (44.4)	0 (0.0)	1 (11.1)		
30-39	5 (35.7)	3 (21.4)	4 (28.6)	2 (14.3)		
40-49	4 (28.6)	6 (42.9)	2 (14.3)	2 (14.3)		
50-59	3 (42.9)	1 (14.3)	1 (14.3)	2 (28.6)		
≥60	8 (88.9)	0 (0.0)	1 (11.1)	0 (0.0)		
Gender					6.24	0.1
Female	16 (38.1)	11 (26.2)	8 (19)	7 (16.7)		
Male	8 (72.7)	3 (27.3)	0 (0.0)	0 (0.0)		
Nationality					0.42	0.934
Non-Saudi	4 (40)	3 (30)	2 (20)	1 (10)		
Saudi	20 (46.5)	11 (25.6)	6 (14)	6 (14)		
Educational level					15.13	0.234
Non educated	4 (44.4)	4 (44.4)	1 (11.1)	0 (0.0)		
elementary	0 (0.0)	1 (50)	0 (0.0)	1 (50)		
Intermediate	3 (75)	1 (25)	0 (0.0)	0 (0.0)		
Secondary	3 (30)	4 (40)	3 (30)	0 (0.0)		
Higher	14 (50)	4 (14.3)	4 (14.3)	6 (21.4)		
Employment status					7.83	0.251
Not working	17 (51.5)	10 (30.3)	3 (9.1)	3 (9.1)		
Part time	0 (0.0)	0 (0.0)	1 (50)	1 (50)		
Full time	7 (38.9)	4 (22.2)	4 (22.2)	3 (16.7)		

Table 3. Relationship between participants', level of disability based on The Migraine Disability Assessment Test (MIDAS) classification and participants' demographics and clinical data (No.: 53) (continued)

Number of children					14.22	0.286
None	5 (62.5)	1 (12.5)	1(12.5)	1 (12.5)		
1	9 (69.2)	4 (30.8)	0 (0.0)	0 (0.0)		
2	5 (45.5)	1 (9.1)	2(18.2)	3 (27.3)		
3	2 (22.2)	4 (44.4)	2 (22.2)	1 (11.1)		
>3	3 (25)	4 (33.3)	3 (25)	2 (16.7)		
Time of diagnosis					4.9	0.557
6m-12m	4 (80)	0 (0.0)	1 (20)	0 (0.0)		
1-5 years	6 (42.9)	5 (35.7)	2 (14.3)	1 (7.1)		
>5 years	14 (41.2)	9 (26.5)	5 (14.7)	6 (17.6)		
Age at diagnosis					5.79	0.447
18-29	6 (31.6)	6 (31.6)	4 (21.1)1	3 (15.8)		
30-39	7 (43.8)	6 (37.5)	(6.3)	2 (12.5)		
40-59	11 (61.1)	2 (11.1)	3 (16.7)	2 (11.1)		
Current prophylactic Medication					40.03	**0.021**
No	18 (60)	8 (26.7)	3 (10)	1 (3.3)		
Amitriptyline	1 (11.1)	5 (55.6)	0 (0.0)	3 (33.3)		
Ketamine	0 (0.0)	0 (0.0)	1 (50)	1 (50)		
Keppra	0 (0.0)	0 (0.0)	1 (50)	1 (50)		
Riboflavin	0 (0.0)	1 (100)	0 (0.0)	0 (0.0)		
Topamax,	3 (75)	0 (0.0)	1 (25)	0 (0.0)		
Amerol	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)		
Topiramate	1 (50)	0 (0.0)	1 (50)	0 (0.0)		
Valproic acid	1 (50)	0 (0.0)	0 (0.0)	1 (50)		
Attacks per month					21.2	**0.002**
1	18 (66.7)	7 (25.9)	1 (3.7)	1 (3.7)		
1-3	4 (20)	7 (35)	6 (30)	3 (15)		
>3	2 (33.3)	0 (0.0)	1 (16.7)	3 (50)		
Taking any prophylactic supplement or herb					4.84	0.183
No	0 (0.0)	2 (66.7) 12	0 (0.0)	1 (33.3)		
Yes	24 (48)	(24)	8 (16)	6 (12)		

Figure 2. Spearman's correlation between Migraine-Specific Quality of Life Questionnaire, version 2.1 (MSQ) and The Migraine Disability Assessment Test (MIDAS) scores

N.B.: (r=0.85, p-value = < 0.001)

Discussion

In this study, 26.4% of the participants were between the ages of 30-39 or 40-49. According to a recent Saudi study, the majority of their participants were between the ages of 20 and 40, which is consistent with the age at which migraines are most common (12,13,14,15).

In this study, 64% of the individuals had had a migraine diagnosis for more than five years. A previous Saudi study with a majority of participants who had migraines for at least five years came to the same conclusion (16). Other research also showed similar findings (17, 18,19).

According to The Migraine Disability Assessment Test (MIDAS) categorization, participants in this study who experienced just one attack per month were a much larger percentage than those who were classified as having little to no disability. Previous research indicated that since attacks typically last at least 15 days in a month, the frequency and intensity of migraine episodes may rise over time to chronic migraine (20).

The frequent episodes may be a major contributing factor to severe functional impairments, such as physical and psychological difficulties (21) and the negative effects on quality of life, academic performance, and social interactions (22,23,24). Additionally, during or in between migraine attacks, impairments related to migraines were also documented. Commonly, even between attacks, patients with migraines had a poor sense of wellbeing and quality of life compared to age- and gender-matched healthy control groups (25).

Only 5.7% of participants in this study were taking a prophylactic supplement or herb for migraine management. A previous Saudi study had found a low prevalence of the usage of alternative medications for headache management among the population in Riyadh, Saudi Arabia (26).

In this study, the average MSQ and MIDAS scores were 37.04 16.58 and 8.54, respectively.

10.57 in each case. Because of the missed days of work or school, decreased productivity, and the financial burden from the expense of prescriptions, migraine headaches have a negative impact on quality of life (26).

In this study, the percentages of patients with little to no disability and mild disability were 45.3% and 26.4%, respectively. 13.2% and 15.1%, respectively, had moderate and severe disabilities. Patients with migraines were shown to have a severely reduced quality of life, which resulted in significant disability (27).

A previous Saudi study was conducted in the neurology clinics at King Fahad Hospital-Hofuf, AlAhsa. The study found that more than half of the participants (57.3%) suffered from a severe

disability caused by migraines as compared to 20.7% with a moderate disability (28).

In the present study, a non-significant relationship was found between the MIDAS levels and all participants' demographics. A previous study found that disability was significantly higher among females and others with low-income levels (29).

In the current study, there was no significant correlation between the participants' demographics and the mean MSQ scores. Higher quality-of-life scores were found in the Saudi study by Al Ghadeer et al., 2021 among individuals with less education and those who never used medicines or other alternative techniques to manage migraine-associated discomfort (28). Shaik MM et al. (2015) reported a different outcome, finding that females with migraines had significantly lower overall WHOQOL-BREF scores (84.3) than healthy controls. This can be explained by the usage of several QOL assessment scales (30) Participants who took riboflavin had significantly higher mean MSQ ratings in this trial, indicating an improved quality of life (31). According to studies, vitamin B12 levels were considerably lower for people with tension-type headaches, migraines, and unclassified headache groups than in the control group (32). According to other studies, people with lower vitamin B12 levels were more likely to get migraines (33).

The MSQ and MIDAS scores showed a substantial positive connection in this investigation. This correlation was also seen in a recent Saudi study that discovered a strong connection between migraine-related impairment and QOL (29). Another study revealed that most respondents said they had severe impairment that adversely affected their quality of life (34).

Limitations
The use of a self-reporting questionnaire in the present study could have a recall bias.

Conclusion

This study found that 64.2% of participants were had been diagnosed for migraine for >5 years and 35.8% were diagnosed between the ages of 18-29. The majority (56.6%) were not on any current prophylactic medications, 59.9% had a one attack monthly and 5.7% were taking a prophylactic supplement or herb. Of them, 45.3% and 26.4% of the participants had little or no disability and mild disability respectively and 15.1% and 13.2% had moderate and severe disability. Participants who were on Ketamine and who had only one attack per month had significantly higher mean MSQ scores indicating a better quality of life and participants who were prescribed Topamax and who had only one attack monthly had a significant higher percent than those who had little or no disability. A significantly positive correlation was found between the MSQ and the MIDAS scores.

Migraine headache assessment must be complete, encompassing mental health, well-being, and the real-life effects on the patient, in order to provide successful management of the condition. Clinicians should evaluate migraine-related disability and QOL on a regular basis as a complementary approach to migraine patients to ensure that they are receiving the appropriate therapy and to determine whether further methods are required.

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