The Prevalence of Migraine Headache and Its Associated Factors among Physicians Working in Primary Health Care at Ministry of Health inside Makkah Al- (A cross-sectional study) Mokarramah, 2020

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Abstract:

Aim: *To assess the prevalence of migraine headache and its associated factors among physicians working in Primary health care.*

Method: *A cross sectional study was conducted among primary health care physicians who worked at three primary health care centers located in Makkah city during 2020.*

A validated self-administered questionnaire was used for data collection including socio-demographic and personal characteristics, Diagnostic criteria of episodic Migraine headache and its associated factors and, The Migraine Disability Assessment test.

Result: *Out of 157 physicians, 51.0% were female, age ranged 20-48 with mean score 35.2 and SD 6.9. The majority (80.3%) were married, 67.5% general practitioner and 23.5% had Board Certified family physicians. The mean score of experience was 6.3±3.0 years. The majority of the participants (79.6%) suffered from headaches during the last year, 45.9% described headache as Pulsating, 28.8% had headache on one side of the head, 38.7% reported that exercises make headaches worst. The common symptoms were noise bother 55%, lighting bothers 37.8% , followed by nausea 19%, then vomiting 2.7%. While the common reason for headaches were "Stress or anxiety", followed by "Sleep disturbance", then "Missed meals". On the other hand, the main relieve reasons were "Sleep" (76.5%), followed by "Rest' (48.6%), then "Quiet and darkness" (36.9%). The prevalence of migraine was 12.7%. The prevalence of the total number of days regarding MIDAS grade was 40.0% for grade I, 10.0% for grade II , 35.0% for grade III, and 15.0% for grade IV. There was a significant higher rate of headache in females (p=0.027), older age (p=0.037), and more experience (p=0.00).*

Conclusion: *Headache is a common disorder among physicians, where more than three quarters of the physicians suffered from headaches during last year without connecting to other diseases. Less than fifth had migraine. Headache episodes were significantly higher among females, those with more experience, and older.*

Recommendation: *Health education messages about headache disorders and migraine should be enforced for those who are female, older, and had more experience. Encourage physicians to change their lifestyle and take periodic vacations during working duration (2 weeks/6 months) better than (1 month/1 year). Encourage physicians to ask for professional help to decrease and prevent headaches and migraine episodes. Further nationwide studies on detecting the prevalence of headache disorders and migraine need to be conducted in larger sample sizes and regions other than Makkah Al-Mokarramah.*

I. INTRODUCTION

1.1 BACKGROUND

Globally, migraine is a common source of burden to public health and primary care [1]. It was ranked as the third most prevalent disorder and the seventh-highest specific cause of disability worldwide [2]. It negatively affects both quality of life and productivity whether at work or at home. It is more common among the productive workforce segment of the population[3].

During the last decades, the death toll from infectious diseases has been either declining or stabilizing and there are greater numbers of people who live longer. Therefore, disorders that cause morbidity and disability, e.g., migraine, have become important causes of global health burden [4].

The global years lived with disability for migraine have been steadily increasing since 1990. Therefore, primary headache disorders are now the leading causes of sequelae of about one third of the population [5].

The World Health Organization has recognized migraine as an important public health concern and listed it as one of the leading causes of disability worldwide [6].

1.1.1- Definition

Migraine is described as "a common, chronic neurovascular brain disorder that has cranial autonomic findings, characterized by recurrent, severe attacks of headaches often associated with other symptoms and much disability, as well as personal, familial and societal impact"[7].

Episodic migraine is characterized by those with migraine who have 0 to 14 headache days per month, while chronic migraine is characterized by 15 or more headache days per month for 3 or more months[8].

1.1.2- Epidemiology and risk factors

The observed one-year prevalence of migraine in Saudi Arabia was 32% [9].

In western countries, the prevalence of migraine is about 12%, with three times more predilection among women than men[10].

There is limited evidence that exists about epidemiology and risk factors for migraine [11]. The prevalence slightly decreases with age but is higher among women and individuals who were divorced, separated, or widowed [12].

1.1.3- Migraine among physicians

Work stress is one of the environmental risk factors for migraine. Healthcare professionals, who are considered to have stressful jobs and are frequently on rotating work shifts. Also noted that is among health care professionals, physicians are especially stressed.

A good way of explaining the high prevalence of migraine among physicians is that migraine offers a unique model to understand the consequences of repeated stressors on the brain, which can alter the normal response of physiological systems. Consequently, the brain responds abnormally to environmental conditions [13,14,15].

1.1.4- Diagnosis

It is a clinical diagnosis [16].

According to the Third International Classification of Headache Disorders (ICHD-3 Beta) [8], migraine has been classified into two major subtypes:

Migraine without aura, and **Migraine with aura**

1.2 RATIONALE

1. The researcher has a special interest to identify the prevalence of migraine headache among physicians, and the associated possible risk factors.
2. Up to the researcher's knowledge, there is a gap in similar studies conducted in the Kingdom of Saudi Arabia.

1.3 AIM OF THE STUDY

To assess the prevalence of migraine headache and its associated factors among physicians working in Primary health care.

1.4 OBJECTIVES

1. To estimate the prevalence of migraine headache among physicians working in primary health care centers at the ministry of health inside Makkah AL- Mokarramah city, 2020
2. To determine factors associated with migraine Headache among the same population.

II.   LITERATURE REVIEW

2.1 International studies

In 2013 in Iran, Yazdanparast and colleagues conducted a descriptive study among 350 medical students. It showed that 24.6% of the medical students had experienced recurrent, severe headaches. The prevalence of migraine was 16.3% and it was differed by gender, and it was greater among male students [17].

In 2016 in Ethiopia, Birru and colleagues conducted an institution based cross-sectional study among 720 students to determine the prevalence of migraine and tension-type headaches and the associated management options used among undergraduate students at the College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia. The results showed that the prevalence of a lifetime headache and headache in the last 12 months was 81.11 and 67.22 %, respectively. A significantly higher rate of a lifetime headache and analgesia use was among females, students with a family history of a headache and lack of adequate vacation time [18].

In 2015, in Taiwan, Yin Kuo et al conducted a nationwide population-based cohort study used Taiwan's National Health Insurance Research Database, to detect the prevalence of migraine risk differences between HCPs and the general population. The result revealed that physicians, nurses, and other HCPs had higher migraine risks than did the general population (adjusted odds ratio [AOR]: 1.672; 95 % confidence interval [CI]: 1.468–1.905, AOR: 1.621; 95 % CI: 1.532–1.714, and AOR: 1.254; 95 % CI: 1.124–1.399, respectively) [13].

2.2 National studies

In 2017, in Saudi Arabia, Alwahbi et al conducted a cross-sectional observational study to determine the prevalence of migraine among all medical students of all academic years, in King Saud bin Abdulaziz University for Health Sciences and its association with several factors. The results showed that migraine was recognized in 23.7% of students using ID-Migraine. Migraine prevalence in females was significantly higher than males $p < 0.001$ [19].

In 2017, in Saudi Arabia, Alzahrani et al conducted a cross-sectional study among 308 medical and paramedical staff to identify the prevalence of headache and its impact on job performance in emergency department medical and paramedical staff. The results showed that in the last 3 months prevalence of headache among participants was 272 (88.3%) with statistically significant differences with physical activities (P = 0.008) and smoking (P = 0.020). There were statistically significant differences (P ≤ 0.05) between headache impact test and age, marital status, specialty, BMI, physical activities, smoking, headache duration, specialist consultation, medication use, and frequency of absenteeism [20].

III.   METHODOLOGY

3.1   Study Design

Cross-sectional descriptive study.

3.2   Study area

The Holy City of Makkah is the holiest city on earth to Muslims. It is variously known as Makkah Al-Mokarramah.

This study was conducted at the Ministry of Health PHCCs, which include seven supervisory sectors, three of them inside Makkah (Al-Zahir, Al-Kakia, and Al-Adel) with 39 PHCCs and 252 physicians. The other four supervisory sectors are located outside Makkah with 44 PHCCs and 131 physicians.

3.3   Study Population

Physicians working in PHCCs at MOH inside Makkah Al-Mokarramah City, during the study period approximately (N=252 physicians)

3.3.1   Inclusion criteria

All primary health care physicians working at MOH PHCCs in the three supervisory sectors inside Makkah Al-Mokarramah City.

3.3.2 Exclusion criteria

- Dentists
- Physician who are on vacation
- Physicians working in the three sectors are assigned to work outside them during the study period.

3.4   Sample size

Sample size for this study was calculated by Raosoft statistical program for sample size calculation. It was calculated to be 159 physicians, based on 32% prevalence [9], 95% confidence level, 5% error and, 10% for defaulters and non-respondents.

3.5   Sampling technique

Proportional allocation stratified sample. After calculating the sample size, participant physicians were divided into strata according to their sectors. As such, they were divided into 3 strata including (Al Zahir, Al Kakia and, Al Adel), According to their percentages.

- 35% are worked in Al-Zahir sector N=87
- 32% are worked in Al-Kakia sector N=81
- 33% are worked in Al-Adel sector N=84

Afterward, the sample size was distributed over these 3 sectors according to these percentages.

Then, a systemic sampling technique was applied. The official list was taken from the corresponding supervisory sectors administration. Each third physician on each list was included as a potential participant till the total number for each sector is completed.

3.6 Data collection tool

A self-administered questionnaire Adopted and modified from previous a study [9], and revalidated by three consultants. During the pilot study, the researcher tests the reliability. Cronbach's alpha showed the questionnaire to reach acceptable reliability, α =0.84.

The questionnaire consists of three main parts:

- First part: socio-demographic and personal characteristics including age, gender, nationality, marital status, medical degree, year of experience and sectors.
- Second part: consists of two domains:
- ☐   Domain 1: Diagnostic criteria of episodic Migraine headache

    ☐   Domain 2: Associated factors

•   Third part: The Migraine Disability Assessment test (MIDAS):

A 7-item questionnaire (with 5 scored items) is designed to evaluate headache - related disability within the most recent 3 months. The patient needs to score the reduction in performance, in days, of work, household work, and family/social activities. The MIDAS score consists of four grades of severity that predict the patient's treatment needs: Grade I, little or no disability (score of 0–5); grade II, mild disability (score of 6–10); grade III, moderate disability (score of 11–20); and grade IV, severe disability (score of ≥ 21). MIDAS Grade I usually indicates a low medical need, simple over-the-counter analgesics may be effective in the acute treatment of these patients, grade II patients should also qualify for first line triptan medication if they have failed on simple analgesics and grade III/IV indicates a high medical need, specific acute therapy such as a triptan, is usually the most appropriate therapy for these patients. Prophylactic treatment should also be considered.

3.7 Data Collection technique

•   After receiving the official approval from the general directorate of health affairs-general health section in Makkah Al-Mokarramah, a list of physicians' names and contact numbers was obtained from each sector, and a systemic sampling technique was done on this list. Each third physician on each list was included as a potential participant. the researcher visited all the concerned PHCCs.

•   The main tool of the study was a self-administered questionnaire with a covering message clarifying the goal of the study without mentioning names to guarantee confidentiality along with written consent.

•   The questionnaire was distributed by the researcher herself during break time or prayer time to avoid the rush hours at the clinics and care was taken not to disturb the physicians. If a selected physician was not available, the researcher would select the next one on the list.

•   The researcher was available to clarify any issue and the questionnaire was collected after being filled. If one of the physicians could not fill the questionnaire at the same time, the researcher would come again at the end of the day or on the next day to collect it.

•   The same process was repeated on the selected physicians at different PHCCs till the researcher retrieves all questionnaires.

3.4   Study variables

3.8.1 Dependent variables

  Prevalence of Migraine Headache And Its Associated Factors Among Physicians: Stress, hormones in women, missed meals, weather changes, sleep disturbance, certain smells or perfumes, light, smoking, certain foods, exercise, sexual activity, Others

3.8.2 Independent variables

  Age, gender, nationality, marital status, medical degree, and year of experience in PHC

3.9 Data Entry and Analysis

- All collected data were verified and coded before its entry to a personal computer.
- Data entry and analysis were accomplished using the Statistical Package for the Social Sciences (SPSS 24) statistical program.
- For categorical variables, (frequencies and percentages) were used. While numeric variables, (mean and standard deviation) were used for description.
- Statistical tests such as Chi-square, T-test, and other appropriate tests were used.
- P-value of less than 0.05 was considered statistically significant.

3.10 Pilot study

A pilot study was conducted on (10%) of the sample (15 physicians) in Al Sharaya PHCC, which is located outside Makkah, to test the questionnaire validity and understanding before starting the actual research, necessary modifications were made accordingly.

3.11   Ethical considerations

•   Permission from the general directorate of health affairs-general health section in Makkah Al-Mokarramah was obtained, No 275.

•   A written consent (on the front page of the questionnaire) was obtained from each physician.

•   All collected data were kept confidential and were not used except for scientific research.

•   Ethical considerations were observed throughout the research.

3.12   Budget

Self- funded.

IV.   Results

4.1 Response rate

Out of 159 physicians, 157 accepted to participate in the study representing 98.7% response rate.

4.2 Demographic data of the physicians

Out of 157 physicians, demographic data are presented on Table1

Table (1) Demographic data:

Variable	Mean± SD	Range (min-max)
Age	35.2±6.9	(20-48)
Experience years	6.3±3.0	(1-24)

variables	N	%
Gender		
Male	77	49.0
Female	80	51.0
Nationality		
Saudi	69.0	43.9
Non-Saudi	88.0	56.1
Marital Status		
Single	23.0	14.6
Married	126.0	80.3
Divorced	7.0	4.5
Widowed	1.0	0.6
Medical Degree		
General practitioner	106.0	67.5
Board Certified family physician	37.0	23.5
Diploma Certified family physician	10.0	6.5
Other	4.0	2.5
Sector		
Al Zahir	55.0	35
Al Kakia	50.0	32
Al Adel	52.0	33

Data presented as numbers and percentages or as mean±SD

The majority of the participants 125 (79.6%) suffered from headache during the last year, the diagnostic criteria and its associated factors are mentioned on table 2

Table (2) Diagnostic criteria of Migraine headache & its associated factors

Variable	Mean± SD	Range (min-max)
Headache episode /month	4.0±1.0	(0.0-30)
Duration of headache	7.0±2.5	(0.30-12)
Age of first headache	18.7±10.3	(1.0-30)

Variable	N	%
Have you had a headache during the last year?		
No	32.0	20.4
Yes	125.0	79.6
In the last year, have you had headache that was not part of another illness?		
No	14	11.2
Yes	111	88.8
How would you describe your headache?		
Throbbing or pulsating	51	45.9
Pressing, squeezing or tightening	60	54.1
Is the pain of this type of headache usually on		
One side of the head	32	28.8
Both	79	71.1

Variable	N	%
Does physical activity (like walking or climbing stairs) tend to make this type of headache worse?		
No	68	61.2
Yes	43	38.7
With this headache, do you feel nausea?		
No	90	81
Yes	21	19
With this headache, do you actually vomit (throw up)?		
No	108	97.3
Yes	3	2.7
When you have this type of headache, does daylight or other lighting bother you?		
No	69	62.2
Yes	42	37.8
When you have this type of headache, does noise bother you?		
No	50	45
Yes	61	55
Have you had your headaches evaluated by a neurologist?		
No	92	82.9
Yes	19	17.1

Variable	N	%

If "yes", what was the diagnosis:		
Migraine	13	68.4
Tension-type	5	26.3
Cluster	1	5.2
Have you ever had a head or a neck injury requiring medical treatment?		
No	110	99.1
Yes	1	.9
Do any of your family members have migraine headaches?		
No	104	66.2
Yes	53	33.8
Have you ever been diagnosed to have any chronic health disorder (e.g., high blood pressure, asthma, heart disease, peptic ulcer)?		
No	144	91.7
Yes	13	8.3
Do any of the following occur before or during your headache? (Check all that apply)		
Blurred/double vision, loss of vision, zigzag lines appear, numbness or tingling, one side of the body weakness and Speech difficulty	0	0
None	157	100

Variable	N	%
Do any of the following bring on your headaches or make them worse? (Check all that apply)		
Stress	99	89.1
Hormones in women	19	17.1
Missed meals	47	42.3
Weather change	13	11.7
Sleep disturbance	71	63.9
Certain smells or perfume	10	9.0
Lights	15	13.5
Smoking	13	11.7
Certain foods	2	1.8
Exercise	14	12.6
Sexual activity	3	2.7
None	0	0
Do any of the following make your headaches better?		
Rest	54	48.6
Sleep	85	76.5
Quiet and darkness	41	36.9
Exercises	0	0.0
Massage	19	17.1
Warm shower	9	8.1
None	4	3.6

The prevalence of migraine was 20 (12.7%), where 13 (65%) cases diagnosed by neurologist, and the rest 7 (35%) diagnosed by the criteria , these 7 cases were migraine without aura.

The prevalence of the total number of days regarding MIDAS grade were 8 (40.0%) for grade I (Little or No Disability) (0-5 days),2 (10.0%) for grade II (Mild Disability) (6-10 days), 7 (35.0%) for grade III (Moderate Disability) (11-20 days), and 3 (15.0%) for grade IV (Severe Disability)

(≥21 days). On the other hand, only one case had chronic migraine (>15 days).

The results showed a significant higher rate of headache in female than male (p=0.027). On the other hand, there was no significant difference regarding marital status and medical degree, even that those who are married and general practitioner had the higher rate of migraine. (Table 3)

Table (3) The relation between migraine and demographic data (1):

Variable		Having headache		Test
		No	Yes	P value
Gender	Male	21 65.6%	56 44.8%	X^2=4.4 P=0.027*
	Female	11 34.4%	69 55.2%	
Marital status	Single	4 12.5%	19 15.2%	X^2=2.4 P=0.571
	Married	28 87.5%	98 78.4%	
	Divorced	0 0.0%	7 5.6%	
	Widowed	0 0.0%	1 0.8%	
Medical degree	General practitioner	21 65.6%	84 67.7%	X^2=1.7 P=0.620
	Board Certified family physician	5 15.6%	32 25.8%	
	Diploma Certified family physician	4 12.5%	6 4.8%	
	Other	2 6.3%	2 1.6%	

Data presented as numbers and percentages.

The total number of participants was equal 157.

Comparisons were made using Chi square test

* Statistically significance at the <0.05 level.

The results showed a significant higher rate of headache in older age (p=0.037), and more experience (p=0.00).

V. Discussion

Primary headache disorders, including a migraine, tension-type, and cluster, are the main global health problems because of their high prevalence and their important disability burden upon the patients [21,22].

The global burden of a headache is very huge, in contrast, a burden of a headache is extensively ignored [23]. which affects the quality of life and routine activities [24,25].

The present study aimed to assess the prevalence of migraine headache and its associated factors among physicians working in Primary health care, Makkah Al-Mokaramah, Saudi Arabia.

Results of this study showed that more than three quarters of the PHCPs suffered from headaches during the last year without any associating with other diseases.

It is higher than Taiwanv study , which was 1.5% [13].

Alwahbi et al reported that the prevalence of migraine was 23.7% among medical students [19]. While Alzahrani et al reported the prevalence to be (88.3%) [20].

This difference could be due to the variety of socio-economic factors, and geographic areas. As well as the variation in the criteria for the definition of headache disorders, differences in study design, and study population.

Global literature reviews reported that a stress-migraine interaction was because the physiological stress response engaged in neuroendocrine, metabolic, and immune changes caused by the stimulating of the hypothalamic-pituitary-adrenocortical axis, and of the sympathetic nervous system [26,27,28].

In the current study less than fifth went to neurologist for evaluation.

The study of Alzahrani et al., in Saudi Arabia, found that 30 (11.0%) went to neurologist [20].

Huge workloads, work stress, shift work, and sleep disturbance were reported as the main reasons for targeting migraine episodes, this explains why the rate of migraine is higher among healthcare professional than other jobs. [29-33].

Migraine could cause considerable productivity damages due to absenteeism and reduced effectiveness at work. A previous study about the productivity impact of headaches on a heavy-manufacturing workforce revealed that a small minority (5.7 %) of those with headaches, who was only 2.5 % of the staff, accounted for >45 % of the lost productivity during work [13].

In the current study, the prevalence of the total number of days regarding MIDAS grade was (40.0%) for grade I, (10.0%) for grade II,(35.0%) for grade III, and (15.0%) for grade IV.

VII. Conclusion

Based on the findings of the researcher study, the following can be concluded:

- Headache is a common disorder among physicians.
- The common symptoms were light sensitivity, noise sensitivity, nausea and vomiting.
- The common reason for headache were "Stress or anxiety", "Sleep disturbance" and "Missed meals".
- The main relief reasons were "Sleeping", "Rest", and "Quiet and darkness".
- Headache episodes were significantly higher among female, those with more experience, and older.

VIII. Recommendation

Based on the findings of the researcher study, the following can be recommended:

- Health education messages about headache disorders and migraine should be enforced for those who are female, older, and had more experience.
- Encourage physicians to change their lifestyle.
- Encourage physicians to take periodic vacation during working duration (2 weeks/6 months) better than (1 month/1 year.
- Encourage physicians to ask for professional help to decrease and prevent headache and migraine episodes.
- Further nation-wide studies on detecting the prevalence of headache disorders and migraine need to be conducted in larger sample size and regions other than Makkah Al-Mokarramah, so as to identify the prevalence and underlying causes.
- To present the most key points in this study to hospitals and PHCCs administrators.
- Designing different interventional programs to develop an effective preventive strategy for this underestimated problem.

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