MEDICAL SCIENCE

Prevalence, clinical aspects and impact of migraine headache on quality of life of population in Jeddah, Saudi Arabia

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ABSTRACT

This study aimed to evaluate prevalence, determinants and associated quality of life impairment due to migraine headache among the population of Jeddah city, Saudi Arabia. A cross sectional study was conducted using the convenient sampling technique via Online-Google form questionnaire. It provided information on: Personal and sociodemographic characteristics, morbid history, clinical aspects of migraine headache and quality of life. Logistic regression and factor analyses were used. Of all the participants, 69% had headache; however, migraine was diagnosed among 38.6% (59/153) of the participants. The subjects with positive family history of migraine were 4.6 times more likely to have migraine compared to those without (OR: 4.564; 95% CI: 1.811, 11.503, $p < 0.001$). The participants with Migraine were 9.1 times more likely to use OCT drugs (particularly NSAIDs) compared to those without (OR: 9.098; 95% CI: 3.107, 26. 636, 503, $p < 0.000$). Factor analysis showed that Migraine was associated with restriction of ability to concentrate on work and home activities (weight = 0.206), with feeling angry because of headache (weight = 0.207) and with feeling tired to do work or home activities (weight = 0.203). Migraine headache, is a common health problem that affects the quality of life of the affected population of Jeddah City Saudi Arabia.

Keywords: Migraine headaches, Quality of life, Saudi Arabia

1. INTRODUCTION

Migraine and other headache disorders are among the most prevalent disorders worldwide (Stovner et al., 2007). The report of the GBD 2019 Diseases and Injuries Collaborators, (2020) revealed that migraine remains second among the world's causes of disability and first among young women. A migraine is usually a headache of a one side of the head. It is associated with severe pulsating sensation and often produces throbbing pain which is severe in nature. Affected subjects may have increased sensitivity to sounds and light and may suffer from vomiting and nausea. The accompanied pain may be so severe that it can affect the daily activities; it may last for days or

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hours.

Affected subjects may have an aura which comes with or before the attach of headache bout such as inability to speak or tingling on one arm or leg or other visual disturbances such as blind spots or flashes of light (Shaik et al., 2015). Studies have shown that migraine affected the individual's daily life and quality of life negatively, the frequency, severity, accompanying symptoms including nausea and photo-phobia of migraine and comorbid conditions including mood disorders contributed to this negativity and pain was sufficient to disrupt the quality of life by itself independent of accompanying factors. Limitations with respect to educational opportunities and daily activities and poor sleep all have been reported by migraine sufferers (Ramage-Morin and Gilmour, 2014).

Some migraines can be prevented by medications which reduce its discomfort. Quality of life measurements in migraine patients are essential in their migraine management. Severity of migraine can be assessed by focusing on the limitations to activity or temporary disability. Lifestyle changes and self-help remedies with the right medicines may help (Bagley et al., 2012; Peng and Wang, 2012). Migraine headache is common in Saudi Arabia. The prevalence rates of migraine in different areas of the kingdom vary between 25% to 78.5% (Almalki et al., 2018; Al-Jumah et al., 2020; Gouhar et al., 2018; Binbakheet et al., 2023; Alatawi et al., 2023).

There is a lack of awareness in majority of subjects about migraine leading to under diagnoses, under treatment and with high use of over-the-counter medicine. There is a need for proper awareness campaigns in Saudi Arabia (Syed et al., 2020). Therefore, we tried to explore the prevalence of migraine headache among the population of Jeddah city and study the clinical aspects of the disorder and study its possible determinants.

2. MATERIAL AND METHODS

Participants and study design

Participants in this cross-sectional study were from the general population of Jeddah city, Saudi Arabia using a non-probability convenient sampling method, conducted through online Google form questionnaire survey. This study was conducted during the period 01/07/2022 to 07/01/2023. The minimum sample size for this study was 122 subjects (G*Power: Effect size = 0.3; α = 0.05; Power = 80%; df = 3). Thus, in the present study we enrolled 153 subjects.

Tools for data collection

The following questionnaires were asked to every participant:

1- A study questionnaire which provided information on socio-demographic characteristics, personal characteristics and clinical as well as family history of migraine of the participants.

2- A migraine screen questionnaire (MS-Q) (Lainez et al., 2005). It consists of 5 questions about migraine and is based on the criteria of the international headache society to diagnose migraine (Olesen and Lipton, 1994). The responses for the questions were either by Yes or No. One is given for yes and zero for No. Migraine is diagnosed if the subject scores 4 or more out of 5.

3- The short form health survey (SF-36) (Mc-Horney et al., 1993).

4- MIDAS was developed to assess headache-related disability of migraine patients (Stewart et al., 2001). MIDAS included five questions, which provide information on non-work activity and days with substantially reduced productivity over a period of 3 months, on missed days of work, and on household chores (Mc-Horney et al., 1993).

5- The six-item Headache Impact Test (HIT-6) was designed to provide a global measure of adverse headache impact (Kosinski et al., 2003).

Statistical analysis

The SPSS software version 22 was used. Multinomial Logistic regression was used and OR and 95% CI were calculated. Factor analysis with principal component solution was used; the factors extracted were those with eigenvalues of one or more. The Varimax rotation was employed. As the exploratory factor analysis was used, loadings of the variables on the factors of 0.2 or more were regarded as significant. The level of significance was 0.05.

3. RESULTS

The participants in this study were 153 subjects, 120 females (78.4%) and 33 males (21.6%). The median age was 26 years (the minimum was 17 and the maximum was 62). Migraine headache was diagnosed in 59 participants (38.6%); 48 participants (81.4%) of them admitted that they had received treatment for migraine headache. Table 1 shows results of Multinomial logistic regression

for the relationship between Migraine and socio-demographic, personal characteristics and morbid history. After allowing for confounding variables, age, gender, marital status, educational level, smoking and history of chronic disorders were not significantly associated with occurrence of migraine.

On the other hand, subjects with history of migraine in the family were 4.6 times more likely to have migraine compared to subjects with no family history (OR: 4.564; 95% CI: 1.811, 11.503, $p < 0.001$). Participant with Migraine were 9.1 times more likely to use OCT drugs compared to those who did not have migraine (OR: 9.098; 95% CI: 3.107, 26. 636, 503, $p < 0.000$).

Table 1 Multinomial logistic regression for the relationship between Migraine and socio-demographic and personal characteristics

Migraine	B	Sig.	EXP(B)	95 % confidence interval	
				Lower limit	Upper limit
Age category	.900	.224	2.458	.576	10.490
Gender	-.777	.162	.460	.155	1.365
Marital status	-.357	.481	.700	.259	1.890
Educational level	1.523	.139	4.585	.610	34.448
Smoking	-.219	.710	.803	.253	2.550
Family history of Migraine	1.518	.001	4.564	1.811	11.503
Use OCT drugs	2.208	.000	9.098	3.107	26.636
Chronic diseases	.853	.321	2.346	.435	12.640

Results of principal component Factor analysis of Migraine and QOL scale and satisfaction of the subjects are in (Table 2). Migraine was significantly loaded on factor 5 (weight = 0.732). Presence of migraine in the family and use of OCT drugs were also heavily loaded on factor 5 and were significantly associated with migraine (weights = 0.575 and 0.739 respectively). Migraine was significantly associated with restricted climbing many stores (weight = -0.245), but not washing or unclothing (weight = 0.274). Migraine was responsible for impaired of ability to do work properly and home activities (weight = 0.206), with feeling angry because of headache (weight = 0.207) and with inability to do home activities or work (weight = 203).

Table 2 Principal component Factor analysis of Migraine and QOL scale and satisfaction of the subjects

	Component					
	1	2	3	4	5	6
Migraine MS-Q	-.024	.234	.222	.022	.732	-.187
Family member has migraine	-.144	.277	.208	-.292	.575	.421
Taking any over the counter remedies for migraine	.116	.287	-.145	.009	.739	.129
Restrict moderate activities such as moving table	.808	-.166	.018	.027	.106	.005
Restrict lifting groceries	.859	-.014	.192	.049	-.029	.091
Restrict climbing many stores	.650	-.013	.365	-.330	-.245	-.029
Restrict climbing one store	.775	-.034	.129	-.131	-.091	-.147
Restrict bowing or bending	.825	-.004	.154	-.049	-.102	.130
Restrict walking for two Kilometers	.787	.160	.074	-.215	-.193	.129
Restrict walking for half a Kilometer	.844	-.043	-.092	.034	.027	-.071
Restrict walking for less than 200 meters	.883	-.036	-.086	.003	.129	.127
Restrict washing or unclothing	.807	-.163	-.094	.096	.274	-.055
Restrict the type of work or activity I desired	.355	-.179	.592	.081	-.060	.045
Needed extra efforts to achieve work and activities	.204	-.344	.723	-.021	.080	-.126
Faced emotional problems such as depression and anxiety	-.051	.093	.847	.095	-.014	.029
Achieve less than what was planned	-.050	-.054	.832	.108	.128	.157
In the past four weeks you felt tired to do your work or home activities	-.046	.872	-.078	.113	.203	-.045
In the past four weeks you felt angry because of headache	-.068	.752	-.145	.261	.207	-.152
In the past four weeks the headache restrict your abilities	-.069	.892	-.090	.082	.206	.151

to concentrate on work and home activities						
Rating about the currently used treatment	-.070	-.081	.200	.806	-.057	.215
Rating about preventive treatment currently used	.147	-.051	.079	.291	.017	.856
Rating of the treatment you are using on the frequency of bouts of headache	-.069	.261	.086	.810	.166	-.017
Rating of the treatment you are using on the frequency of intensity of headache	-.025	.303	-.001	.796	-.178	.077

Several factors acted as triggers of migraine headache including disturbed sleep (24.4%), Stress (22.0%), loud sound (16.9%), and 13.5% bright light (Figure 1). Great proportion of the subjects felt nausea before the headache bout (44.1%) and nausea and vomiting accompanied 89% of the bouts of headache (Figure 2).

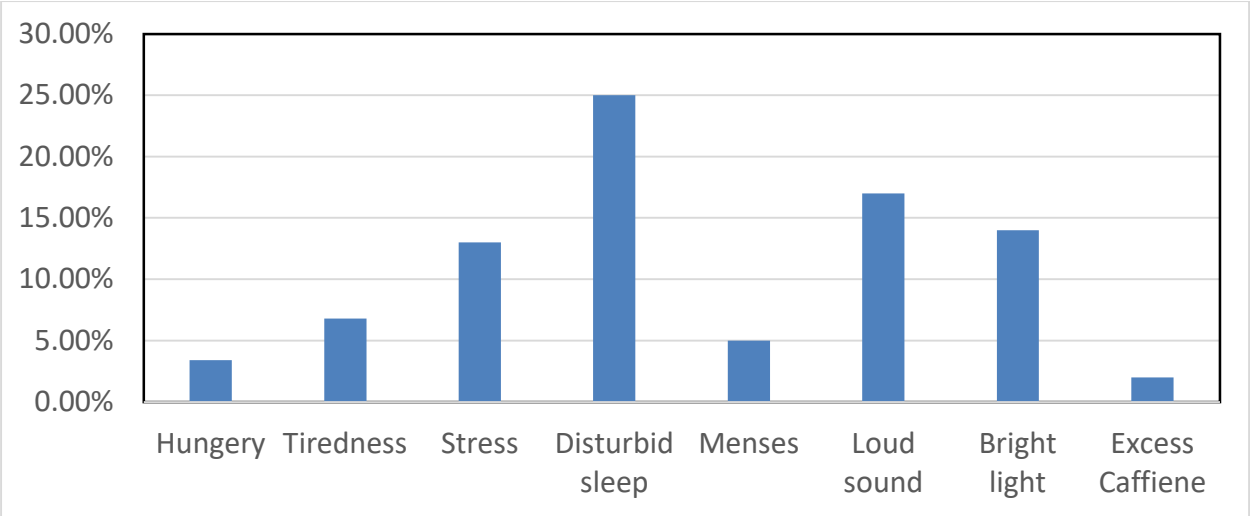

Figure 1 Factors which act as triggers for attacks of migraine bouts

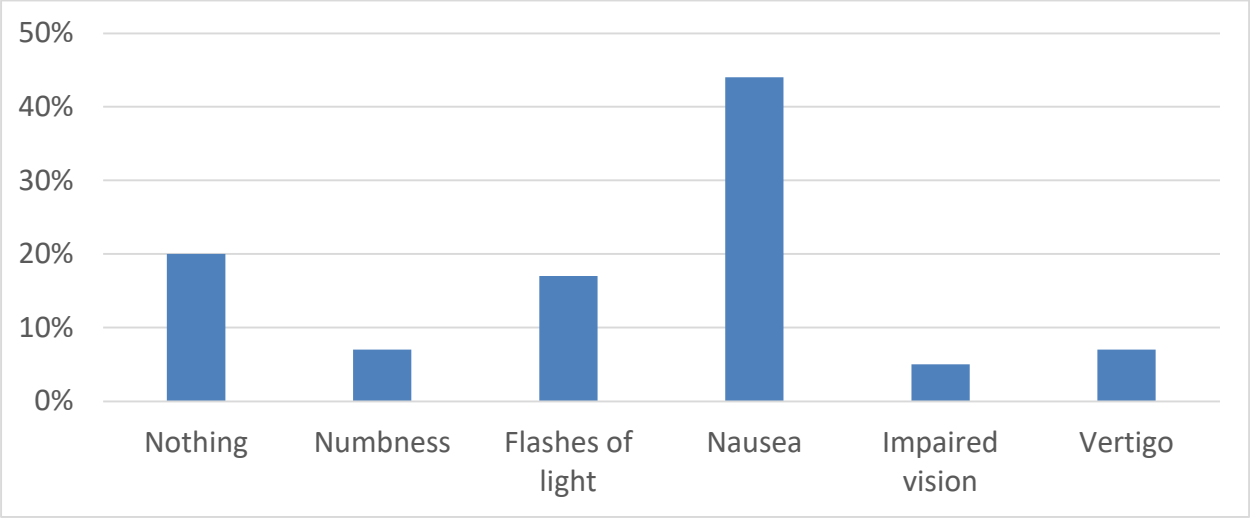

Figure 2 Aura which preceded the attacks of migraine bouts

Almost half of the subjects with migraine got the attacks daily (49.2%), while others got it weekly (23.7%) or monthly (25.4%). Migraine headache usually starts gradually (54.2%) or suddenly (18.6%) and in 25.4% it starts variant pattern. Majority of the subjects get the attacks of migraine in the evening (70%). Majority of the attacks last for hours even with treatment (76%). The headache is mainly unilateral (51%) and least frequent at the back of the head (8%). The pain is mainly of squeezing or stabbing nature (49.2%) and may be throbbing in nature (48%). Nausea and vomiting are the main symptoms accompanying migraine attacks (81.4%). In majority of the subjects (59.3%) the attacks of migraine extend for more than 3 months (Table 3).

Table 3 Frequency distribution of the clinical characteristics of Migraine among the studied subjects

Variable	Categories	Frequency	Percent
Frequency of headache bouts	Daily	29	49.2
	Weekly	14	23.7
	Monthly	15	25.4
Usually headache bout starts	Gradually	32	54.2
	Suddenly	11	18.6
	Variant	15	25.4
Usual time of headache bouts	During the day	16	27.1
	Evening	41	69.5
How long the headache lasts with treatment	Minutes	12	20.3
	Hours	45	76.3
Site of feeling the headache	Unilateral	30	50.8
	Bilateral	8	13.6
	Retro orbital	7	11.9
	Front of the head	9	15.3
	Back of the head	5	8.5
Type of pain during headache	Squeezing and stabbing	29	49.2
	Throbbing pain	28	47.5
	Burning	1	1.7
Symptoms associated with headache	Nausea and vomiting	48	81.4
	Vertigo	3	5.1
	Numbness and tingling	1	1.7
	Lacrimation	1	1.7
	Lacrimation	4	6.8
Duration of headache	3 months	21	35.6
	> 3 months	35	59.3

Migraine headache in majority of the subjects was relieved by rest in a dark room (49%) or by sleeping (45%). Majority with migraine had it for long period (59%). Almost half of the subjects with migraine (46.4%) had cupping done on them to treat headache. Majority of the patient with migraine used acetaminophen (77.9%), 16.9% used NSAIDs and 5.0% used triptans for treatment of acute migraine attacks (Table 4).

Table 4 Coping and pharmacological management of Migraine among the studied subjects

Variable	Categories	Frequency	Percent
Relief of headache by	Sleeping	27	45.8
	Stay in a quiet dark room	29	49.2
	Warm compresses	2	3.4
Pharmacological treatment	Acetaminophen	46	77.9%
	NSAIDs	10	16.9%
	Triptans	3	5.1%
Specific treatment for headache	Chiropractor	4	14.3
	Acupuncture	1	3.6
	Psychiatrist	3	10.7
	Herbal	3	10.7
	Nutritionist	3	10.7
	Physiotherapist	1	3.6
	Cupping	13	46.4

4. DISCUSSION

Migraine is a common neurovascular disorder affecting the population in Saudi Arabia (Almalki et al., 2018; Al-Jumah et al., 2020; Gouhar et al., 2018). The prevalence of headache in Jeddah city (38.5%) was found to be similar to other studies conducted worldwide (Domingues et al., 2006; Al-Hashel et al., 2014). Previous studies reported that migraine was predominant in females, and in those of younger age (Almalki et al., 2018; Al-Jumah et al., 2020). However, in the present study, when Multinomial logistic regression was used, after allowing for confounding variables, age, gender, marital status, educational level, smoking and history of chronic disorders were not significantly associated with occurrence of migraine. This is consistent with a previous study (Lipton et al., 2018).

Having a family member with migraine is important. In the present study, having a history of migraine in one or more of the members of the family was 4.6 times more likely to have migraine compared to subjects with no family history (OR: 4.564; 95% CI: 1.811, 11.503, $p < 0.001$). This is in line with other studies which reported similar findings (Al-Hashel et al., 2014; Ojini et al., 2009). Participant with Migraine were 9.1 times more likely to use OCT drugs compared to those who did not have migraine (OR: 9.098; 95% CI: 3.107, 26. 636, 503, $p < 0.000$). There was a significant association between the severity of symptoms and poorer quality of life, with a great majority being not able to conduct work or daily activity in correct way.

A study conducted in USA showed that majority of patients with migraine have missed work or schedule, cancelled social events, were less active at work or school and skipped their household chores. This is in line with findings from the present study, where factor analysis revealed that migraine was associated with impairment of ability to work or do activity at home (weight = 0.206), with feeling angry because of headache (weight = 0.207) and with feeling tired to do usual activities (weight = 203). Migraine was, also, significantly associated with restricted climbing many stores (weight = -0.245), but not washing or unclothing (weight = 0.274).

In the present study the highest proportions of the subjects with migraine had headache bouts daily (49.2%) and it started gradually (54.2%), bouts come in the night (69.5%) and site of feeling pain is unilateral (50.8%). Majority of the subjects had headache in the form of squeezing pain (49.7%) or throbbing pain (47.5%). This was in line with previous studies (Almalki et al., 2018; Gouhar et al., 2018). Regarding the trigger factors for migraine, in reviewing the literature, stress and sleep disturbance were the most common triggers (Burch et al., 2018; Aljaafari et al., 2021), which was confirmed in the present study.

Other triggers included bright light and noise. Analgesic medications are often used to relieve migraines, as show in our study (87.5%). Acetaminophen (77.9%) was used most often, followed by NSAIDs (16.9%) and triptans (5.0%). This was in line with previous studies (Burch et al., 2018; Aljaafari et al., 2021). Great proportion of the subjects felt nausea before the headache bout (44.1%) and nausea and vomiting accompanied 89% of the bouts of headache. This was also reported by other studies (Ojini et al., 2009; Aljaafari et al., 2021).

Although many patients with migraine got positive benefits from conventional pharmacological treatments, many others did not benefit sufficiently or experienced adverse effects from these treatments (Zhang et al., 2017). For that reason, these patients usually adapted complementary and/or alternative medical (CAM) treatments all over the world. Up to 50% of those with severe headaches/migraines used complementary and alternative medicine (CAM) and integrative medicine treatment options (Zhang et al., 2017). In the present study several methods were resorted to, but wet cupping and Chiropractor were the most ones employed. Headache in majority of the subjects, in the present study, with migraine was relieved by rest in a dark room (49%) or by sleeping (45%). This was consistent with reports from other studies (Domingues et al., 2006; Aljaafari et al., 2021).

Limitations

There are some limitations to this study: As this study is cross-sectional, the causal relationship remains unknown and we do not know if the effects of these variables on Migraine during the COVID-19 pandemic will persist in the long term. It is also a nonprobability convenient sample and its generalization to the population may be defective; however, it is an exploratory study, and using Multinomial logistic regression allowed for the confounding variables and effects, which led to the controversial findings reported in the literature.

5. CONCLUSION

Migraine is a common disabling health problem among the population of Jeddah, KSA. Having migraine in a close relative is a significant risk factor for occurrence of migraine. Acetaminophen and to a lesser extent NSAIDs are the main remedies used by the subjects to cope with migraine, while Wet cupping is the commonest CAM method used to cope with migraine.

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Author Contributions

FG contributed to study design, analyzing data and writing the first original draft; SQ, MA, RA, WW and SD contributed to analyzing the data and writing the draft. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of Ibn Sina National College for medical studies (No. H-12-09062021, approval date: 9 – 6- 2021).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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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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