Prevalence of Migraine and Trigger Factors among Adult Rural Sudanese Population 2018

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ABSTRACT

Background: Migraine is one of the most common types of headache; it is a chronic neurological disease that affects 15% of the population, however, information about its prevalence in Sudan is scarce.
Aim: The aim of this study was to study prevalence of migraine and trigger factors among adult rural Sudanese population in 2018.
Setting and Design: This is a cross sectional two-stage door-to-door community-based study conducted in 16 administrative areas in rural Sudan.
Materials and Methods: A sample of 8610 adult Sudanese individuals, 18 years and above was selected. A structured pretested questionnaire was used included questions about two or more

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headaches in the last three months for screening. Participants with at least one positive response were asked to perform the 3-item validated Identification of Migraine (ID Migraine) test. Data was analyzed by SPSS version 20 for descriptive statistics and one way chi square test was used for testing the association of triggering factors with migraine at 95% confidence level of significant.

Results: Four hundred and sixty eight had migraine with a prevalence rate of 5.4% among 8610 study population. The prevalence of migraine was 40% among those having at least two episodes of headache. Females were significantly affected by migraine more than males, P- value 0.044. Migraine significantly decreases with increase in age showed the highest frequency among the age group 18-29 years (38.0%). Family history of migraine accounted to 83.4% of population with migraine. Population with migraine who experienced aura was 64.5%. Already diagnosed population with migraine was 38.9%.The most important triggering factors among population with migraine were irregular/lack of sleep followed by stress/anxiety, noise and fatigue/physical activity, 91.0%, 88.0%, 85.7% and 84.6% respectively. The females experienced migraine with menstruation accounted to 46.7%. Perceived migraine effect was moderate to severe on work/ daily activities/ leisure of 78.2% of population with migraine.

Conclusion: Migraine prevalence was alarming in this study. A gap exists in the diagnosis of migraine that needs efforts to reduce the sufferings of affected population.

1. INTRODUCTION

Migraine is one of the most common types of headache; it is a chronic neurological disease that affects 15% of the population [1] Systematic review of 21 community-based studies in Africa revealed a prevalence of migraine as 5.6% in general population and 14.9% among young students [2]. Migraine is two to three times more prevalent in women than men and the duration, frequency and severity are more in females. It decreases the quality of life of individuals by disturbing their physical, psychological and social-economic activities, and it is considered the seventh disabling illness [3,4]. Migraine is a devastating disease affecting the wellbeing of the patients and decreases the economic productivity of complainers [5]. Migraine is defined as "unprovoked headache lasting 4-72 hours with 5 or more attacks within lifetime, it is severe enough to markedly restrict or even prohibit routine daily activity and accompanied by nausea or light/ sound sensitivity. Clinical definition of migraine does not require the headache to be pulsatile ("throbbing") or lateralized to one side of the head: although such features are common in migraine, they are far from invariable. The diagnosis of migraine does not require the occurrence of aura or visual symptoms. Migraine needs not to be intense or disabling on every occasion; some migraine attacks may involve no headache (aura without headache), and many attacks may involve headache that is mild in intensity and more reminiscent of tension type headache than what one typically associates with migraine" [6].

Previously it has been thought that the aura is due to hypoxemia and headache is due to rebound vasodilatation but this "vascular theory" was unable to explain all features of migraine. A new theory has been suggested after discussing results of an experiment on animal models and nowadays it is world widely accepted. The cortical spreading depression (CSD) is explained by a wave of a neuronal hyperactivity followed by an area of cortical depression that accounts for the aura [7,8]. The headache depends on activation of the trigeminal-vascular pain pathway [9,10]. Cortical spreading depression has been found to cause changes in the brainstem nociceptive neuronal activity [11]. Functional imaging studies of migraine patients had shown alteration of blood flow and its pattern of spread in cortical function is suggestive of CSD [12]**.** This is associated with photophobia, phonophobia, nausea, vomiting, and cutaneous allodynia [13]. In women there is specific type of migraine called "Catamenial migraine", it occurs before two and after three days of menstrual cycle which represent one of the predisposing factors of migraine [14]. The most common triggering factors are stress and anxiety, glare and noise in addition to environmental factors, sleep disturbances, fatigue, alcohol, and nutrition [15]. There are several modalities of therapy to treat acute and chronic migraine aiming to achieve rapid pain relief. The treatment is either pharmacological such as different analgesics and anti-inflammatory drugs, anti-emetics and 5-HT1B/1D receptor agonists or non-pharmacological such as behavioral treatment including relaxation training, cognitive behavioral

therapy, biofeedback, stress management training, acupuncture, physical therapy, mind-body treatment options like meditation and yoga, dietary supplements and nerve therapy. However, the first recommended measures in management of patient having migraine include: improvements in lifestyle, change of eating behavior and the identification of modifiable predisposing and triggering factors [16]. Information about headache and migraine in Sudan is scarce. This study aims to determine the prevalence of migraine and trigger factors among adult rural Sudanese population aged 18 years and above.

2. MATERIALS AND METHODS

2.1 Study Design

This was a cross-section; community-based study.

2.2 The Study Area

Four states of Sudan were selected for field training of medical students. The states were Gazera, White Nile, River Nile and the Northern States. The Four states are divided geographically into several localities. Gazera State has seven localities; White Nile State has six localities, River Nile has six localities and Northern State has four localities. Localities are further divided functionally into administrative units. Sixteen administrative units were chosen for the medical students training. These were 10 administrative units from Gazera State and 2 administrative units from each of the other three States.

2.3 The Study Population

The study population was adults Sudanese aged 18 years and above.

Eligibility of study population: having at least two episodes of headache in the last three months.

2.4 Sampling Procedure and Sample Size

Two-stage sampling procedure was carried out. The first stage was carried by random selection of 16 localities from the 23 total localities in the four states. In the second stage, one administrative area was randomly selected from each locality. A total of 2878 households were surveyed with total population of 8610 and 1171 individuals aged 18 years and above.

2.5 Tools and Data Collection

A structured pre-tested questionnaire was used to pick those with two or more headaches in the last three months. These were then subjected to two preliminary questions. Participants with at least one positive response were asked to perform the 3-item validated Identification of Migraine (ID Migraine) test [17,18]. The data collectors were medical students as part of the rural field training curriculum.

The questionnaire: This included three parts: The first part was about Socio-demographic information including number of family members aged 18 years and above, those who have had at least 2 episodes of headache in the last 3 months, their age, gender, marital and working status and ever being diagnosed with migraine. The second part was about the trigger factors of migraine which included: food, hunger/skipping meals, irregular/lack of sleep, stress/anxiety, bright sunlight, caffeine, fatigue/physical stress, and examination/reading too much, noise and menstruation for women. The third part was about the assessment for migraine.

Assessment for migraine: This was a two-stage process:

Initial evaluation: Includes three preliminary questions for probing the presence of migraine. The first question: Did you have two or more headaches in the last three months? The second question: If yes, do the headaches limit your ability to work or enjoy life? The third question: Do you need to talk to your health care professional about your headaches? Individuals who gave positive response to the second or third questions were considered as the subjects who are likely to have migraine type headaches and asked the 3-item ID-Migraine test of the second stage.

ID-migraine test: It is a diagnostic test that includes three questions. The first question: Did you feel nauseated or sick in your stomach with your headaches? The second question: Did light bother you when you had a headache compared with if you do not have headache)? And the third question: Did your headache limit your ability to work or daily life activity that you needed to do for at least 1 day? Any individual with at least 2 positive responses was considered as having migraine. Individuals with migraine were asked about family history of migraine, presence of aura before having an episode of migraine and

effect of migraine on work, daily activities or leisure.

Analysis: Data was collected and analyzed using the SPSS version 20. Descriptive statistics was used, and one way chi square test was used to test the association of triggering factors with migraine at 95% confidence level of significant.

3. RESULTS

A total of 8610 adult population aged 18 years and above were interviewed in 16 administrative units in rural Sudan. Those having at least two episodes of headache accounted to 1171 adults (13.6%). Four hundred and sixty eight had migraine with a prevalence rate of 5.4% among 8610 study population. The prevalence of migraine was 40% among those having at least two episodes of headache [Table 1]. Three hundred and thirty (70.5%) of population with migraine were females who were significantly affected by migraine more than males [Table 1]. Migraine significantly decreases with increase in age showed the highest frequency among the age group 18-29 years; 178 (38.0%) [Table 1]. Migraine was not significantly affected by working and marital status where more than half 268 (57.5%) of them were not having any occupation and 319 (68.2%) were married [Table 1]. Family history of migraine accounted to 391 (83.4%) and those already diagnosed with migraine were 182 (38.9%) [Table 1]. Population with migraine who experienced aura were 302(64.5%) [Table 1]. The most important triggering factors among population with migraine were irregular/ lack of sleep (91.0%) followed by stress/anxiety (88.0%), noise (85.7%) and fatigue/physical activity (84.6%) [Fig. 1]. The females experienced migraine with menstruation accounted to 154 (46.7%) [Fig. 1]. Migraine had moderate to severe effect on work/ daily activities/ leisure of 366 (78.2%) of population with migraine [Table 2].

4. DISCUSSION

This was a population-based study to assess the prevalence of migraine in rural Sudan. The prevalence of migraine was found to be 5.4% among the total study population. This is supported by the epidemiological study of burden of migraine in India [19] although there is variation between the two studies in the time duration of the prevalence and the residential area of the study population [19]. The three months prevalence of migraine in developed countries as in United States of America revealed high prevalence of migraine among American population [20]. This is differing from our study since that data was abstracted from different surveillance statistics for different American population [20].

Table 1. Characteristics of the population with migraine (n=468)

Characteristics	Participants with migraine (n=468)		P-value*
Gender	Male	138 (29.5%)	0.044
	Female	330 (70.5%)	
Age	18 - 29 years	178 (38.0%)	0.001
	30 – 39 years	122 (26.2%)	
	40 – 49 years	90 (19.2%)	
	50 – 59 years	38 (8.1%)	
	60 and above	40 (8.5%)	
Marital status	Single	124 (26.5%)	0.107
	Married	319 (68.2%)	
	Divorced	19 (4.1%)	
	Widow	6 (1.2%)	
Occupation	Working	199 (42.5%)	0.910
	Not working	269 (57.5%)	
Family history of migraine	Yes	391 (83.4%)	0.001
	No	77(16.6%)	
Already diagnosed with migraine	Yes	182 (38.9%)	0.001
	No	286(61.1%)	
Presence of aura	Yes	302(64.5%)	0.001
	No	166(35.5%)	

One way chi square test

Table 2. Perception of population with migraine regarding the effect of migraine on work/ daily activities/ leisure (n= 468)

Perception of the effect	N (%)
No effect	20 (4.3)
Mild effect	82 (17.5)
Moderate effect	164 (35.0)
Severe effect	202 (43.2)

From this study, migraine prevalence was found to be 40% among those having at least two episodes of headache. The prevalence of migraine differs between different countries which might be due to different environmental and cultural factors, different methodological approaches with different criteria in defining headache. Migraine was found to be the 7th disabling disease in the world, however; Sub-Saharan Africa has little information about the burden of migraine showing 1-year prevalence as 17.7% in Ethiopia [4,21]. In this study; females were significantly affected by migraine with co-factor of menstruation. Females are commonly experiencing significant longer duration and intensity of migraine more than men, superimposed by menstruation as an additional risk factor of migraine [1,22]. The higher prevalence of migraine among women might be related to the hormonal differences between both sexes or might be due to certain psychological and social stressors that affect women [3,23,24]. The study had shown that migraine was common among younger age and decreases with age. Genetics could be a strong factor among youngsters and environment might influence the expression of the disease [22,25]. Family history of migraine was a factor among 83.4% of population with migraine in this study. Migraine is positively associated with family history and commonly among younger females particularly with menstruation [26,27] Study population that were not diagnosed with migraine in the past but known to have migraine symptoms in this study accounted to 61.1%. Under diagnosis of migraine might be due to people being reluctant to seek treatment, physician`s unawareness with the diagnostic criteria of migraine or self-medication practice where migraine is treated as tension headache [28,29]. Migraine aura is a complex of neurological symptoms giving up an alarm from the cortex or brainstem [30]. Visual and sound aura preceded the migraine attack among two third of the study population with migraine. This is supported by literature that find out the most common types of aura are visual, vestibular vibration and sound [30,31]. Marital status was not found to be associated with migraine in this study, and that is not supported by a study in Pakistan, where the occurrence of migraine was significantly higher in unmarried persons [32]. It was found that, working status of population with migraine had no relationship with having migraine. Working status as one of the parameters of socioeconomic status increases the prevalence of frequency of migraine [33]. The
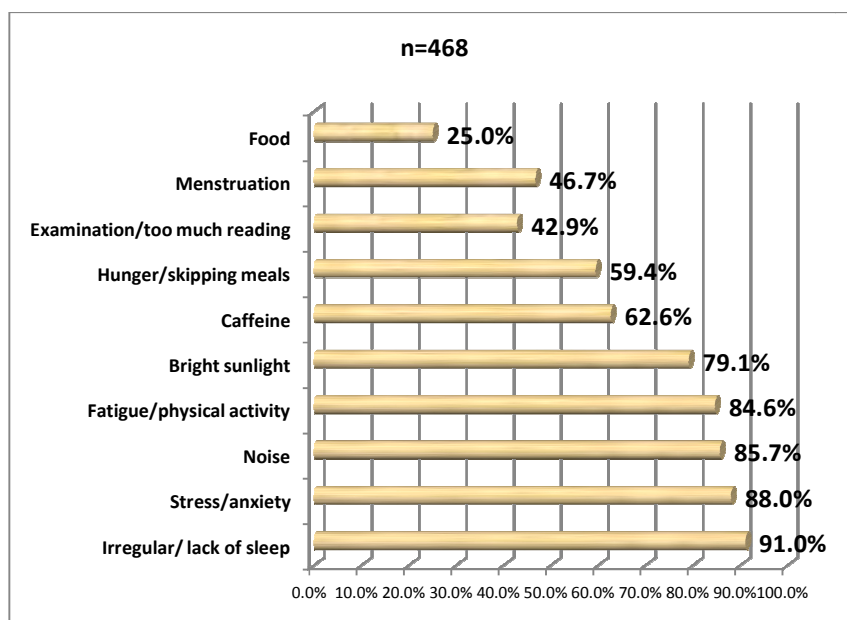

Fig. 1. Trigger factors among population with migraine

Commonest trigger factors as perceived by population with migraine in this study were irregular/lack of sleep followed by stress/anxiety, noise, fatigue/physical activity. Differences in trigger factors might be due to neurological, physiological, psychological, ethnological, and geographical variations [34-38]. Perception of population with migraine regarding the effect of migraine on work/ daily activities and leisure time varied between moderate to severe. The effect of migraine on productivity of population and health system consumption leads to low growth national product in developing countries compared to well-developed ones [4,39,40].

5. CONCLUSION

Migraine prevalence was alarming in this study. A gap exists in the diagnosis of migraine that needs more studies and efforts to alleviate the burden on individuals with migraine, relatives and community at large.

6. LIMITATIONS

The questionnaire was designed to capture only episodes of headache failing to capture frequency and duration of migraine, types of treatments received and severity. Furthermore; the selected States were those involved in the Rural Residency Program for the 5th year medical students field training, therefore the results obtained could not be generalized to whole Sudan.

CONSENT

As per international standard or university standard, the participant's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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