EVALUATION IMPACT OF MIGRAINE HEADACHE AMONG HEALTH CARE WORKERS IN PRIMARY HEALTH CENTERS DURING COVID-19 IN MAKKAH CITY, SAUDI ARABIA, 2022

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Abstract:

1. Background: Migraine is estimated to be the third cause of disability, according to the Global Burden Disease (GBD), in health care workers. It can be severe enough to impair quality of life and daily activities. The most accepted pathophysiological hypothesis for migraine is the trigeminovascular theory. Covid-19 is a novel infectious agent causing coronavirus disease 2019, which has been declared as pandemic in March 2020. Personal protective equipment has been mandatory for healthcare workers in order to contain the outbreak of pandemic disease. Mild neurological disturbances such as migraine headache, common migraine triggers include long fasting, hypoglycemia. Migraine is a common neurological disorder with significant impact on quality of life, affecting 12% Saudi population. migraines impose significant health and financial burdens, headache is a common neurological disorder, which is associated with a significant disease burden, headache affects work, social and leisure activities and has a tremendous impact on a person's life also the migraine is one of the most critical concerns among healthcare providers and other relevant stakeholders in the health sector. **Aim of the study**: To Evaluation impact of Migraine headache among health care workers in primary health centers during Covid-19 in Makkah City, Saudi Arabia, 2022 **Method** : Across-sectional study among health care workers in primary health care center in Makkah 2022, the study has been conducted health care workers who works in PHC centers in Makkah city KSA. Was conducted using an online questionnaire designed during August 2022. The questionnaire collected the socio-demographic factors, a migraine screen questionnaire (MS-Q) Migraine Disability Assessment questionnaire (MIDAS), our total participants were (163).**Result:** that most of the participants (40%) were in the age group(>50) years follow by the (33.0%)were in the age (25-50) years, regarding the Nationality most of participants non-Saudi were were(73.0%), the majority of them males was higher compared to male(53.0% and 47.0%), regarding the marital status most of participants married were(50.0%), regarding level of education the majority of participant are Consultant were(49.0%) while general practitioner were(29.0%). **Conclusion:** Only one-third of Saudi migraines possess background knowledge about migraine triggers. Family history of migraine is very common among Saudi migraines' mostly experienced by people with migraine disease during Covid-19

Keywords: Evaluation, impact, Migraine, headache, health care workers, primary health centers, Covid-19, Makkah City.

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Introduction

Migraine is a public health problem and it is the third most common cause of disability among health care works in primary health centers during Covid-19 In spite of the multiplicity of the studies concerned with exploring the disease epidemiology and nature worldwide, data from Saudi Arabia are lacking. (1) Migraines are incredibly common yet disregarded medical issue, and can be characterized as a crippling condition that might bring about a lower personal satisfaction and upset job performance, eventually making a critical economic burden on societies and it is one of the commonest detailed neurological issues found in primary care settings(2). Repeating headache issues are a typical clinical issue, remaining among the top reasons for disability and sufferings. There is an absence of data about its circulation, disease characteristics and related co morbidities in KSA .(3)

Coronavirus disease 2019 (COVID-19) is an acute infection of the respiratory tract emerged in late 2019 from the city of Wuhan in China and rapidly spread to other countries worldwide (4). On March 11, World Health Organization (WHO) declared COVID-19 outbreak a global pandemic(5). To date, there are nearly 87.4 million confirmed COVID-19-affected patients worldwide. The first imported cases in Italy were on 23 January 2020 in a couple of Chinese tourists(6), and it is now reaching the number of 2.2 million, with around 77,000 deaths(7). On March 8, 2020, the Italian Government implemented extraordinary measures to limit viral transmission, such as city lockdowns and movement restriction, initially in the region of Lombardy, then extended to the entire nation (phase I) (8). On May 16, 2020, the Italian Government declared the suspension of the extraordinary measures, but people are suggested to keep social distancing and wear facemask (phase II) (9). SARS-CoV-2, like

Other coronaviruses, spread by respiratory droplets; therefore, personal protective equipment (PPE) has become mandatory for healthcare workers while attending to patients, in order to contain the outbreak of pandemic disease (10). In particular, both surgical and close-fittingN95 facemasks create a barrier between individuals limiting the aerosol spread of viruses (11)

Headache is perhaps the most basic worries among medical services suppliers and other important partners in the health sector. It is one of the significant reasons for disability among older patients (aged 50-years and more). Saudi Arabia has had a lot of the medical problem with the always expanding prevalence of migraine in the country.(12) Work-related pressure is viewed as a significant natural reason for migraine(13). Healthcare workers have an upsetting workplace, are often presented to emotional pressure, and are frequently on pivoting work shifts in view of their work requests (14) . Practically half (45%) of Healthcare workers, especially doctors and nurses, reported highly stressful workdays (15)

According to the World Health Organization (WHO), a big part of the grown-up populace overall is influenced by migraines. These incorporate tension-type headaches, headaches, and group migraines. Just about one-third of cerebral pain cases in grown-ups are headaches (16). Headache is a neurovascular issue portrayed by relentless migraine going from moderate to serious agony. Regularly, it influences just one side of the head, as a throbbing aggravation, and endures from hours to days. Its assault normally starts suddenly, arrives at its greatest in at least one hours, and endures as long as 12 hours . It is also observed to run in families, so it is perceived to have a solid hereditary substrate (17).

Authors showed that PPE-associated headache fulfilled the International Classification of Headache Disorders (ICHD-3) criteria for external-compression headache (ECH), defined as "headache starting within one hour from compression of per cranial soft tissues and resolving within one hour after external compression is relieved"(18). The three problems that are responsible for the most of headache-attributed burden are tension-type headache, migraine, and medication overuse headache (MOH) (19). Migraine is described by unilateral, pulsatile attacks of headache, which is more present in the temporal area and its duration ranges in the range of 4 and 72 hours (20). It is more seen among females than guys, which could be credited to changes in the hormone levels. Headache could diminish work execution and day by day exercises, as most headache sufferers revealed decrease of exercises during headache attacks (21)

Literature review

This study about Evaluation impact of Migraine headache among health care workers in primary health centers during Covid-19 in Makkah City, Saudi Arabia, 2022, some interesting results, unreported on Makkah region in Saudi Arabia before this current study,

Ibrahim NK, et al.(2017) reported in their study that migraine, despite having a higher prevalence in young adult Saudi population , is frequently underdiagnosed and undertreated.(22). In the previous studies, prevalence of migraine Aura consisting of visual, sensory, or speech symptoms was reported by two out of five participants reporting migraine.(23)

Studies have concluded that though biological factors may explain some of the differences, but the main explanation is presumably gender disparities in work, economy, daily living, social life and expectations between women and men and deeper societal changes are needed to reduce the inequities in pain experiences between women and men.(24)

Many researchers agree that the health problem can cause throbbing pain in the affected area, which varies in intensity.6 More than 70% of the patients diagnosed with the condition report nausea and sensitivity to light as well as sounds.(25)

Significant association of headache with other socio-demographic and personal characteristics like job type, working hours, sleeping hours was also revealed. Civil workers, those with more working hours and less sleeping hours suffered more with migraine than non-migraine headache. Migraine has previously shown to be significantly associated with unemployment in other studies. In the previous literature studies that stated that migraine headache was more prevalent among females (26) High prevalence of migraine among females can be attributed not only to hormonal changes, but also to central cortical excitability (27). Krause et al (2021 reported in their review article stated the Migraine headache was also found to be more prevalent among city habitants than countryside habitants. The stressful life in the city, and the lack of meditation and relaxing country nature can be the reasons behind the high prevalence of migraine among city inhabitants. Migraine was significantly associated with high rates of unemployment.(28)

Other study reported that episodic migraine is the commonest headache occurring in younger age group, predominantly in women. This finding is consistent with many studies documenting that migraine is experienced mostly at young age, among 20% of women and 10% men (29). The female gender predominance may be attributed to the role of estrogen acting as a key factor in the increased prevalence of migraine in women (30). Interestingly, our study showed a positive correlation between migraine and higher educational level as well as satisfactory monthly income. On the contrary, a recent study conducted in India showed that migraine was more common in patients with lower educational level and lower monthly income (31).

Rationale

Migraine is prevalent in Saudi Arabia. It is more prevalent among females, and among urban areas. Migraine causes negative consequences and is associated with high rates of unemployment. Most Saudi migraineurs encounter throbbing, moderately severe headache that does not awake them from sleep. Females report more severe headaches, whereas men seek medical advice more and take medications. Nausea is the most common associated symptom with migraine. Family history of migraine is very common among Saudi migraineurs. Our findings suggest that risk, job insecurity, frustration with health care center administration, inadequate access to personal protective equipment, and witnessing patient suffering and death contributed to deteriorating mental and physical health. Negative health impacts included the onset or exacerbation of anxiety, depression, and somatic symptoms, including weight fluctuation, fatigue, and migraines.

Aim of the Study

To Evaluation impact of Migraine headache among health care workers in primary health centers during Covid-19 in Makkah City, Saudi Arabia, 2022

Objectives:

- To measure the prevalence of migraine among care workers who works in PHC centers by using valid and reliable questionnaire in Makkah city , Saudi Arabia, 2020.
- To Evaluation impact of Migraine headache among health care workers in primary health centers during Covid-19 in Makkah City, Saudi Arabia 2022.

SUBJECTS AND METHODS

Study design:

A cross sectional study has been carried out among health care workers in primary health centers during Covid-19 in Makkah City, Saudi Arabia who works in PHC centers in Makkah city, Saudi Arabia, 2022.

Study setting
The study has been carried out among health care workers who works in PHC centers during Covid-19 in Makkah Al-mukarramh at Saudi Arabia, 2022. Makkah is the holy city of every Muslim in the world. It is the main place of the pilgrims to perform Umrah and Hajj. Makkah is a modern city and there is a continuous working to improve the infrastructure of Makkah for the sake of both Makkah citizens and pilgrims. Also, it has 85 PHC centers under supervision of Directorate of Health Affairs of Makkah. These centers distributed under 7 health care sectors and each sector contains around 10 – 14 primary health care centers. Three health care sectors inside Makkah city (urban) with 37 primary health care centers underneath and four sectors are outside Makkah (rural) with 48 primary health care centers. The three healthcare sectors inside Makkah are Al-Ka'akya with 11 primary healthcare centers, Al-Adl with 12 primary healthcare centers and Al-Zahir with 14 primary healthcare centers.

Study area:
The study has been conducted in all PHC in Makkah, Saudi Arabia in 2022, under supervision of Directorate of Health Affairs. They are distinguished by their environment and the large number of health care workers who works in them, which is characterized good environment.

Study population:
The study population has been all health care workers who works in PHC centers during Covid-19 in Makkah city, Saudi Arabia, 2022, and agreed to fill the questionnaire.

Eligibility Criteria
a. Inclusion criteria:
All Saudi health care workers who works in PHC centers available during Covid-19 on the duration of the study .
b. Exclusion criteria
Health care workers who are not available during Covid-19 on the duration of the study.

Study Sample:
The sample size has been calculated by epiInfo, http://www.raosoft.com/samplesize.html (The margin of error: 5%, Confidence level: 95%, and the response distribution of the prevalence counted for 50% for the lack of local studies) accordingly the Sample size is (163) of Health care workers in PHC and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been the total population is 300 Health care workers. Computer generated simple random sampling technique was used to select the study participants.

Sampling technique:
The participants will be randomly chosen by using systematic sampling technique by dividing the total population by sample size 300/163=1.7 , the index case out of 2 will be decided randomly.

Data collection tools and instruments:
Pretested, a questionnaire has been used in data collection. The study questionnaire package has been provided to all participants. The package has been in English language and has been include questions about socio-demographic factors, a migraine screen questionnaire (MS-Q) Migraine Disability Assessment questionnaire (MIDAS)

Migraine screen questionnaire
The migraine screen questionnaire (MS-Q) is a five-item migraine screening questionnaire developed for use in clinical practice and research settings both in the general population and occupational medicine. The questionnaire is based on the international headache society criteria (IHS) on migraine diagnosis. Each of the five items in this structured questionnaire has a dichotomous response option of yes/no. A score of 0 is assigned for each "NO" response and of 1 for each "YES" response. The total score is 5, where a cut-off point of ≥4 was used to indicate a case of migraine .

Disability Assessment questionnaire MIDAS
Measuring the burden of migraine should be a prelude to effective treatment designed to reduce that burden. The most frequently used disability instrument in migraine research is the MIDAS questionnaire (Stewart and Lipton, 2002). The MIDAS questionnaire consists of five questions that focus on lost time in three domains: schoolwork or work for pay; household work or chores; and family, social, and leisure activities. All questions ask about either days of missed activity or days where productivity was reduced by at least half. If productivity is decreased to 50% or below, the day is considered missed. The MIDAS score is derived as the sum of missed days due to a headache over a 3-month period in the three domains. Two additional questions on the MIDAS questionnaire are not included in MIDAS score, assessing frequency and intensity of pain. The four-point grading system for the MIDAS questionnaire is as follows:

- Grade 1 (scores ranging from 0 to 5): little or no disability

- Grade 2 (scores ranging from 6 to 10): mild disability
- Grade 3 (scores ranging from 11 to 20): moderate disability
- Grade 4 (21 or greater): severe disability.

Data analysis:
For the Data entry and statistical analysis, SPSS 24.0 statistical software package was used. Quality control performed at the stages of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations, medians, and inert-quartile range for quantitative variables. Chi square test will used at the level of data analysis and association

Ethical concern:
Approval for research data collection of required authorities and institutions has been obtained. These data has been confidential and used just for research purposes.

Budget : Self-funded

Results
Impact of Migraine headache among Health care workers in PHC centers in Makkah City, Saudi Arabia, 2022, total of(300) Health care workers were in this study participants completed the study for a completion rate of 100%.

Table 1 distribution the Personal Information of the participants (n=300)

	N	%
Age		
<25	81	27
25-50	99	33
>50	120	40
Nationality		
Saudi	81	27
Non-Saudi	219	73
Gender		
Female	141	47
Male	159	53
Marital status		
Single	96	32
Married.	150	50
Divorced.	33	11
Widow	21	7
level of education		
General practitioner	87	29
Specialist	66	22
Consultant	147	49

Table 1 shows that most of the participants (40%) were in the age group(>50) years follow by the (33.0%)were in the age (25-50) years, regarding the Nationality most of participants non-Saudi were were(73.0%), the majority of them males was higher compared to male(53.0% and 47.0%), regarding the marital status most of participants married were(50.0%), regarding level of education the majority of participant are Consultant were(49.0%) while general practitioner were(29.0%)

Table (2) Description of Migraine headache among physicians in PHC centers during Covid-19

	N	%
Changed after Covid-19 starting.		
Yes	231	77
No	69	23
Current GPA during Covid-19		
<2	27	9
2 – 2.74	33	11
2.75 – 3.74	63	21

3.75 – 4.49	114	38
4.5 – 5	63	21
How much time do you spend work per day during Covid-19		
Less than 1 hour	57	19
1 - 2 hour	84	28
3 - 5 hour	111	37
More than 5	48	16
The numbers of meal per day during Covid-19		
1 meal	57	19
2 meals	105	35
3 meals	66	22
More than 3	72	24
Frequency of snacks between meals (chips, chocolate, sweets)		
Never	45	15
Always	102	34
Sometimes	105	35
Rarely	48	16
Fast food per week during Covid-19		
Never	57	19
1-3.	138	46
4-7.	66	22
More than 7	39	13
How often do you have stimulants (tea, coffee) in a week during Covid-19		
Never	57	19
1-3.	81	27
4-7.	69	23
More than 7	93	31

Regarding the Changed after Covid-19 starting the majority of participant answer yes were (77.0%) while followed by not changed were constitutes (23.0%), regarding the Current GPA during Covid-19 the majority of participant between the (3.75 – 4.49) were constitutes (38.0%) followed by between the (2.75 – 3.74) were constitutes (21.0%) while participant (<2) were constitutes (9.0%), regarding the how much time do you spend studying per day during Covid-19 the majority of participant 3 - 5 hour were constitutes (37.0%) followed by (1–2) hour were constitutes (28.0%) while less than (1 hour) were constitutes (19.0%), regarding the numbers of meal per day during Covid-19 the majority of participant between the (2 meals) were constitutes (35.0%) followed by more than 3 were constitutes (24.0%), while (3 meals) were constitutes (22.0%), regarding the frequency of snacks between meals (chips, chocolate, sweets) the majority of participant between the sometimes were constitutes (35.0%) followed by always were constitutes (34.0%) but Rarely were(16.0%) while never were constitutes (15.0%), regarding The Fast food per week during Covid-19 the majority of participant between the (1-3) were constitutes (46.0%) followed by between the(4-7) were constitutes (22.0%) while never were constitutes (19.0%), regarding How often do you have stimulants (tea, coffee) in a week during Covid-19 the majority of participant more than 7 were constitutes (31.0%) followed by between the(1-3) were constitutes (27.0%) while never were constitutes (19.0%)

Table 3: Distribution of the migraine screen questionnaire(MS-Q) of the participants

MS-Q	**No**		**Yes**	
	N	**%**	**N**	**%**
Do you have frequent or intense headaches	231	77	69	23
Do your headaches usually last more than 4hours?	237	79	63	21
Do you usually suffer from nausea when you have headache?	207	69	93	31
Dose light or noise bother you when have a headache?	174	58	126	42
Dose headache limit any of your physical or intellectual activities?	165	55	135	45

Table 3 shows regarding the frequent or intense headaches the majority of participants answer No were (77.0%), while Yes were(23.0%), regarding headaches usually for last more than 4 hours the majority of participants answer No were (79.0%),while Yes were(21.0%), regarding the suffer from nausea when you have headache the majority of participants answer No were(69.0 %),while Yes were(31.0%), regarding light or noise bother you when have a headache the majority of participants answer No were(58.0%),while Yes were(42.0%), regarding headache limit any of your physical or intellectual activities the majority of participants answer No were(55.0%),while Yes were(45.0%)

Table 4 : Distribution of the migraine screen (MS-Q) of the participants

	MS-Screen		Chi-square	
	N	**%**	**X^2**	**P-value**
Positive	126	42	7.363	0.0067*
Negative	174	58		
Total	300	100		
Range	1-8.			
Mean±SD	4.115+0.987			

Table 4 shows that the MS-Screen of migraine screen questionnaire (MS-Q) of the participants the mean ±SD was (4.115+0.987) while the data range (1-8) while the most of participants negative score were (58. 0%) while positive were (42.0%), while a significant relation were P-value=<0.0067and X^2(7.363)

Figure 1: Distribution of the migraine screen (MS-Q) of the participants

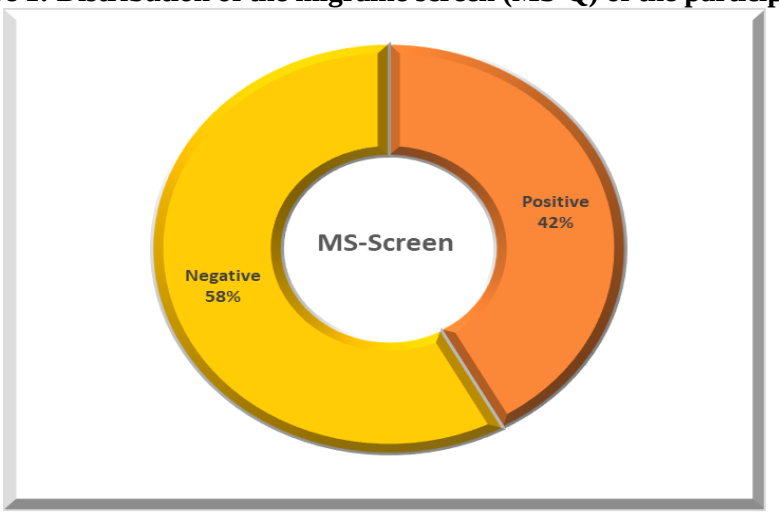
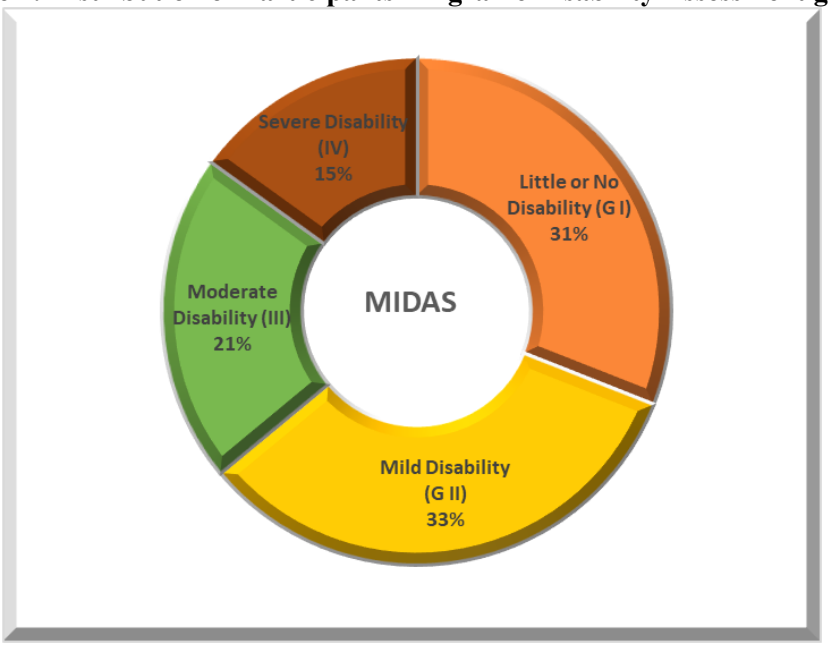


Table (5) Distribution of Participants' Migraine Disability Assessment grades

The Migraine Disability Assessment Test (MIDAS)			
		N	%
Little or No Disability (G I)		93	31
Mild Disability (G II)		99	33
Moderate Disability (III)		63	21
Severe Disability (IV)		45	15
Total		300	100
Chi-square	**X^2**	25.920	
	P-value	<0.001*	

Table 5 and shows that regarding the Participants' Migraine Disability Assessment grades the majority of participants in the Mild Disability (G II) were (33.0%) followed by Little or No Disability (G I) were (31.0), regarding the Total were(100.0%) while the a significant relation were P-value=<0.001 **X^2**were (25.920%) .

Figure 2: Distribution of Participants' Migraine Disability Assessment grades



Discussion

Migraine headache is a common neurological disorder affecting Saudi population, was found to be higher than prevalence reported in different studies. For instance, headache was reported in 53.2% of individuals studied in Brazil in 2005 , 33.8% in Nairobi, and 27.9% in Kuwait. The most of age in our participants was >50 years, which was close to the findings of the previous Saudi study conducted on migraine patients, where the mean age of patients was 34.21 years. Pradeep et al. reported that migraine was more frequent among young and middle-aged individuals (32)

The present study revealed that prevalence of migraine headache among health care workers in PHC centers Makkah City , with significantly higher grades of severity among females and general practitioner in our study shows that most that most of the participants (40%) were in the age group(>50) years follow by the (33.0%)were in the age (25-50) years, regarding the Nationality most of participants non-Saudi were were(73.0%), the majority of them males was higher compared to male(53.0% and 47.0%), regarding the marital status most of participants married were(50.0%), regarding level of education the majority of participant are Consultant were(49.0%) while general practitioner were(29.0%)(See table 1)

These findings are in accordance with those reported by several studies. El-Metwally et al. reported that prevalence of migraine among the general population of the Arab countries ranged between 2.6% and 32%, also regarding the migraine headache among physicians in PHC centers during Covid-19. The prevalence rates ranged from 12.2% to 27.9% among medical students, and ranged from 7.1% to 13.7% among school children. Females were more susceptible to migraine compared to males(33)

Table (2) show Changed after Covid-19 starting the majority of participant answer yes were (77.0%) , regarding the Current GPA during Covid-19 the majority of participant between the (3.75 – 4.49), regarding the how much time do you spend studying per day during Covid-19 the majority of participant 3 - 5 hour were constitutes (37.0%) , regarding the frequency of snacks between meals (chips, chocolate, sweets) the majority of participant between the sometimes were constitutes (35.0%), regarding How often do you have stimulants (tea, coffee) in a week during Covid-19 the majority of participant more than 7 were constitutes (31.0%)

shows in table 3 regarding the frequent or intense headaches the majority of participants answer No were (77.0%), while Yes were(23.0%), regarding headaches usually for last more than 4 hours the majority of participants answer No were (79.0%),while Yes were(21.0%), regarding the suffer from nausea when you have headache the majority of participants answer No were(69.0 %),while Yes were(31.0%), regarding light or noise bother you when have a headache the majority of participants answer No were(58.0%),while Yes were(42.0%), regarding headache limit any of your physical or intellectual activities the majority of participants answer No were(55.0%),while Yes were(45.0%).

The present study showed that the largest proportion of health care workers in PHC had

shows that regarding the Participants' Migraine Disability Assessment grades the majority of participants in the Mild Disability (G II) were (33.0%) followed by Little or No Disability (G I) were (31.0), regarding the Total were(100.0%) while the a significant relation were P-value=<0.001 X2were (25.920%) .(See table 5)

In Malaysia, severe disability was reported among 73% of migraine patients, which was higher than that shown by our study. In accordance with our study, severe disability was significantly associated with increasing duration of migraine.(34) Alzahrani et al. found that headache had a severe effect on the job performance and the life of emergency department staff.(35) .

6. Conclusion

Migraine is prevalent at Saudi Arabia. It is recommended that awareness related to knowledge of symptoms and triggers of migraine among general Saudi population be raised by print and electronic media as well as printed brochures should be placed in every health care center. Only one-third of Saudi migraineurs know about migraine triggers. Stress was the most migraine trigger, family history of migraine is very common among Saudi migraineurs. Time and stress management courses and relaxation sessions to improve productivity among migraineurs should also be arranged.

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