Medical Science

pISSN 2321–7359; eISSN 2321–7367

Awareness and perceptions of migraine headache in Saudi Arabia

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To Cite:
Albadrani MS, Alqelaiti BA, Ternati MK, Almalki AE, Alsaadi GK, Alahmadi SK, Al-Maghlouth MK, Mohamed KG. Awareness and perceptions of migraine headache in Saudi Arabia. *Medical Science* 2023; 27: e104ms2683.
doi: https://doi.org/10.54905/disssi/v27i132/e104ms2683

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Peer-Review History
Received: 14 December 2022
Reviewed & Revised: 17/December/2022 to 12/February/2023
Accepted: 14 February 2023
Published: 20 February 2023

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Introduction: A migraine is a moderate or severe headache that is commonly characterized by a recurrent episode of one-sided throbbing pain. It is the second-most impairing condition in the world; nevertheless, it remains underdiagnosed. Migraine may affect approximately half of the adult population in the world. *Objective:* This study aimed to determine the level of awareness and perception of migraine headaches in both Saudi and non-Saudi individuals living in Saudi Arabia. *Subjects and methods:* This is cross-sectional study was conducted among patients with migraines or a family history of migraine headache in Saudi Arabia. A self-administered questionnaire was distributed among the targeted participants. The questionnaire includes socio-demographic data (i.e., age, gender, education, etc.), previous history of migraine headaches, treatment patterns and a questionnaire that assesses awareness about migraine headaches. *Results:* Overall, 1927 patients were involved (female 64.6% vs. male 35.4%). The most likely age range between was 18 to 25 years (39.8%). Only 6.9% of participants had a good degree of awareness, while 24.3% of respondents had moderate levels and 68.8% of respondents were defined as having poor awareness levels. High scores of awareness were found among young age groups, participants of high educational level, students, Southern residents, migraineurs and participants with a family history of migraine. *Conclusion:* The general population in Saudi Arabia lack enough awareness regarding migraine. However, better awareness can be seen more frequently among younger groups of age, educated females and people who had suffered from migraine headaches. Awareness campaigns are vital to increasing the population's understanding of this neurological disease.

Keywords: Migraine headaches (MH), awareness, perception, General population

1. INTRODUCTION

One of the primary headaches is migraine that usually occurs as unilateral throbbing pain accompanied by photosensitivity. Globally, migraine It is the second-most impairing condition and tthird-most recurrent condition with a 14.7% one-year prevalence. According to the Global Burden of Disease Study, years lost due to migraine count as the sixth highest among years lost to other disabilities. People aged 35 to 45 are the most affected, especially, females with a ratio of 2:1 due to environmental factors and hormonal fluctuations (Viana et al., 2020; WHO, 2016).

Although MH is a common and well-known condition, it remains underdiagnosed and undertreated. Patients usually underestimate their symptoms, neglect to seek professional help and self-diagnose instead. On the other hand, migraine misdiagnosis often happens with other conditions such as sinusitis, allergy and tension headache leading to wrong treatment. For this reason, the International Headache Society (IHS) offers educational programs about migraine for young neurologists and primary care physicians (Gultekin et al., 2018).

Migraine contributes to different socio-economic problems as well as poor quality of life for patients and their families (Issa et al., 2022). People who suffer from migraine have negative functional, academic and occupational performance. According to a global study, the mean annual individual cost for an episodic and a chronic migraine patient is 2000 US dollars and 8000 US dollars, respectively (WHO, 2016).

Prevention and management of MH depend mainly on proper diagnosis and the willingness of patients to seek professional help. The IHS guidelines provide a comprehensive explanation for the types, risk factors, triggers, diagnostic criteria and management of MH, however, failure of treatment is still an issue. For better treatment outcomes, some studies suggest focusing on patient experience and preference for treatment options as the main goal is to enhance their quality of life (Bamalan et al., 2021).

According to a study performed in Jeddah city of Saudi Arabia, MH is highly prevalent and has a detrimental effect on the quality of life of patients. It also mentioned that many patients remain underdiagnosed, thus more prevalence and awareness assessment studies are needed for a better understanding and management of the situation in Saudi Arabia (Algahtani et al., 2022; Bamalan et al., 2021). In this scope, this study seeks to determine the level of awareness and perception of migraine headaches in Saudi and non-Saudi individuals living in Saudi Arabia.

2. SUBJECTS AND METHODS

Study design

This is a cross-sectional study that was conducted from April 2022 to August 2022 in all regions of Saudi Arabia.

Study population and Sampling

The study subjects were Saudi and non-Saudi residents of Saudi Arabia who agreed to fill in the questionnaire. The study included people who live in Saudi Arabia and patients aged 15 years or older with no upper limit. People with mental disabilities were excluded.

According to the estimated prevalence of MH in Saudi Arabia (27%) with a population of 34.81 million (Goodhew, 2019). We found out that the proper sample size would be 385 participants at a 95% confidence interval, 5% margin of error and 0.05 level of significance. A self-administered online questionnaire and we share it in social media like WhatsApp, Twitter etc.

Measurement tool

The measurement tool is a self- administered online questionnaire and we share it in social media like WhatsApp, Twitter ect. and it's composed of following information:

- The demographic date (age, gender, job or work, nationality, marital status, education level) of the participants.
- Assessment of the knowledge of MH and the possible ways to treat these symptoms and how to avoid the attacks of MH.

The awareness of participants about migraine headaches has been assessed using 8-item questionnaires where the correct answers had been identified and had been scored with 1 while the incorrect answers had been scored with 0. Questions #4 (7 correct answers), question #5 (5 correct answers), question #7 (2 correct answers) and question #8 (8 correct answers) are multiple-response answers, giving a total awareness of 26 items. The total awareness score has been calculated by summing all 26 items. The total awareness score range was from 0 to 26 points. By using 50% and 75% to determine the level of awareness, participants were classified as having poor awareness if the score was less than 50%, 50% to 75% was considered moderate awareness and above 75% was regarded as good awareness level.

Statistical Analysis

The data analyses were carried out using Statistical Packages for Software Sciences (SPSS) version 26 Armonk, New York, IBM Corporation. Categorical variables were presented using numbers and percentages, while numerical variables were presented using mean and standard deviation. The normality test was performed using the Shapiro-Wilk test and the Kolmogorov-Smirnov test. Therefore, the awareness score follows the non-normal distribution and non-parametric tests were applied. The total awareness score was compared with the socio-demographic characteristics using the Mann-Whitney Z test and Kruskal Wallis H-test. P-value less than 0.05 were considered statistically significant.

3. RESULTS

In total, 1927 respondents were able to complete the survey. As in Table 1, most participants (39.8%) were aged between 18 to 25 years old and nearly two-thirds of participants (64.6%) were females. More than half of the participants (57.6%) were university degree holders and 40.8% were students. Approximately 32.7% had a family monthly income of 10001 to 20000 SAR. Respondents living in the Northern region were 28.8% and about half of the respondents (52%) were single. The prevalence of participants with a previous history of migraine headaches was 24.9%, while the prevalence of participants with a family history of MH was 37.2%. In addition, 41.3% believed that medications are effective in the self-treatment of headaches.

Table 1 Socio-demographic characteristics of participants and prevalence of MH (n=1927)

Study variables	N (%)
Age group	
<18 years	104 (05.4%)
18 – 25 years	766 (39.8%)
26 – 35 years	383 (19.9%)
36 – 45 years	263 (13.6%)
46 – 55 years	233 (12.1%)
>55 years	178 (09.2%)
Gender	
Male	683 (35.4%)
Female	1244 (64.6%)
Educational level	
Uneducated	15 (0.80%)
Secondary or below	329 (17.1%)
Diploma	231 (12.0%)
University degree	1109 (57.6%)
Postgraduate	243 (12.6%)
Occupational status	
Student	787 (40.8%)
Employed	613 (31.8%)
Retired	185 (09.6%)
Unemployed	342 (17.7%)
Family monthly income (SAR)	
<5000	407 (21.1%)
5000 – 10000	592 (30.7%)
10001 – 20000	630 (32.7%)
>20000	298 (15.5%)
Residence region	
Western	373 (19.4%)
Central	391 (20.3%)
Northern	555 (28.8%)
Southern	417 (21.6%)

Study variables	N (%)
Eastern	191 (09.9%)
Marital status	
Single	1002 (52.0%)
Married	819 (42.5%)
Divorced	77 (04.0%)
Widowed	29 (01.5%)
History of MH	
Yes	480 (24.9%)
No	1447 (75.1%)
Family history of MH	
Yes	716 (37.2%)
No	1211 (62.8%)
Effectiveness of medication for the self-treatment of headache	
Yes	796 (41.3%)
No	1131 (58.7%)

In Figure 1, it represnts an independent parameter, for assessment the co morbid diseases that was come with migraine in Saudi community and according to all participants, there are 12.5% have hypertension and 11.5% have diabetes.

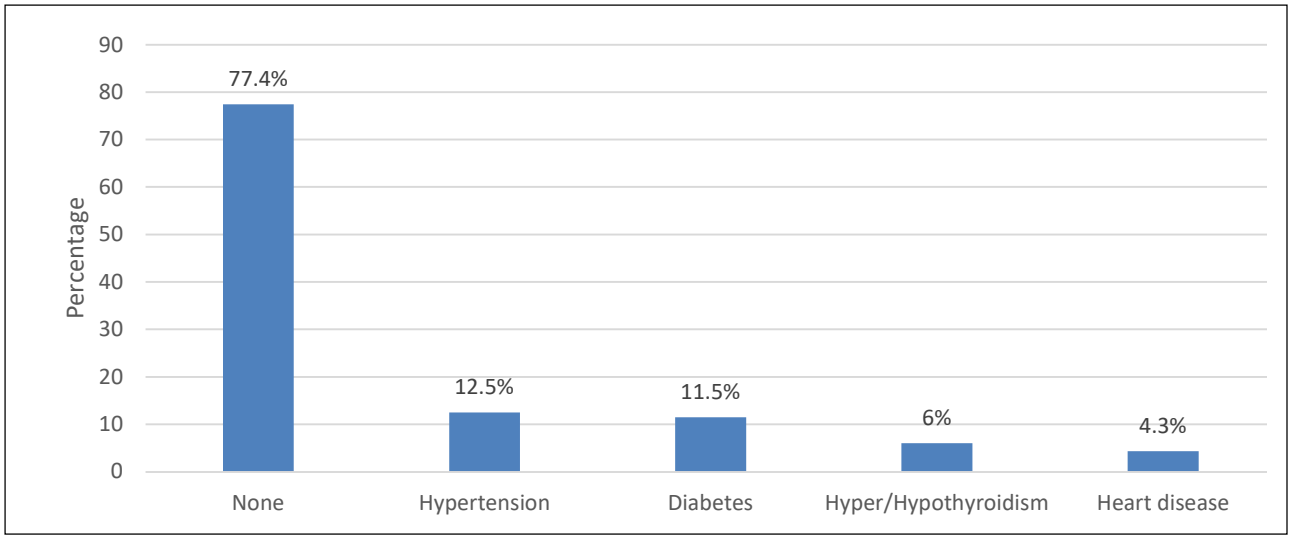

Figure 1 Associated chronic disease assement

In Figure 2, paracetamol was reported as the most frequent medication used for the self-treatment of migraine headaches (34.3%), followed by NSAIDs (9.7%), then pendulum (8.3%).

Regarding the responses that assessed the level of awareness toward MH (Table 2), the results revealed that most participants showed poor awareness levels (68.8%). Approximately 30.6% believed that genetic factor plays an important role in the affection of migraine headaches, while only 39.9% believed that migraine headache is more dominant in females.

Half of the participants believed that panadol is the most effective drug for treating migraine headaches (50.5%), while 36.5% believe it's ibuprofen. Moreover, only 14.7% mentioned that Inderal (propranolol) is the most common preventive medication while 10.9% believed antihistamines are the preventive medication.

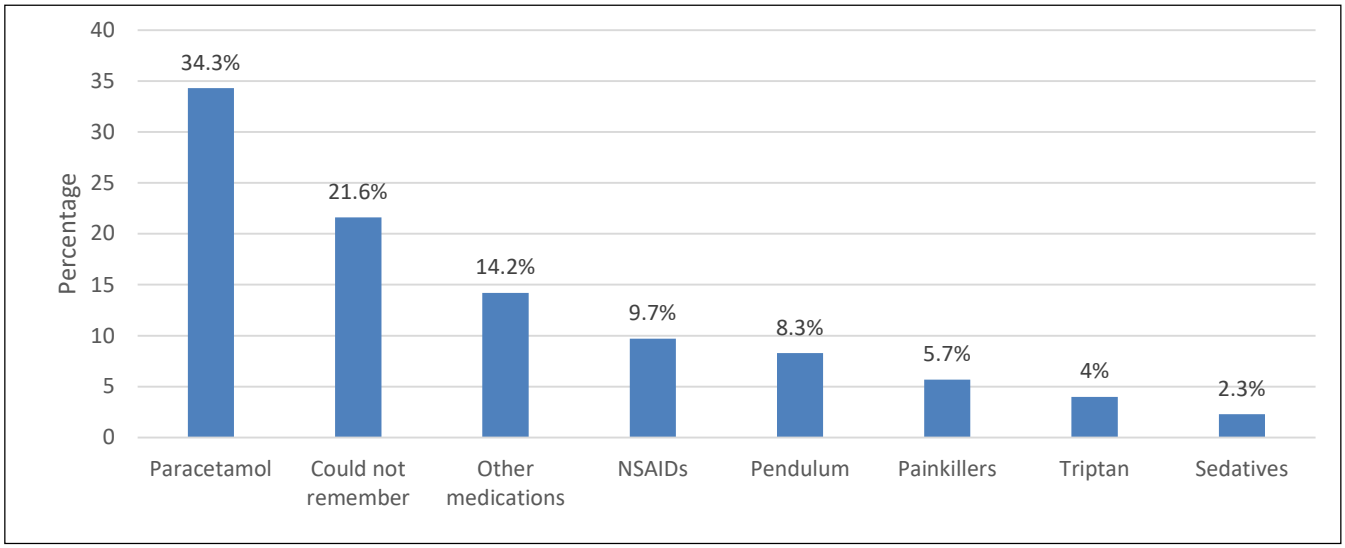

Figure 2 Specific medication used for self-treatment of migraine headache

Table 2 Assessment of awareness regarding migraine headache (n=1927)

Awareness statement	N (%)
Do you think the genetic factor plays a important role in the affection of MH?	
Yes*	589 (30.6%)
No	278 (14.4%)
I don't know	1060 (55.0%)
MH is more common in?	
Male	282 (14.6%)
Female*	768 (39.9%)
I don't know	877 (45.5%)
The pain in MH is?	
Mild	37 (01.9%)
Moderate	346 (18.0%)
Severe*	1052 (54.6%)
I don't know	492 (25.5%)
In your opinion, which of the following are the causes or factors that increase the likelihood of an individual having a MH?†	
Psychological and physical stress*	1223 (63.5%)
Strong lights*	1128 (58.5%)
Change in sleep (more or less)*	1052 (54.6%)
Loud sounds*	1038 (53.9%)
Strong odors such as: Smells of perfume or smoke*	940 (48.8%)
Some types of medications	557 (28.9%)
The change in the atmosphere or weather*	538 (27.9%)
Food such as: Cheese or coffee and tea*	477 (24.8%)
I don't know	262 (13.6%)
In your opinion, what are the accompanying symptoms that come with an MH?†	
Pulsating pain on one side of the face*	1255 (65.1%)
Sensitivity to light or sound*	1144 (59.4%)
It affects the person's daily activities*	1014 (52.6%)
Headache not less than 4 hours and not more than 72 hours*	895 (46.4%)

Awareness statement	N (%)
Feeling sick with or without vomiting*	862 (44.7%)
Headache increases with movement*	835 (43.3%)
I don't know	275 (14.3%)
In your opinion, what drugs work effectively in the treatment of MH?†	
Panadol	974 (50.5%)
Ibuprofen	704 (36.5%)
Triptan*	273 (14.2%)
Aspirin	297 (15.4%)
Antibiotics	109 (05.7%)
I don't know	624 (32.4%)
In your opinion, what are the preventive medicines for MH?†	
Inderal*	284 (14.7%)
Antihistamine	210 (10.9%)
Isoptin*	191 (09.9%)
Acupuncture	170 (08.8%)
Antibiotics	138 (07.2%)
I don't know	1367 (70.9%)
In your opinion, what are the ways to prevent MH?†	
Establish a daily schedule to determine sleep times*	1076 (55.8%)
Healthy diet*	932 (48.4%)
Exercise*	817 (42.4%)
Quit Smoking*	698 (36.2%)
Avoid chocolate and cheese*	396 (20.6%)
Relaxation exercises such as yoga*	340 (17.6%)
Botox injections*	255 (13.2%)
Playing sports*	153 (07.9%^)
I don't know	520 (27.0%)
Total Awareness score (mean ± SD)	9.84 ± 6.01
Level of awareness	
Poor	1326 (68.8%)
Moderate	468 (24.3%)
Good	133 (06.9%)

* Indicates correct answer.

† Variable with multiple response answers.

The majority of the participants showed good knowledge about symptoms, causes and prevention of migraine; 54.6% of the respondents knew that MH caused severe pain. Moreover, the respondents mentioned that the most common causes or factors that increase the likelihood of MH were psychological and physical stress (63.5%), strong lights (58.5%) and change in sleep (54.6%). In addition, they reported that the most common accompanying symptom associated with migraine was pulsating pain on one side of the face (65.1%), followed by sensitivity to light (59.4%). The most common ways to prevent MH were indicated as establishing a daily schedule to determine sleep times (55.8%), followed by a healthy diet (48.4%) and exercise (42.4%). The overall mean awareness score was 9.84 (SD 6.01).

When comparing the differences in the score of awareness with the socio-demographic characteristics of participants, it was found that the higher awareness score was associated with being younger in age ($Z=7.914$; $p<0.001$), female ($Z=4.864$; $p<0.001$), highly educated ($Z=6.732$; $p<0.001$), being a student ($H=58.419$; $p<0.001$), living in the Southern region ($H=83.276$; $p<0.001$), being a single ($Z=4.971$; $p<0.001$), had a previous history of migraine headaches ($Z=10.663$; $p<0.001$) and believing in the effectiveness of medication for the self-treatment of headaches ($Z=3.047$; $p=0.002$) (Table 3).

Table 3 Differences in the score of awareness concerning the socio-demographic characteristics of participants (n=1927)

Factor	Awareness Score (26) Mean ± SD	Z/H-test	P-value
Age group[a]			
≤35 years	10.6 ± 6.01	Z=7.914	<0.001 **
>35 years	8.48 ± 5.76		
Gender[a]			
Male	9.10 ± 6.48	Z=4.864	<0.001 **
Female	10.3 ± 5.69		
Educational level[a]			
Diploma or below	8.38 ± 5.47	Z=6.732	<0.001 **
University or higher	10.5 ± 6.12		
Occupational status[b]			
Student	10.9 ± 5.96	H=58.419	<0.001 **
Employed	9.56 ± 6.24		
Unemployed	8.53 ± 5.50		
Family monthly income (SAR)[a]			
≤10000	9.57 ± 5.67	Z=1.630	0.103
>10000	10.1 ± 6.35		
Residence region[b]			
Western	9.29 ± 5.36	H=83.276	<0.001 **
Central	8.27 ± 5.82		
Northern	9.50 ± 5.75		
Southern	12.3 ± 6.58		
Eastern	9.84 ± 5.49		
Marital status[a]			
Never been married	10.4 ± 5.80	Z=4.971	<0.001 **
Been married	9.27 ± 6.18		
History of MH[a]			
Yes	12.5 ± 5.85	Z=10.663	<0.001 **
No	8.97 ± 5.81		
Family history of MH[a]			
Yes	11.8 ± 5.97	Z=10.739	<0.001 **
No	8.68 ± 5.73		
Effectiveness of medication for the self-treatment of headaches[a]			
Yes	10.4 ± 6.34	Z=3.047	0.002 **
No	9.45 ± 5.73		
Associated chronic disease[a]			
Yes	10.3 ± 6.43	Z=0.770	0.442
No	9.72 ± 5.88		

[a] P-value has been calculated using Mann Whitney Z-test.
[b] P-value has been calculated using Kruskal Wallis H-test.
** Significant at p≤0.05 level.

4. DISCUSSION

Migraine is a very common disabling condition that affects patients' quality of life; yet, it can be easily prevented and managed. The main issue is that migraine is a subjective condition, patient has to be aware of their problem so they can seek proper professional

help. The present study is a cross-sectional study that investigated the level of awareness and perception regarding migraine in the general population of Saudi Arabia. The study revealed a poor level of awareness regarding migrane in the kingdom.

Level of migrane awareness

Although migraine is a very common, distressful, sometimes unbearable type of headache, migraine literacy is widespread (Algahtani et al., 2022; Viana et al., 2020). In this study, only less than 7% of the participants were well aware of the condition, while more than two-thirds (68.8%) of the participants showed poor awareness levels (mean score: 9.84; SD 6.01, out of 26 points). Similar to our study, several previous studies reported a lack of awareness about migraine. For instance, a study that represented the general population in Jeddah in 2022 revealed that participants had poor knowledge regarding migraine prevention and complications. About 12% out of them, stated that they had no prior knowledge of migraine (Algahtani et al., 2022). Another recent multicenter study performed in seven countries on migraineurs showed that more than half of the participants call their migraine a "headache" (Amiri et al., 2021).

Significant factors associated with level of migraine awareness

Factors affecting the level of awareness about migraine may differ from one population to another. In this study, factors that contributed to relatively higher awareness levels were young age (<35 years old), gender as females had higher scores, being a student, high educational level, having a history of MH or having a family history of MH.

Prior studies that evaluated the level of migrane awareness did not evalutes the associated factors contributed to the level of awareness (Algahtani et al., 2022; Viana et al., 2020) except for having a history of migraine (Goodhew, 2019; Wang et al., 2015). According to two studies performed on university students in Australia and in China, the Australian university students who experienced migraine had higher knowledge scores than their non-migraineurs peers (Goodhew, 2019). On the contrary, the Chinese study showed no association between the history of MH and MH awareness (Wang et al., 2015).

Prevalence of MH

Nearly one-fourth (24.9%) of our sample population reported having a previous incidence of MH, while 37.2% reported of family history. Moreover, 39.9% of participants believed that MH is more common in females. According to a systematic review, the prevalence of MH in Saudi Arabia was reported to be 2.6% to 5%; however, the author referred to the lack of data in the Arab world generally (Benamer et al., 2010). A more recent systematic review of the prevalence of migraine in Arab countries showed results ranging from 2.6% to 32% (El-Metwally et al., 2020). Another study adjusted their results to represent the whole Saudi population and found that MH prevalence was 25.0% (Al-Jumah et al., 2020). They also reported that MH is more prevalent in females than males (Al-Jumah et al., 2020; Benamer et al., 2010; El-Metwally et al., 2020). It is believed that migraine prevalence is underestimated due to the lack of awareness or misdiagnosis (Viana et al., 2020). This explains the variation between the reported prevalence and our findings.

Knowledge of the symptoms, causes and triggering factors

Only 14.3% of the participants stated that they do not have any knowledge about migraine symptoms while 65.1% of them identified unilateral pulsating pain as a symptom. Regarding triggering factors, the commonly known factors were physical and psychological stress (63.5%). Meanwhile, other factors were not well recognized such as the change in atmosphere or weather (27.9%) and diet (24.8%).

Generally, several studies that included migraineurs from different populations (Gupta et al., 2019; Zahid et al., 2014) and the Saudi general population (Algahtani et al., 2022; Alkhudhairi et al., 2018) supported that people are only aware of the common migraine causes such as psychological stress and are not well aware of dietary and environmental factor (Alkhudhairi et al., 2018; Gupta et al., 2019; Viana et al., 2020).

Knowledge of prevention and treatment

Unfortunately, pharmacological prevention and treatment were the areas with the lowest level of awareness among our participants. About half of the participants have a wrong perception that Panadol® (paracetamol) is an effective treatment while only 14.2% knew about Triptan's effectiveness. Despite this scenario, the overall rating for the effectiveness of self-medication in treating migraine headaches was about 41.3%. This lack of awareness can be dated back to the general behavior of considering migraine as a non-serious condition and that most people turn to self-treatment rather than seeking a healthcare provider consultation.

Moreover, approximately three-quarters of the participants (70.9%) are not aware of pharmacological prevention of migraine; yet, about half of them recognized healthy sleeping patterns (55.8%), healthy diet (48.4%) and exercise (42.4%) as effective methods of prevention. These findings are still considered unacceptable levels of awareness as the preventive factors of MH are vital to deter disease development. Our study is consistent with other studies that pointed out the issue regarding MH treatment and prevention in Saudi general population (Khan et al., 2019). Whether the lack of awareness or unwillingness to seek professional help, those problems require extensive public awareness campaigns about migraine to encourage the Saudi population to address their suffering and have a better quality of life.

5. CONCLUSION

The awareness of the general population in Saudi Arabia regarding MH was suboptimal. However, better awareness can be seen more frequently among younger, educated females who had suffered MH with better perception regarding the effectiveness of self-medication in treating headaches. Due to poor knowledge of the disease, improper self-medication, such as taking over-the-counter drugs, is a probable scenario that could lead to more complications and may directly impact public health. It is necessary to address the gaps in the knowledge of MH. Education initiatives such as awareness campaigns are essential to raising public awareness of this neurological condition and healthcare providers have the most essential role in providing the appropriate information to the general public about MH.

Acknowledgements

None.

Author contributions

BA, MT, AM, GK, SA, MA & KG: Concept, design, definition of intellectual content, literature search, clinical studies, data analysis, statistical analysis, manuscript editing and manuscript review. MA did conception and design of the work, acquisition, analysis and interpretation of the data manuscript drafting and final editing of the version to be published. All authors read and approved the final manuscript.

Ethical approval

This study received the ethical approval from the Ethical Committee of Scientific Research division of Medical College at Taibah University, Al-Madinah, Saudi Arabia (TU-21-020).

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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