Original Article

Awareness level of Headache Medication Side Effects within the General Population

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ABSTRACT

Background: Medication overuse headache (MOH) is a secondary headache caused by the frequent overuse of acute headache medications. In patients with primary headaches, it is characterized by a frequency of 15 or more days per month and is associated with the use of over-the-counter (OTC) analgesics for a period exceeding three months.

Objective: This study evaluated the prevalence of MOH and the level of awareness of adverse medication effects among the general population of Jeddah, Saudi Arabia.

Methods: A descriptive cross-sectional study was conducted between March 25 and May 25, 2023, using an online questionnaire administered to the general population. Data were collected from cooperative male and female residents of Jeddah City, Saudi Arabia.

Result: The questionnaire was completed by 449 individuals; of them, 388 (86.4%) were females,with 369 (82.2%) being Saudi nationals. According to the study, 39% of participants reported having headaches for one to two days within the previous month, indicating a significant prevalence of headaches. Over half of the participants (54.3%) were unaware of the side effects of headache medications. Paracetamol was the most commonly used drug (62.8%), followed by Solpadeine (10.2%) and NSAIDS (6.9%). Higher educational levels were linked to better awareness of medication side effects.

Conclusion: Our study found significant associations between socio-demographics and knowledge of headache medication's side effects, especially high educated females and frequent headache sufferers. We suggest that we need to increase awareness about the side effects of headache medication among the high school educational population in Jeddah City.

Keyword: Jeddah, general population, headache, awareness, side effects, Saudi Arabia.

Introduction

Previously referred to as rebound headache or drug-induced headache, Medication Overuse Headache (MOH) is just another name for this condition. In the majority of situations, migraine headaches are regarded to be a sequelae of migraine headaches rather than a tension-type headaches [1, 2].

Additionally, MOH is characterized by a headache that persists for 15 days or more per month in a known patient with primary headaches, such as migraine and tension-type headaches, which are the most prevalent types of primary headaches according to the International Classification of Headache Disorders 3rd edition (ICHD-3).

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This condition is associated with the consistent overuse of over-the-counter (OTC) analgesics for acute headaches for a period exceeding three months [3-5]. However, the description of regular overuse varies depending on the class of medication that has been overused. Overusing is considered when the patient uses simple analgesics (e.g., acetaminophen) or NSAIDs for 15 days or more per month or ten days or more per month of opioids, triptans, and combined analgesics (i.e., caffeine-containing or more than one class), in addition to the symptoms that cannot be better explained by another diagnosis [5]. According to a study conducted in the United States, the consumption prevalence of OTC medication among adolescents for pain management is primarily between 57% and 78%. [6]. Patients with chronic headaches usually choose self-medication. This is especially true given that the majority of MOH causing drugs are readily available analgesics; therefore, that will eventually lead to MOH if these drugs are overused [7]. In referring to the Global Burden of Disease (GBD), MOH was rated 20th in the Global Burden of Disease (GBD) in 2015 [8]. In cases of chronic headaches, MOH is present in about half of patients, which has a prevalence of 1–2% of the global population. More than 60 million individuals globally are impacted by MOH [8]. MOH is often unrecognized; therefore, it demands more attention and awareness as it is both preventable and treatable [9]. Upon conducting a literature review in Saudi Arabia to ascertain the prevalence of primary headache disorders among the general population, a study conducted in 2020 demonstrated that the country has a high prevalence of primary headache disorders, primarily migraine and TTH. The study found that approximately 65.8% of adults experience these disorders at 1-year prevalence. Two percent (2%) of the respondents, primarily women, had pMOH, especially in the fourth and fifth decades, being the most affected age group [10]. Two previous studies conducted on specific populations in Qassim province and Makkah city revealed that the prevalence of MOH in Qassim province and Makkah city was 4% and 4.5%, respectively. Across the Qassim province, 18% of participants were aware of MOH, while 18.7% were aware of the condition in Makkah city [7, 4]. To our knowledge, there has yet to be published data regarding this topic in Jeddah City, Saudi Arabia. Therefore, this study aims to assess the general population prevalence and level of awareness about this condition in Jeddah City, Saudi Arabia, and make a judgment about the need for educational programs focused on increasing the overall understanding of MOH.

Methods

Study design, area, and population: A descriptive cross-sectional study was conducted in Jeddah, Saudi Arabia, to investigate the general population in the city.

Inclusion criteria: Adults who live in Jeddah city.

Sample size: The number of Jeddah population in the last report of the General Authority for Statistics was 4,863,000. The sample size was calculated using Epi-info software, version 5.5.11. With CI 95%, power 80, and an expected frequency of 50%. The estimated sample size is 384. The data was collected randomly through an online questionnaire distributed by data collectors with questions in the first part with consent if the participant agreed to be involved in the study. All participants signed the approval to share the study after being informed of its details and rationale.

Data collection methods: A validated self-administered questionnaire from a previously published study was utilized in this cross-sectional study [4]. The questionnaire was distributed online using Google Forms and multiple social media platforms. This study employed a self-administered questionnaire that requires less than 10 minutes to complete and has been thought to be an efficient and effective tool for collecting information. The questionnaire involved three significant sections: the first was demographic data, the second asked about headache symptoms, and the third asked about the medication used to treat the headache.

Data management and analysis plan: The data underwent a process of cleaning and verification to ensure its completeness and to eliminate any possible errors or inconsistencies. The data analysis was done by using SPSS version 24.0. then, the relevant descriptive statistics were conducted and condensed into frequency, percentage, and mean values. The analysis of categorical variables using chi-square tests. The statistical analysis used Student t-tests to compare parametric data between two groups. Ultimately, the scrutinized data was systematically arranged and conveyed in tables, graphs, and narratives as appropriate. Binary logistic regression was used to determine the odds ratios (unadjusted and adjusted) for the risk variables. Statistical significance was determined for differences with a P-value of less than 0.05.

Ethical considerations: A request for permission was submitted to Umm Al-Qura University's Institutional Research Board (IRB) (SOPJ04032) about the

research. Before the conduct of the questionnaires, the consent of the participants was requested.

Results

(Table 1) A total of 449 participants completed the questionnaire. The majority (388, 86.4%) of participants were females, with (369, 82.2%) being Saudi nationals. More than half (248, 55.2%) of the participants had a bachelor's degree, with only (10, 2.2%) having less than a high school education level. Concerning chronic diseases, (98, 21.8%) of the participants had diabetes mellitus, (59, 13.1%) had hypertension, and (292, 65.1%) suffered from other chronic conditions. (Table 2) depicts the participants' headache history and their awareness of the medication side effects. All the participants (449, 100.0%) reported having had headaches at some point in their lives. A notable proportion (175, 39.0%) indicated that they experienced headaches 1-2 days in the last 30 days. More than half (244, 54.3%) of them were not sure about the headache medication side effects, with only a few participants reporting chronic headache (38, 8.5%), increased sweating (34, 7.6%), and lack of appetite (32, 7.1%).(Table 3) shows the types and history of headache medication used by the participants; Majority (282, 62.8%) of them preferred Paracetamol (Panadol, Fevadol, Adol, Panadrex or Acitam) medication to relieve pain. Solpadeine was the second most commonly used medication (46, 10.2%), followed by NSAIDs (aspirin, ibuprofen, or diclofenac) (31, 6.9%). Only (4, 0.9%) of them reported the use of Sumatriptan medication as a pain reliever. Regarding the history of drugs, more than half (222, 61.2%) of them attested that they used them 1-9 days in the last 30 days. Most (272, 74.9%) of the participants reported using the medication intermittently; 38 (10.5%) of them used the medication for more than three months; (36, 9.9%) of them used it for less than one month; while only (17, 4.7%) of the participants used them for 1 to 3 months. The findings in (Figure 1) shows depict the level of awareness about headache medication side effects among the participant concerning their socio-demographic information. Ten options were used to measure the participants' awareness of the medication's side effects. Every correct answer was assigned a score of 1, while an incorrect answer was assigned 0. The highest score any respondent could get was 9, and the lowest score any respondent could get was 0. Data was converted to composite scores. The levels of knowledge were categorized based on scores as follows: 0-4 =Poor awareness while 5-9 = good awareness. Data was then analyzed to determine the levels of awareness among the participants. The study revealed that (205, 45.7%) of the participants had a good knowledge level about the side effects of headache medication. In contrast, the majority (244, 54.3%) of them exhibited a poor knowledge level about the side effects of headache medication. (Table 4) demonstrates the relationship between the socio-demographic information of participants and their level of cognizance regarding the adverse effects of headache medication. The findings demonstrated a statistically significant correlation between the level of awareness about the adverse effects of headache medication and one's education level (p-value=0.017*). The participants with PhD degrees exhibited significantly higher and good knowledge about headache medication side effects than other education levels (65.8%, p-value=0.017*). Furthermore, the participants who had experienced headaches for 15 days or more within the last 30 days showed significantly better awareness about headache medication side effects (77.4%, p-value=0.018*) than the other groups. Participants who used Sumatriptan (3, 75.0%) and NSAIDs (23, 74.2%) exhibited significantly better knowledge (p-value=0.005*) than those who used other medication to relieve headaches. Participants who used the medication for 10-14 days within the last 30 days showed significantly good knowledge (77.3%, p-value<0.001*) than the other groups. Furthermore, participants who used the medication for less than one month (23, 63.9%) and more than three months (22, 57.9%) showed good knowledge than the rest of the groups. There was no statistically significant association between gender, nationality, and the level of awareness about headache medication side effects (p>0.05).

Discussion

The objective of this study was to assess the prevalence of medication overuse headaches and the level of awareness regarding the adverse effects of headache medications among the general populace in Jeddah, Saudi Arabia. MOH is a secondary headache that is the result of the consistent overuse of medication(s) that are intended to alleviate (but not prevent) the symptoms of a pre-existing primary headache [11]. This is an important area of investigation, as headache disorders are a significant public health concern globally, and understanding medication use and knowledge of side effects can inform patient education and improve headache management strategies.

Table 1: Socio-demographic information of the Participants (N=449).

Socio-demographic information	**Category**	**Frequency and Proportion n (%)**
Gender	Female	388 (86.4%)
	Male	61 (13.6%)
Nationality	Saudi	369 (82.2%)
	Non-Saudi	80 (17.8%)
level of education	Less than high school	10 (2.2%)
	High school	68 (15.2%)
	Bachelor's degree	248 (55.2%)
	Master's degree	47 (10.5%)
	PhD	76 (16.9%)
Chronic disease	Diabetes Mellitus	98(21.8%)
	Hypertension	59(13.1%)
	Others	29(6.5%)
	None	263(58.6%)

Socio-demographic information presented in frequencies (n) and proportion (%)

Table 2: Participants' headache history and awareness about the medication.

Questions	**Categories**	**Frequency and Proportion n (%)**
Have you ever had a headache in the past?	Yes	449 (100.0%)
	No	0
Within the past 30 days, how many days have you been affected by headaches?	Within the past 30 days, I haven't experienced any headaches.	73 (16.3%)
	A day or two	175 (39.0%)
	Three to seven days	130 (28.9%)
	Eight to fourteen days.	40 (8.9%)
	fifteen days or more	31 (6.9%)
	Diarrhea	23 (5.1%)

What the adverse effects that you are aware of if you are taking medication for a headache?	Increased sweating	34 (7.6%)
	Loss of appetite	32 (7.1%)
	Stomach cramps	29 (6.5%)
	Skin rash	13 (2.9%)
	Chronic headache	38 (8.5%)
	Fever	7 (1.6%)
	Bloody urine	5 (1.1%)
	Tiredness or weakness	24 (5.3%)
	None	244 (54.3%)

Participants' headache history and awareness about the medicines of presented in frequencies (n) and proportion (%)

Table 3: Types and history of headache medication used by the participants.

Question	**Medication**	**Frequency and Proportion n (%)**
Which of these medications do you use frequently for relieving headaches?	NSAIDs (aspirin, ibuprofen, or diclofenac)	31 (6.9%)
	Paracetamol (Panadol, Fevadol, Adol, Panadrex or Acitam)	282 (62.8%)
	Solpadeine	46 (10.2%)
	Sumatriptan	4 (0.9%)
	I don't use medication for headache	86 (19.2%)
What was the frequency of your use of these medications for relieving your headache throughout the past 30 days?	1-9 days	222 (61.2%)
	10-14 days	22 (6.0%)
	15-30 days	25 (6.9%)
	Have not taken headache medications throughout the past 30 days	94 (25.9%)
What is the typical duration of your headache relief with these medications?	Intermittently	272 (74.9%)
	Less than one month	36 (9.9%)
	1-3 months	17 (4.7%)
	More than three months	38 (10.5%)

Table 4: The association between Socio-demographic variables and level of awareness about headache medication side effects.

	Level of awareness			
Variables	Category	Poor	Good	p value
Gender	Female	204 (52.6%)	184 (47.4%)	0.058
	Male	40 (65.6%)	21 (34.4%)	
Nationality	Saudi	203 (55.0%)	166 (45.0%)	0.540
	Non-Saudi	41 (51.2%)	39 (48.8%)	
level of education	Less than high school	5 (50.0%)	5 (50.0%)	0.017*
	High school	31 (45.6%)	37 (54.4%)	
	Bachelor's degree	116 (46.8%)	132 (53.2%)	
	Master's degree	21 (44.7%)	26 (55.3%)	
	PhD	26 (34.2%)	50 (65.8%)	
Within the past 30 days, how many days have you been affected by headaches?	Within the past 30 days, I haven't experienced any headaches.	63 (86.3%)	10 (13.7%)	<0.001*
	A day or two	99 (56.6%)	76 (43.4%)	
	Three to seven days	55 (42.3%)	75 (57.7%)	
	Eight to fourteen days.	20 (50.0%)	20 (50.0%)	
	fifteen days or more	7 (22.6%)	24 (77.4%)	
Which of these medications do you use frequently for relieving headaches?	NSAIDs (aspirin, ibuprofen, or diclofenac)	8 (25.8%)	23 (74.2%)	0.005*
	Paracetamol (Panadol, Fevadol, Adol, Panadrex or Acitam)	166 (58.9%)	116 (41.1%)	
	Solpadeine	22 (47.8%)	24 (52.2%)	
	Sumatriptan	1 (25.0%)	3 (75.0%)	
	I don't use medication for headache	47 (54.7%)	39 (45.3%)	
What was the frequency of your use of these medications for relieving	1-9 days	115 (51.8%)	107 (48.2%)	<0.001*
	10-14 days	5 (22.7%)	17 (77.3%)	
	15-30 days	8 (32.0%)	17 (68.0%)	

your headache throughout the past 30 days?	Have not taken headache medications throughout the past 30 days	69 (73.4%)	25 (26.6%)	
What is the typical duration of your headache relief with these medications?	Intermittently	156 (57.4%)	116 (42.6%)	0.042*
	Less than one month	13 (36.1%)	23 (63.9%)	
	1-3 months	12 (70.6%)	5 (29.4%)	
	More than three months	16 (42.1%)	22 (57.9%)	

Association between participants' socio-demographic information and level of awareness about headache medication side effects. * Significant at $p<0.05$ level.

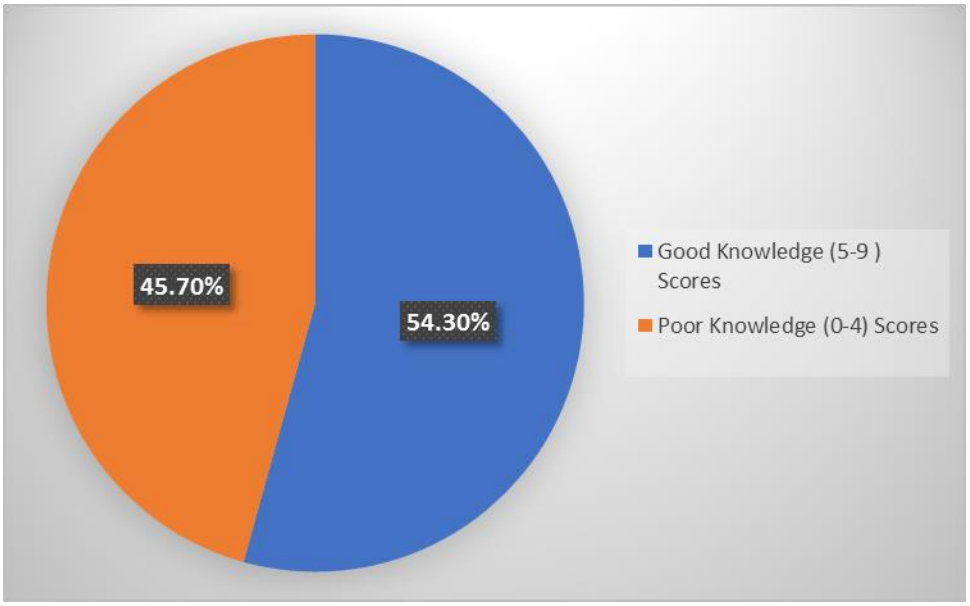

Figure 1: Pie chart illustrating the level of awareness about headache medication side effects.

The findings indicate a high prevalence of headaches in this population, with all participants reporting a history of headaches and a notable proportion (39%) experiencing headaches 1-2 days in the last 30 days. This high frequency of headache episodes suggests that headache is a common and potentially debilitating condition in this community. However, more than half (54.3%) of the participants were unaware of the potential side effects of headache medications. This lack of awareness could contribute to the inappropriate or unsafe use of these drugs, potentially increasing the risk of adverse outcomes, such as medication overuse, headache, gastrointestinal bleeding, renal impairment, and other complications. The most commonly used headache medication was paracetamol (62.8%); as in another study in Qassim, With 302 (67%) participants, paracetamol is the most often used medicine because, compared to other analgesics, it is considered safe and has few adverse effects[7,12]. Solpadeine (10.2%), and NSAIDs (6.9%), suggest a preference for over-the-counter analgesics among this population. While these medications may be appropriate for the management of occasional, mild headaches, their overuse or improper use can lead to medication overuse headache, a condition characterized by the development of chronic headaches due to the excessive and prolonged use of pain relievers. Medication overuse headache is a significant problem, as it can be challenging to treat and can have a substantial impact on the quality of life of those affected. The study found a significant association between higher educational attainment (PhD) and better awareness of medication side effects. This indicates that targeted education campaigns may be beneficial for improving knowledge about headache medications in the general population, particularly among those with lower levels of education. Limited academic attention has been given to MOH in Saudi Arabia, underscoring the necessity of conducting additional research on this topic. Furthermore, there is inadequate awareness of the adverse effects of analgesics in regular use in the country [4]. By addressing the knowledge gaps identified, healthcare providers and policymakers can work to enhance the management of headache disorders and mitigate the risks associated with the misuse of headache medications. The study's limitations include its cross-sectional design and reliance on self-reported data, which may be subject to recall bias. Additionally, the lack of assessment of medication overuse headache prevalence limits the comprehensive understanding of the problem. Future research should consider longitudinal designs and objective measures of medication use and overuse, such as medication diaries or pharmacy records, to elucidate better the relationship between headaches, medication use, and side effect awareness in this population. Despite these limitations, the findings of this study highlight the need for improved patient education and awareness campaigns to promote the safe and appropriate use of headache medications in Saudi Arabia. By addressing the knowledge gaps identified, healthcare providers and policymakers can work to enhance the management of headache disorders and mitigate the risks associated with the misuse of headache medications. This, in turn, may lead to improved patient outcomes, reduced healthcare costs, and a better overall quality of life for individuals suffering from headache disorders in this region.

Conclusion

In conclusion, our study established a statistically significant association between sociodemographic information on gender, education level, and level of knowledge about the side effects of headache medication. The study revealed the majority had poor knowledge about the side effects of headache medication. Female participants with PhD degrees showed a higher level of knowledge of headache medication side effects than those having less than a high school education level. Participants who experienced headaches more frequently and those using specific medications demonstrated better knowledge of potential side effects. Paracetamol was the most preferred medication for headache relief, followed by Solpadeine and NSAIDs. Participants predominantly used these medications intermittently and for short durations, reflecting varying usage patterns. According to our study, we suggest that we need to increase awareness about the side effects of headache medication among the high school educational population in Jeddah City.

Conflict of Interest

None

Funding

None

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