RESEARCH ARTICLE

PREVALENCE OF MIGRAINE AMONG FEMALE STUDENTS AT TAIBAH UNIVERSITY, KINGDOM OF SAUDI ARABIA.


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Abstract

Background:- University students are routinely complaining of triggers, especially irregular sleep and stress, which are commonly associated with migraine attacks.

Objectives:- To assess the prevalence of migraine headache among female students at Taibah University (Saudi Arabia) and to determine the common triggering and palliative factors of migraine headache among female University students.

Methods:- A cross-sectional study was carried out among female university students. Participants who had suffered from two or more headaches in the previous 3 months were subjected to the ID migraine screening test, then who had at least two positive answers of the screening test were confirmed as a migraineurs based on the diagnostic criteria of the International Headache Society for migraine.

Results:- Migraine was detected among 244 out of 395 students (61.8%). Physical stimulation as (light, loudness, change in weather, certain smells) were the most triggering factors of migraine in 170/244 (69.7%) of migraine students. The most important relieving factors were rest and sleep in 155/244 (63.5%), medication in (33.2%), followed by darkening room in (30.3%), massage in (20.1%), and coffee drink in (18%) of migraine students. This study showed significant association between migraine headache and family history of migraine and studying in theoretical colleges.

Conclusions:- The prevalence of migraine among female students in Taibah University was high in comparison to other studies. The study recommends raising awareness toward migraine among students and teaching them how to deal with such a disabling condition to achieve optimum coping techniques aiming to a better quality of life.

Background:-
Migraine is a global neurological serious health problem due to its frequency and subsequent disability (1). It is a disabling painful condition that is more prevalent three times amongst women, especially young and middle aged women (2, 3).

The public health effect of migraine is due to its high prevalence and notable temporary disability (4). Migraine is very common among students of universities and it is linked to the limited daily activities and impaired performance on the academic level (5).

There are few studies concentrating on migraine spread between university students, despite it being numerous within the general population and different professional groups (6, 7, 8, 9).
In Saudi Arabia, the numbers of studies related to the amount of migraine among university students are not much \footnote{14, 16}. Today, it becomes of considerable interest among university students due to its negative effects on their concentration, performance and quality of life \footnote{11, 12}.

There are wide forms of external and internal stimuli which can trigger the migraine headaches. Previous researches suggest that migraine could be provoked by hormonal changes especially levels of estrogen, as well as the genetic effect \footnote{15, 16}. People with migraine tend to have recurring attacks triggered by a number of different factors such as anxiety, stress, sleep and dietary substances, exposure to bright, flashing lights, smells, smoke, noise, certain foods, weather changes, or hormonal changes in females due to their menstrual cycle \footnote{19}.

Migraine sufferers may have recurrent attacks of intolerable headaches that may be associated with prodrome/ aura \footnote{16}. Initially, the headache attacks are episodic and increasing in frequency over months or years in some patients, leading to chronic migraine, in which headaches occur at least 15 days per month \footnote{17}. However, most of them do not seek medical care \footnote{16, 19}.

People who experience frequent attacks of migraine headaches (twice or more monthly) have greater disability, are more likely to have other diseases such as depression, arthritis, asthma and are less able to study or work compared to people with less frequent migraines \footnote{20}. Thus, the goal of this study is to assess the prevalence of migraine headache among female students at Taibah University, Kingdom of Saudi Arabia and to determine the common triggering and relieving factors of migraine headache among female University students.

**Subjects and Methods:**

*Study design and setting:* -
A cross-sectional study was conducted among undergraduate female students of Taibah University in Medinah, Kingdom of Saudi Arabia during the academic year 2013-2014.

*Study population and sample size:* -
Based on previous studies \footnote{7, 4} on university students, the sample size is estimated using expected frequency of migraine in university students 15%, worst expected frequency 12% at 95% confidence interval and power of 80%. The sample size is calculated to be 536 female students, which was selected randomly from different semesters and faculties among students list (34432 female students in total) in academic year 2013-2014. It is calculated by Epi-info software version 6.04.

According to the exclusion criteria, 38 students were excluded from the study (include, pregnant students; those with previous history of head/neck injury, nasal allergy or inflammation; headache of systemic or secondary neurological disorders; and mixed headaches as cluster-tension headache, and those who participated in the pilot study). Thus, 498 female students were invited to participate in the study. About 395 (79.3%) were included in the study versus 103 (20.6%) non-responders or had incomplete questionnaire or inconsistent responses.

*Data collection and measures:* -
For this study, self-administered semi-structured written questionnaire was used to collect data from the students. The questionnaire consisted of three parts.

The **first part** was designed to collect personal data (age, college, level, marital state) and whether there had been headache two or more headaches in the last 3 months (Determination of headache students). Those participants who responded with “yes” (n=302) were asked to continue the **second part** of the questionnaire which includes the three items of Identification (ID) Migraine screening test \footnote{21} as an initial evaluation to determine the prevalence of migraine headache (Determination of probability of migraine type headache). At least two positive responses were required to make a test-diagnosis of migraine headache. Then those who had at least two positive answers of three ID screening test (n=280) were asked to complete the **third part** which related to the diagnostic criteria of the International Headache Society (IHS) for migraine \footnote{22}, which was revised in 2004 \footnote{23}, (Determination of migraine headache), then the migraine sufferers of female students according to the IHS diagnostic criteria (n=244) were then asked about common migraine triggering (stress, anxiety, noise, exams, menstruation,……etc) \footnote{24, 25, 26} and relieving factors (rest, coffee, medication,……etc) \footnote{25}.

*Data management:* -
Data was coded and statistically analyzed using Statistical package for the Social Science (SPSS) version 19 \footnote{IBM, 2010}. Descriptive statistics such as frequency, percent, mean, and SD were determined. The threshold of statistical significance was set at P value less than 0.05.

*Ethical issues:* -
Informed consent was obtained from each of the participants after explaining the objective of the study. Ethical permission to carry out the study was obtained from the Research Ethics Committee (REC) of Taibah University, KSA. Confidentiality of the data was ensured for all the students.
Figure 1 Flow-chart of the study process

Total population: 34432

536 female students.

38 excluded (Exclusion criteria)

498 female students

Sample size calculated

Response rate 79.3%

(n=395) Yes

First part of questionnaire (had headache in the last 3 months)?

(Determination of headache group)

(n=103) No response or/Incomplete questionnaire

Yes

Second part of questionnaire (3 ID migraine screening test)

(Determination of probability of migraine headache)

(n=302)

(n=280)

Who give (at least 2+ve answers of ID migraine)

(n=22) students

No or <2 +ve answers

Non migraine (36)

(n=244)

(Migraine sufferer) of female students.
Results:
Table 1: Socio-demographic Characteristics of the study participants.

<table>
<thead>
<tr>
<th>Socio-demographic data</th>
<th>Female students (N= 395)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years): (Mean± SD)</td>
<td>21.14±1.35</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Age (Years):</td>
<td></td>
</tr>
<tr>
<td>18-</td>
<td>123</td>
</tr>
<tr>
<td>21-</td>
<td>218</td>
</tr>
<tr>
<td>23-</td>
<td>54</td>
</tr>
<tr>
<td>Residence:</td>
<td></td>
</tr>
<tr>
<td>Outside Medin</td>
<td>26</td>
</tr>
<tr>
<td>Inside Medina</td>
<td>369</td>
</tr>
<tr>
<td>Marital state:</td>
<td></td>
</tr>
<tr>
<td>Non married*</td>
<td>334</td>
</tr>
<tr>
<td>Married</td>
<td>61</td>
</tr>
<tr>
<td>Number of children:</td>
<td></td>
</tr>
<tr>
<td>No children</td>
<td>371</td>
</tr>
<tr>
<td>≤ 3 children</td>
<td>20</td>
</tr>
<tr>
<td>&gt; 3 children</td>
<td>4</td>
</tr>
<tr>
<td>College:</td>
<td></td>
</tr>
<tr>
<td>Theoretical college</td>
<td>204</td>
</tr>
<tr>
<td>Practical college</td>
<td>191</td>
</tr>
<tr>
<td>Family history of migraine:</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>178</td>
</tr>
<tr>
<td>No</td>
<td>217</td>
</tr>
</tbody>
</table>

Table 1 shows the socio demographic characteristics of the female students participated in this study. The age of the students ranged from 18 to 25 years with the majority of student in the age group of (21≤23years (55.2%) and a mean of 21.14±1.35 years. About, 93.4% of the participants were living inside Medinah compared to 6.6% living outside it. Majority of them (93.9%) were non married and only 15.4% were married and only minority of them (5.1%) have ≤3children, and only 1% have more than 3 children. Two hundred and four student were in theoretical collage, while 191 student were in practical collage. About 45.1% of the students reported that there's a positive family history of migraine.

Figure 1: Prevalence of migraine according to the International Headache Society (IHS) for migraine among university female students.

Figure 1 showed that out of 395 students, 244 students had fulfilled the international headache society (IHS) criteria of migraine diagnosis giving overall prevalence rate of 61.77% compared to 38.23% non-migraine sufferer.
Figure 2: Migraine triggering factors among female students at Taibahu University.

In this figure, physical stimulation as (light, loudness, change in weather, certain smells) were the most triggering factors of migraine in 170/244 (69.7%) of migraine students, followed by life style changes as (change in sleep pattern, skipping meals) in (66.0%) then stress in (56.1%), poor posture, prolonged use of computer, and certain food with frequency (25.0%, 12.7%, 3.3% respectively) among migraineurs.

Table 2: Relieving factors according to female student migraine sufferers.

<table>
<thead>
<tr>
<th>Relieving factors</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rest and sleep</td>
<td>155</td>
<td>63.5</td>
</tr>
<tr>
<td>Improve posture</td>
<td>21</td>
<td>8.6</td>
</tr>
<tr>
<td>Coffee</td>
<td>48</td>
<td>19.7</td>
</tr>
<tr>
<td>Dark room</td>
<td>74</td>
<td>30.3</td>
</tr>
<tr>
<td>Massage</td>
<td>49</td>
<td>20.1</td>
</tr>
<tr>
<td>Eating</td>
<td>20</td>
<td>8.2</td>
</tr>
<tr>
<td>Medication</td>
<td>81</td>
<td>33.2</td>
</tr>
<tr>
<td>Cold packs</td>
<td>15</td>
<td>6.1</td>
</tr>
<tr>
<td>Spinal adjustment</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>Nothing</td>
<td>12</td>
<td>4.9</td>
</tr>
<tr>
<td>Other*</td>
<td>13</td>
<td>5.3</td>
</tr>
</tbody>
</table>

*others (neck stretches & exercises that increase blood flow to the head)

Table 2 showed that the most important relieving factors were rest and sleep in 155/244 (63.5%), medication in (33.2%), followed by darkening room in (30.3%), massage in (20.1%), and coffeedrink in (18%) of migraine students.
Table 3:- Migraine and non-migraine prevalence by socio-demographic Characteristics of the female students at Taibah University.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Migraine</th>
<th>Non- migraine</th>
<th>χ2 test</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No  %</td>
<td>No  %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (Years):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-</td>
<td>82 33.6</td>
<td>41 27.2</td>
<td>2.60</td>
<td>0.272</td>
</tr>
<tr>
<td>21-</td>
<td>127 52.0</td>
<td>91 60.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23-</td>
<td>35 14.3</td>
<td>19 12.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital state:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non married</td>
<td>208 85.2</td>
<td>126 83.4</td>
<td>0.23</td>
<td>0.630</td>
</tr>
<tr>
<td>Married</td>
<td>36 14.8</td>
<td>25 16.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theoretical college</td>
<td>136 55.7</td>
<td>68 45.0</td>
<td>4.28</td>
<td>0.03*</td>
</tr>
<tr>
<td>Practical college</td>
<td>108 44.3</td>
<td>83 55.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history of migraine:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>130 53.3</td>
<td>48 31.8</td>
<td>17.4</td>
<td>0.000*</td>
</tr>
<tr>
<td>No</td>
<td>114 46.7</td>
<td>103 68.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (395)</td>
<td>244 61.8</td>
<td>151 38.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table(3) showed migraine and non-migraine prevalence accordingto the socio-demographic characteristics of the students. Majority frequency of migraine was in the age group 21-23 years and non-married females but without significant association. The female students in theoretical colleges had higher frequency of migraine 55.7% compared to the students who study in practical fields 44.3% with significant association (p<0.05). Family history has an important role in the prevalence of migraine, because 53.3% of migraineurs had positive family history of migraine with highly significant association (p<0.0001).

Discussion:-
This is the first registered study that evaluates the spread of migraine among female students in different faculties of Taibah University, Medina in KSA. There are few studies focusing on migraine among university students in Arab Gulf Countries showing noticeable differences in prevalence. A reported migraine prevalence of 25.7% among 400 students at King Saud University in Riyadh, whereas in Kuwait University, reported 27.9% among 621 medical students. Other prevalence reported 12.2% in Oman, 7.9% in Qatar. In the present study, a screening test for the identification of migrainetype headaches (ID Migraine) has been used, then migraine headache was confirmed by IHS criteria for migraine. Our study results have showed that the migraine prevalence is higher (61.8%) in our area, compared to many other international studies in the world. For example, in Africa, different studies reported migraine prevalence range from 6.4% to 33.8% . Whereas it was reported to be 6.4% in a study carried out in Nigeria among 376 undergraduates. The difference between our results and others in the prevalence of migraine could be explained by the fact that all the participant students of our study were females, the timeline estimation of prevalence, also may begenetic characteristics, the cultural aspects, the triggering factors and study method. In addition, if the study were to be conducted during a stressful time as mid-term or finalexaminations, it would probably reveal a more of a widespread to migraine headaches since the screening test analyses the presence of headache in the previous three months as in this study. Moreover, environmental, racial, climate, different socioeconomic status or nutritional habits could also play a role in the differentiation whereas contributing factors for migraine in these different countries.

Nevertheless, the reasons for lower rates in other studies is that the diagnosis was based on the questionnaire followed by physical examination, while in this study it was based only on aself-administered questionnaire without physical examination.

Regarding the triggering factors, our results showed that physical stimulation as (light, loudness, change in weather, certain smells) were the most triggering factors of migraine (69.7%) among university students, followed by life style changes as (change in sleep pattern, skipping meals) in (66.0%) and stress in (56.1%). Whereas irregular sleep was reported in 80.6%, stress in 83.5% of migraineurs and in 84% of migraineurs in previous studies.
In accordance, our results are relatively congruent with the study conducted in North-Eastern Nigeria (33) which established that exams, hunger, sleep deprivation, diet, physical and emotional stress can easily trigger migraine.

Concerning migraine relieving factors, our study showed that most important relieving factors were rest and sleep in (63.5%), using medication in (33.2%), followed by darkening room in (30.3%), massage in (20.1%), and coffee drink in (18%) of migraine students. Similarly there is study conducted at King Saud University (4) reported that quiet and sleep were the most important relieving factors respectively in 78.6%, 76.7% of the students.

In addition, other studies (34, 4) reported that (48%, 32% respectively) were using medications for their headache. On the other hand, only five students with migraine in a study carried out in Turkey searched medication for their headache relieving.

Furthermore, darkness (47.6%) and massage (38.8%) were also reported as one of the ways to get the symptoms relieve (4).

The present study showed prevalence rate of migraine among females with a mean age of 21 is 55.2%. Similarly, Al-Hashel et al, 2014 found a high prevalence rate of migraine 31.1% among females with a mean age of 20.18.

In the current study, positive history of a family member who complains of headaches was remarkably associated with migraine (p<0.001). In accordance, other researches (4, 35) found positive family history of migraine headache among migraineurs which support the role of genetic factors and occurrence of migraine.

Surprisingly, migraine prevalence was significantly higher (p<0.05) among theoretical college in comparison to practical college. This finding could be assigned to the fact that most female students in theoretical college get engaged or married earlier than that in practical college with more burden of their emotional stress as a provoking factor of migraine.

**Limitation of the study:-**
Our study included only young females. Also, the migraine students were not interviewed by neurologist for confirmation of migraine diagnosis.

**Conclusions:-**
The study reveal that the prevalence of migraine among female students in Taibah University was high (61.8%), compared to other studies. Physical stimulation, irregular sleep, and change in life style were the most common triggering factors. Sleeping and relaxing were the most helpful relieving factors followed by the use of medications.

**Recommendations:-**
Since migraine prevalence was higher than expected compared to other studies. So we recommend raising awareness of migraine among students and teaching them how to deal with such a disabling condition to achieve optimum coping techniques aiming to a better quality of life.

**Competing interests:-**
The authors of this research clarify that there are no competing benefits and it was financed by the authors of this study.

**Acknowledgements:-**
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