

# Prevalence of migraine and tension-type headache among adults in Jordan

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**Abstract** Here, we investigated the prevalence of headache among adults in Jordan. The study was conducted from January 2007 to November 2008. A sample of 4,836 participants were permitted to complete a self-conducted screening questionnaire. As much as 82.3% of participants complained from headache at least once per year. 36.1% were tension-type headache and 59% of the participants had other family members who suffered from headache. Headaches affected everyday activities in 51.6% of the participants; 82.7% of participants did not seek medical attention for their headaches. Among those who used analgesics (75.6%), acetaminophen was the most common (91.43%). In conclusion, headache and overuse of analgesics were prevalent in a significant part of the society. Thus, there is a need to educate the public to ensure safe practices and to make the use and selling of analgesics more stringent.

**Keywords** Headache · Prevalence · Analgesics · Self-medication · Jordan

## Introduction

Headache is one of the most common complaints of neurologic patients [1–4]. It is a common discomfort making

to the top ten list of complaints in ambulatory medical care, but our understanding of the epidemiology of headache disorders is still incomplete. Most of the recurrent headache cases are due to benign chronic primary headache disorders, such as tension headache and migraine. Less frequently, headache could be due to other underlying conditions such as infections, cerebral hemorrhage and brain lesions [5, 6]. The study of headache epidemiology can address a number of important questions such as variation in the occurrence and severity of headache in the population, and the relationship between headache and other medical disorders. In addition, these studies may provide clues to abortive treatments and preventive strategies for headache [7].

Little is known of the prevalence of headache and the associated analgesic use. It is well documented among adults that overuse of headache medication may contribute to the development of chronic headache [8–14]. Epidemiologic studies indicate that chronic headache (>15 days per month) is common in the adult population with a 2–5% prevalence rate [15–21] and a prevalence of chronic headache associated with medication overuse of about 1% [18, 20, 21].

In general, self-medicating for headache is highly prevalent and self-care is likely to increase in the era of health-care reform [22, 23]. This trend toward self-care is also very popular in the Middle East [24]. Chronic and inappropriate use of over-the-counter drugs such as analgesics, particularly nonsteroidal anti-inflammatory drugs (NSAIDs), can lead to overuse syndromes and drug-induced headache [25, 26].

In the present study, we sought to estimate the association between analgesic use and headache among adults in a large sample of the Jordanian population in relation to age, gender and headache frequency.

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## Methods

In this study, participants (age range 18–85) were approached at their work places, classes or homes. A snowball sampling technique was used in collecting our data. In this procedure, researchers asked every participant to nominate two other persons until the desired sample size was obtained.

The study was ethically approved by the Institutional Review Board (IRB) at Jordan University of Science and Technology and was carried out in accordance with the principles described in the Declaration of Helsinki, including all amendments and revisions. Participants' written informed consent was obtained.

The study was conducted in various regions of Jordan during the period from January 2007 to November 2008. The questionnaire was distributed, in person, by the researchers, and was completed in the presence of the researcher. Each participant was provided with a full explanation of the study and how to complete the questionnaire. Participants were informed that the researcher would be available for any required assistance during scoring of the questionnaire. For the small group of participants who were illiterate, the questionnaire was administered by the researcher in the form of an interview. Completed questionnaires were collected by the researchers and rechecked to ensure completion. Confidentiality was maintained as no names and addresses of participants were required. Data were aggregated into groups and only the authors and the investigator were allowed access to the collected data.

The questionnaire gathered information that included demographic data, frequency and type of headache, and its impact on everyday activities, analgesic use, consultation of a doctor or pharmacist on the use, increase or decrease in the frequency of headache after painkiller usage, increase or decrease in painkiller dose and family history of headache. Every person who was 18 years or older was allowed to complete the survey. The questionnaire is available on requisite (khalzoubi@just.edu.jo).

To establish test–retest reliability, 50 subjects were selected randomly; they answered the questionnaire twice with a 1-week interval. Test–retest data on each item were analyzed using interclass correlation. For each item, correlation coefficients ranged from 0.79 to 0.86, suggesting that the questionnaire was reliable.

The data were coded using the Statistical Package for the Social Sciences, version 15.0 (SPSS Inc., Chicago, IL, USA) entry program. The data were summarized using frequency tables and means and standard deviation for continuous variables. Frequency and contingency tables were used for categorical data.

## Results

To estimate the prevalence of headache among adults in Jordan, a sample of participants (4,836 participants; mean age  $27 \pm 0.4$  years, and male: female ratio of 59:41) was allowed to complete a self-conducted screening questionnaire. As shown in Table 1, about half of the participants (49.2%) were university students and 78.3% were Jordanian citizens. Moreover, 70.7% participants were single and 47.4% were smokers.

Of the 4,836 participants, 82.3% complained of headache at least once per year. For both the 18–29 and the

**Table 1** The demographic data of the study sample

Variable	n (%)
Gender	
Male	2,870 (59.4)
Female	1,966 (40.6)
Age	
18–29 years	3,572 (73.95)
30–39 years	506 (10.46)
40–49 years	402 (8.32)
$\geq 50$ years	356 (7.37)
Education	
Illiterate	83 (1.7)
Elementary school	65 (1.3)
Secondary school	213 (4.4)
High school	610 (12.6)
Diploma	344 (7.1)
University student	2,378 (49.2)
Bachelor	901 (18.6)
Masters	181 (3.7)
Ph.D.	61 (1.3)
Nationality	
Jordanian	3,787 (78.3)
Arab (non-Jordanian)	841 (17.4)
Foreign	208 (4.3)
Marital Status	
Single	3,422 (70.8)
Married	1,304 (27.0)
Divorced	55 (1.14)
Other	55 (1.14)
Monthly income <sup>a</sup>	
Low (< or =400 JD)	257 (5.3)
Medium (>400 JD to < or =1,000 JD)	3,831 (79.2)
High (>1,000 JD)	748 (15.5)
Smoking	
Smoker	2,294 (47.4)
Non-smoker	2,542 (52.6)

<sup>a</sup> 1 JD is equivalent to about 1.4 US Dollars

30–39-year-old groups, the yearly prevalence of headache was found to be the same (82.8%), while it was 79.9 and 81.7% for the 40–49 and older than 50-year-old groups, respectively.

Among the participants, 17.2% had daily headache attacks, while 25.7% had fewer than daily to weekly headaches, 21.6% had headaches on fewer than weekly up to monthly basis, 17.8% complained of headaches on a fewer than monthly basis and 17.7% of all participants did not experience headache attacks. Moreover, 38.4% of the headache complainers did not know the exact type of headache they were experiencing, 36.9% complained of tension type headache and only 7.7% were diagnosed with migraine headache; 51.6% of complainers thought that headache affected their daily activities. A large number of participants stated that one or more of their family members complained of headache as well (Table 2).

Of the migrainers, 37.7% (*n* = 140) complained of daily headache, 35.6% (*n* = 132) had fewer than daily up to weekly headaches, and 18.1 (*n* = 67) and 8.6% (*n* = 32) complained of headaches on a fewer than weekly up to monthly basis, and on fewer than monthly basis, respectively. Additionally, about 75% (*n* = 279) of migrainers thought that migraine adversely affected their daily activities. Concerning tension type headache, 20.3% (*n* = 348) complained of daily headache, 34.7% (*n* = 594) had fewer than daily up to weekly headaches, and 24.1% (*n* = 413)

and 20.8 (*n* = 356) complained of headaches on fewer than weekly up to monthly basis, and fewer than monthly basis, respectively. Moreover, about 53% (*n* = 907) indicated that tension type headache affected their daily activities. The stratified prevalence for both migraine and tension type headache according to age group and gender are shown in Table 3.

Only 17.3% of participants sought medical care for their headaches. This represents 49.7% of migrainers and 15.5% of participants with tension-type headache. Participants who used analgesics on a daily basis accounted for 15.2%. The percentage of participants using analgesics on a weekly basis was 24.5%, less than monthly but more than weekly was 24.8%, monthly usage was 22.5%, and the percentage of participants who never use a analgesics was 14.6%. Participants who used analgesics on the advice of a physician were 15.3%, while those who used analgesics on a pharmacist advice compromised 13.6%. Those who used analgesics based on the experience of a family member or others were 34.8 and 47.4%, respectively (Table 4). In addition, 13.1% of participants complained of increased headache severity or frequency on medication use. Results also revealed that 22.0% of participants had increased their analgesic dose and 78.0% did not change their regimen. The most frequently used analgesic among participants was acetaminophen (78.00%), and to a lesser extent ibuprofen (7.49%) and aspirin (5.58%) (Table 5).

**Table 2** Frequency, type, and family history of headache

Variable	<i>n</i> (%)
Headache frequency	
Daily	832 (17.2)
Fewer than daily to weekly	1,243 (25.7)
Fewer than weekly to monthly	1,043 (21.6)
Fewer than monthly to 1 year	860 (17.8)
No headache	858 (17.7)
Type of headache	
Migraine	372 (7.7)
Tension	1,749 (36.1)
Unknown	1,857 (38.4)
No headache	858 (17.7)
Headache affects daily activities (if any)	
Yes	2,051 (51.6)
No	1,927 (48.4)
Other family members complaining from headaches	
Father	327 (6.8)
Mother	545 (11.3)
Brothers or sisters	552 (11.4)
Other relatives	558 (11.5)
More than one family member	860 (17.8)
None	1,994 (41.1)

**Discussion**

In this study, we report for the first time an overall 1-year period prevalence of headache among adults in Jordan. A sample (4,836) of participants were requested to complete a self-conducted screening questionnaire. As much as 82.3% of participants reported that they complained of headache at least once per year. This is much higher than the average global prevalence of headache (46%) [27, 28]. Similar percentages were obtained from two studies conducted in

**Table 3** Stratified prevalence of migraine and tension-type headache according to age group and gender

Headache type	Tension-type headache		Migraine	
	Male <i>n</i> (%)	Female <i>n</i> (%)	Male <i>n</i> (%)	Female <i>n</i> (%)
Gender				
Age category (years)				
18–29	652 (31.6)	586 (39.0)	158 (7.7)	97 (6.5)
30–39	120 (36.1)	73 (43.7)	34 (10.2)	11 (6.7)
40–49	72 (31.7)	68 (39.1)	17 (7.5)	18 (10.3)
50 and above	92 (37.3)	49 (40.8)	28 (11.3)	8 (6.7)
Total	936 (32.6)	776 (39.5)	237 (8.3)	134 (6.8)

**Table 4** Approach to medication use among patients with headache

Variable	n (%)
Seeking medical help for headaches	
Yes	688 (17.3)
No	3,290 (82.7)
Advice on using analgesics <sup>a</sup>	
Physician	609 (15.3)
Pharmacist	541 (13.6)
Family	1,383 (34.8)
Others (friends, co-workers, neighbors, etc.)	1,887 (36.3)
Frequency of analgesics usage	
Daily	606 (15.2)
Fewer than daily to weekly	974 (24.5)
Fewer than weekly to monthly	985 (24.8)
Fewer than monthly to 1 year	829 (22.4)
No analgesics	584 (14.6)
Increase in headache frequency after analgesic use	
Yes	520 (13.1)
No	3,458 (86.9)
Increase analgesic dose used over time	
Yes	877 (22.0)
No	3,101 (78.0)

<sup>a</sup> Some participants have sought the advice of more than one category

**Table 5** Frequency of analgesics use among headache patients

Name of the analgesic used	n (%)
Acetaminophen	3,103 (78.0)
Ibuprofen	298 (7.5)
Aspirin	222 (5.6)
Diclofenac sodium	64 (1.6)
Naproxen	25 (0.6)
Metamizole	11 (0.3)
Mefenamic acid	10 (0.3)
Ergotamine	10 (0.3)
Others	137 (3.5)

Note that some patients used more than one medication

other Middle Eastern countries namely Oman [29] and Qatar [30], and from other developing [31] and developed countries [32–34]. On the other hand, one study conducted in Oman showed a prevalence of headache of about 45% [35], however, that study was among university medical students and not the general population. In nearby Saudi Arabia, the prevalence of primary headaches ranged from 8 to 13% [30, 36, 37], which is much lower than that reported in all other studies from the Middle East area. The higher prevalence of headache in Jordan indicates that it is one of the major health problem.

Tension-type headache was found to be the most prevalent among other types of headaches (36.9% compared to 7.7% for migraine). The prevalence of tension-type headache, in this study, falls within the prevalence range previously reported from studies conducted in the Middle East area (11–39%) [29, 35, 38, 39]. Additionally, the reported prevalence for tension-type headache, in this study, is lower than its global prevalence (about 42%) [27], which seems to be the case for the whole Middle East area. Studies on migraine headache from other Arab countries reported prevalence that ranged from 10 to 12.2% [29, 39, 40], which is higher than the migraine prevalence in our studied sample. As in the case of tension type headache, both the global migraine prevalence (about 11%) [27], and the migraine prevalence in western Europe (about 14%) [28] is higher than that in Jordan. Therefore, Jordan seems to have lower migraine prevalence than many other parts of the world. A recent study from nearby Qatar reported a migraine prevalence of about 8.0% [30], which is very similar to the prevalence reported in the current study.

Positive family history of headaches was found in most of our participants. The effect of headache on everyday activities was obvious in our study where a significant percentage (51.6%) of participants ascertained that headache adversely affected their daily activities. Our results showed that 82.7% of participants did not seek medical attention for their headaches. In agreement with other's findings [29, 39], 75.6% of our population used analgesics and acetaminophen was the most popular (78.0%). The popularity of acetaminophen over other analgesics could be related to its availability as an over-the-counter medication, low price, and because it is known to be safe to the gastrointestinal tract.

About 47% of the participants in our study were smokers. Previous studies from Jordan and surrounding countries reported smoking prevalence of about 26–48%, depending on the gender, age and the specific population group studied [41–44]. Worldwide, the overall prevalence of smoking among adult males and females was estimated to ranges from 21 to 37% in the high-income countries, and 8.9 to 49% in low to middle income countries [45]. Therefore, the percentage of smokers obtained in this study is comparable to previous studies from the region and to low to middle income countries all over the world.

According to data obtained from the Jordanian Department of Statistics, about 38% of Jordanian adult population falls into the age range of 19–29 year, which is considered a high percentage of young adults. In this study, however, 74% of the studied sample falls within the range of 18–29 years, and 47% of them were college students. Therefore, the studied sample appears to be not population based, which is one limitation of the current study. Another limitation is the fact that the sensitivity and specificity of the questionnaire was not tested.

In summary, headache is a major health problem in Jordan, where 82.3% of participants experienced troublesome headache attacks at least once per year. Young adults were the most affected especially by tension-type headache. Analgesic overuse without seeking medical advice is regarded as potential for development of chronic headache. These results indicate the need for public education to ensure safe practices and to make the use and selling of analgesics more stringent.

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**Conflict of interest** None.

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