



Prevalence and pattern of analgesic misuse among patients attending primary health care centre in Makkah, Saudi Arabia

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Article History

Received: 05 July 2020

Reviewed: 06/July/2020 to 06/August/2020

Accepted: 07 August 2020

E-publication: 15 August 2020

P-Publication: September - October 2020

Citation

Abrar Alharbi, Fahad Saqib Lodhi, Adeel Ahmed Khan. Prevalence and pattern of analgesic misuse among patients attending primary health care centre in Makkah, Saudi Arabia. *Medical Science*, 2020, 24(105), 3182-3190

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General Note



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ABSTRACT

Background: The inappropriate use of analgesics can have implications on health and can also have effect on quality of life. This inappropriate use can lead to misusing healthcare resources and increasing healthcare costs. **Objective:** To determine the prevalence of analgesic misuse, pattern and side effects of analgesics among adults aged 15 -65 years attending general clinics in Al-Zaher

primary health care center (PHCC) in Makkah. *Subjects and methods:* A cross-sectional study was conducted in Makkah at Alzaher PHCC enrolling 214 patients of age 15-65 years attending general clinics from August - September 2019. A systematic random sample technique was adopted to recruit adult patients attending clinics. A self-administered validated questionnaire was used for data collection including sociodemographic data, the pattern of analgesics use, and awareness about the analgesics use and its side effects. *Results:* The study included 214 participants. The mean age of our study participant was 37 ± 11.9 years. The prevalence of analgesics use was 94.9%. More than half of the participants who used analgesics (58.4%) claimed that these analgesics were not prescribed. The most frequently used analgesic was paracetamol (64.5%). The most frequent indications for using analgesics among the participants were headache (34.5%), joint pain (22.7%), and fever (11.8%). The prevalence of analgesics misuse among the participants was 26.6%. Most of the participants (73.4%) were aware of the analgesics misuse side effects. The most frequently known side effects were hepatotoxicity (39.3%) and nephrotoxicity (30.8%). *Conclusion:* The use of analgesics among the adult population in Makkah, particularly for headache is alarming. Misuse of analgesics is also higher that needs immediate attention. Awareness regarding analgesics side effects is high; however, for particular side effects, it is suboptimal.

Keywords: analgesic misuse, pattern, prevalence, primary health care Centre, Saudi Arabia

1. INTRODUCTION

Analgesics misuse is a common and growing health problem worldwide (Aboodand Wazaify, 2016), in both developed and developing countries. The frequency of use of analgesics has significantly increased over the last three decades (Backer and Starrels, 2015). The misuse of drug prescription included overuse, use to get a high dose, sharing or selling the medications to others and having multiple non-prescribed sources of the medication (Backer and Starrels, 2015). It can be used either the prescription and nonprescription or the so-called Over-The-Counter (OTC) drugs, they generally consider as a safe medication. Potential side effects can occur with misuse of them and most users are unaware of dangerous side effects (Aboodand Wazaify, 2016). The non-prescription analgesics are more commonly used analgesics (Ozkan et al., 2009). Examples of common analgesics used are paracetamol, nonsteroidal anti-inflammatory drugs (NSAID) (ibuprofen, diclofenac, Celebrex, aspirin) (Karami et al., 2018). NSAID act by inhibition of cyclooxygenase enzyme, the enzymes that synthesize prostaglandins, through this action, it decreases inflammation, relief the acute and chronic pain and can use with common conditions like a headache, arthralgia, toothache and backache (McGettigan and Henry, 2013). Undesirable side effect may also occur with its use such as gastrointestinal upset (stomach ulcer, stomach ache, and indigestion) (McGettigan and Henry, 2013; Thomas et al., 2002). It also increases the risk of cardiac disease and stroke, so it should be avoided in a patient at high risk of cardiovascular diseases (McGettigan and Henry, 2013, Amirimoghadam et al., 2017). About one-third of the general population used NSAID as analgesics in the Kingdom (Koffeman et al., 2014), and the public knowledge about non-steroidal anti-inflammatory drugs was low (Amirimoghadam et al., 2017). The easy availability of these medications, it can be provided easily by a community pharmacist and lack of knowledge about the accurate use of analgesics leads to misuse. The inappropriate use of analgesics can have implications on health and can also have effect on quality of life. This inappropriate use can lead to misusing healthcare resources and increasing healthcare costs (Karami et al., 2018).

KSA is considered a high prevalence country with the use of over the counter drugs, with analgesics is the most utilized drug, especially the NSAID diclofenac, it accounts for about 67% of the used drugs (AlKhamees et al., 2018). In Jeddah city, the prevalence of analgesics use is about 84.8% with the most commonly used drug was acetaminophen (86.1%), followed by ibuprofen (25.1%) and diclofenac (14.7%) (Babakor and AL Ghamdi, 2018). Specific factors are related to analgesics misuse such as socio-demographic factors, health-related factors, social and economic factors (Antonov and Isacson, 1996). According to WHO in 2000, the social and economic factors are the main reasons for taking the medication without the appropriate diagnosis (Almalak et al., 2014). About 58.1% of patients using OTC analgesics in Jeddah city do not know the side effects of its use (Babakor and AL Ghamdi, 2018).

This study aimed to evaluate the analgesic misuse among adults aged 15 -65 years attending general clinics in Al-Zaher primary health care center in Makkah, 2019. We also intended to find out the awareness of its use and determining the side effects associated with analgesic use.

2. SUBJECTS AND METHODS

This was a cross-sectional study carried out in Makkah city, Saudi Arabia located in the western region of the country. It is the core of the Islamic world and the most blessed place on the earth. A sample of adult's age from 15-65 years attending general clinics in Al-Zahir primary health care center in Makkah throughout the study period (August - September 2019) was included. A systematic

random sample technique was adopted to recruit adult patients attending general clinic, according to the total number of eligible patients visiting clinic daily till the required sample size of 214 was reached (Fig 1).

An Arabic validated self-administered questionnaire was used to collect data including sociodemographic data such as age, gender, marital status, education, employment, family income, the pattern of analgesics use. It also included: use of analgesics medication, type of analgesics use, nature of the medicine used, prescription-only medication, nonprescription drugs, frequency of use, duration of use and the presence of chronic disease. Severity of pain was assessed by scale ranged between 0 and 10 of pain intensity (mild 0-3, moderate 4-6 and sever 7-10). Awareness about the analgesics use and its side effects, the source of knowledge about analgesics medication, reasons for OTC analgesics use, knowledge about the analgesics side effects; were also assessed.

Ethical approval was taken from local committee at Directorate of health affairs in Makkah. Approval from the director of the involved primary health care center was taken before the conduct of the study. Individual consent was filled by participants on the first page of the questionnaire. Data entry was carried out in Epi Data version 3.1. Data was analyzed using software of Statistical package of Social Sciences (SPSS version 21.0). Descriptive analysis for socio-demographics information was run. Mean and standard deviation for continuous variables i.e., age was computed. Frequency and proportions for categorical variables i.e., gender, marital status, education, employment and family income were calculated. Proportions for pattern of analgesics use, type of analgesics use, prescription-only medication, frequency of use, presence of chronic disease, awareness about the analgesics use and its side effects were also generated. Chi-square test was used to compare analgesic misuse and awareness of analgesics side effects among participant's socio-demographic characteristics (gender, marital status, education, employment and family income). P-value of ≤ 0.05 was considered as statistically significant.

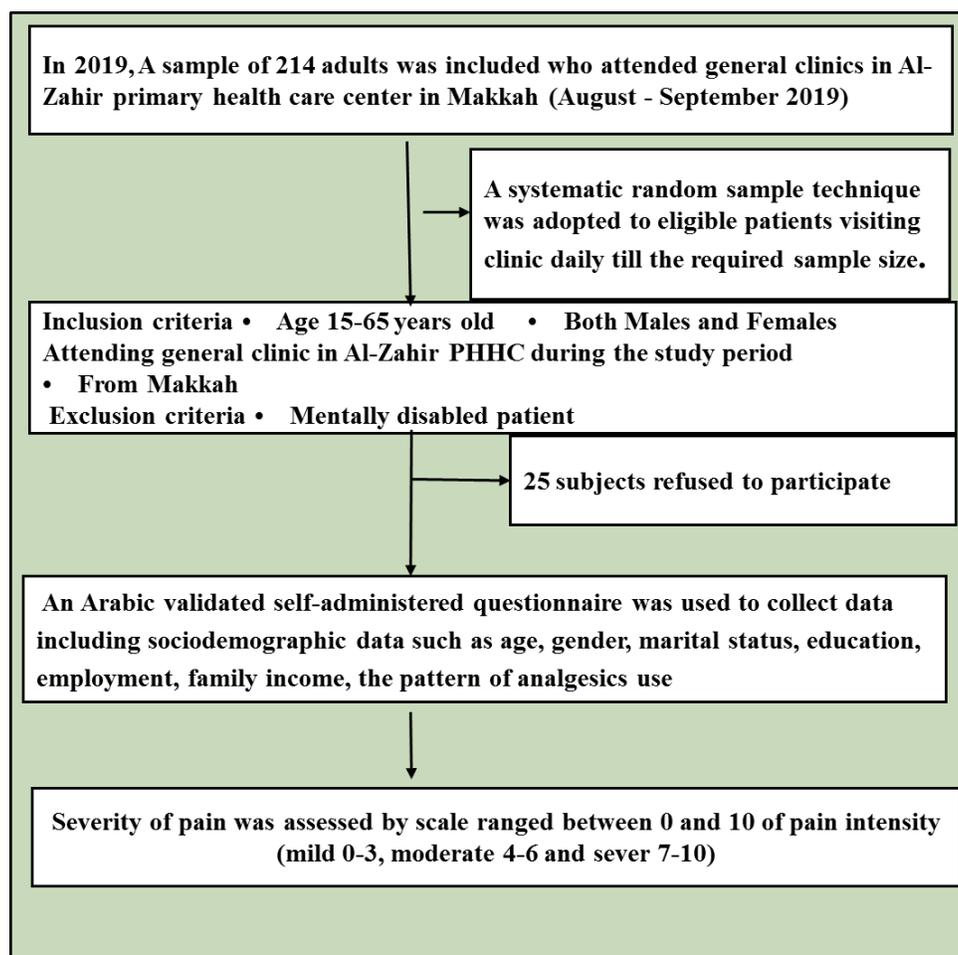


Figure 1 Schematic presentation of the sampling technique

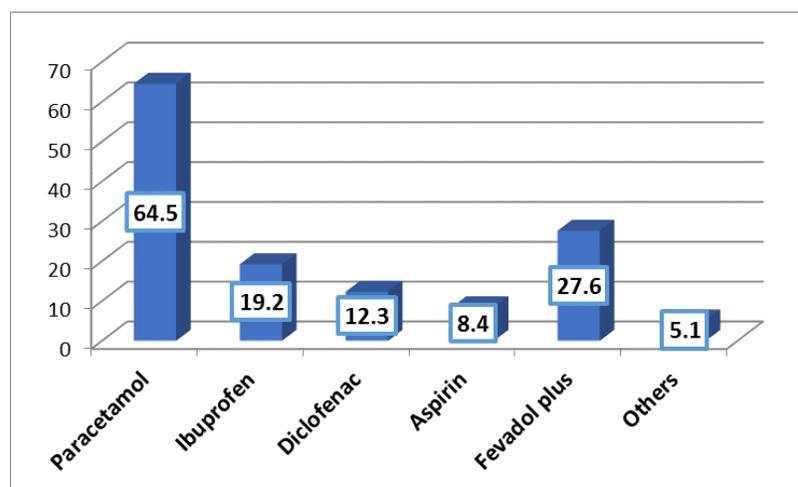
3. RESULTS

Our study included 214 participants. The mean age of our study participant was 37 ± 11.9 years. All were Saudis and residents of Makkah. They were equally distributed according to gender. Nearly two-thirds of them (69.2%) were married and university graduated (63.6%). Almost one-third (36%) were unemployed (Table 1).

Table 1 Socio-demographic characteristics of the participants (n=214)

Variables	Frequency	Percentage
Gender		
Male	107	50.0
Female	107	50.0
Marital status		
Married	148	69.2
Single	48	22.4
Divorced/widowed	18	9.4
Educational level		
Below secondary school	20	9.3
Secondary school	22	10.3
Diploma	10	4.7
University	136	63.6
Postgraduate	26	12.1
Employment status		
Unemployed	77	36.0
Retired	14	6.5
Student	27	12.6
Employed	96	44.9
Family income (SR/month)		
<3000	29	13.6
3000-5000	41	19.2
5001-10000	51	23.8
>10000	93	43.4

History and pattern of analgesics use

**Figure 1** Types of used analgesics in the past 6 months among the participants

The prevalence of analgesics use among the participants was 94.9%. More than half of the participants who used analgesics (58.4%) claimed that these analgesics were not prescribed. The most frequently used analgesics were paracetamol (64.5%), followed by fevadol plus (27.6%), ibuprofen (19.2%), and diclofenac (12.3%) as demonstrated from Figure 1. About one-quarter of the participants (23.2%) reported using analgesics more than three times in the last 6 months. The majority of the analgesic users

(92.9%) claimed that they used the same recommended dose of the drug whereas only 4.4% reported using more than the recommended dose (Figure 2).

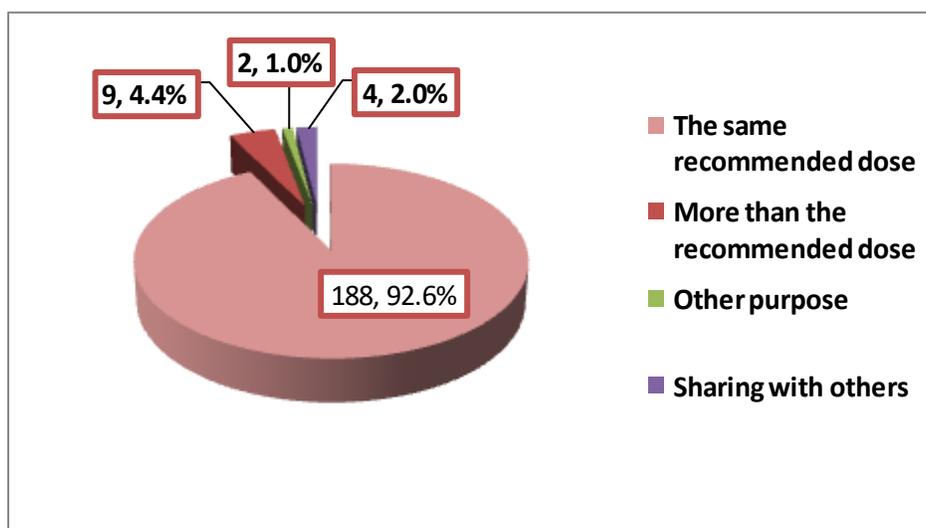


Figure 2 Pattern of using the analgesics among the participants

About a quarter of the participants (26.1%) reported increasing the dose of the analgesic in case of failure of getting the desired effect. On a scale ranging between 0 and 10 of pain intensity, participants intended to use an analgesic at a median score of 3 (IQR=2-3). The main source of knowledge about analgesics was the previous prescription (35%), followed by self-knowledge (27.6%), pharmacy (17.3%), and family (13.6%). Doctors represent only 1.4% of the source of information about analgesics. The main sources of obtaining analgesics were private pharmacy (59.1%), home (41.4%), and pharmacy of a private hospital (24.6%). Concerning the reasons for using analgesics without counseling a doctor were having a simple health problem (48.3%), a drug already used previously (39.9%), and high expense of doctor's visit (18.7%). The most frequent indications for using analgesics among the participants were headache (34.5%), joint pain (22.7%), and fever (11.8%) respectively.

History of chronic diseases

History of chronic diseases was reported among 18.2% of the participants. The commonly reported chronic diseases were diabetes (56.2%) and hypertension (25.6%).

Analgesic misuse

Prevalence of analgesics misuse among the participants was 26.6%. None of the studied variables (gender, age, marital status, educational level, employment status, and family income) was significantly associated with analgesics misuse among the participants (Table 2).

Table 2 Socio-demographic factors associated with analgesics misuse among adults aged 15-65 years attending the general clinics in Al-Zaher primary health care center in Makkah, 2019

	Analgesics misuse		p-value
	No N=57 N (%)	Yes N=157 N (%)	
Gender			
Male (n=107)	27 (25.2)	80 (74.8)	0.643*
Female (n=107)	30 (28.0)	77 (72.0)	
Age (years)			
Mean±SD	36.6±11.6	37.2±12	0.748**
Marital status			
Married (n=148)	41 (27.7)	107 (72.3)	

Single (n=48)	13 (27.1)	35 (72.9)	0.605*
Divorced/widowed (n=18)	3 (16.7)	15 (83.3)	
Educational level			0.384*
Below secondary school (n=20)	4 (20.0)	16 (80.0)	
Secondary school (n=22)	9 (40.9)	13 (59.1)	
Diploma (n=10)	1 (10.0)	9 (90.0)	
University (n=136)	36 (26.5)	100 (73.5)	
Postgraduate (n=26)	7 (26.9)	19 (73.1)	
Employment status			0.783*
Unemployed (n=77)	18 (23.4)	59 (76.6)	
Retired (n=14)	4 (28.6)	10 (71.4)	
Student (n=27)	9 (33.3)	18 (66.7)	
Employed (n=96)	26 (27.1)	70 (72.9)	
Family income (SR/month)			0.823*
<3000 (n=29)	9 (31.0)	20 (69.0)	
3000-5000 (n=41)	11 (26.8)	30 (73.2)	
5001-10000 (n=51)	15 (29.4)	36 (70.6)	
>10000 (n=93)	22 (23.7)	22 (23.7)	

* Chi-square test

**Student's t-test

Awareness of analgesics side effects among the participants

Most of the participants (73.4%) were aware of the analgesics misuse side effects. The most frequently known side effects were hepatotoxicity (39.3%) and nephrotoxicity (30.8%).

History of having side effects of analgesics among the participants

17.3% of the participants had any side effects with analgesics use whereas 21% were not sure. The commonest reported side effects of analgesics used were stomach ache (12.1%), nausea and vomiting (7.5%), headache (4.2%) and vertigo (4.2%). None of the studied variables (gender, age, marital status, educational level, employment status, and family income) was significantly associated with awareness of the participants about analgesics side effects as seen in Table 3.

Table 3 Socio-demographic factors associated with awareness of analgesics side effects among adults aged 15-65 years attending the general clinics in Al-Zaher primary health care center in Makkah, 2019

	Awareness of analgesics side effects		p-value
	No N=57 N (%)	Yes N=157 N (%)	
Gender			0.279*
Male (n=107)	32 (29.9)	75 (70.1)	
Female (n=107)	25 (23.4)	82 (76.6)	
Age (years)			0.345**
Mean±SD	35.7±11.9	37.5±11.9	
Marital status			0.486*
Married (n=148)	39 (26.4)	109 (73.6)	
Single (n=48)	15 (31.3)	33 (68.8)	
Divorced/widowed (n=18)	3 (16.7)	15 (83.3)	
Educational level			
Below secondary school (n=20)	15 (75.0)	5 (25.0)	
Secondary school (n=22)	15 (68.2)	7 (31.8)	

Diploma (n=10)	8 (80.0)	2 (20.0)	
University (n=136)	100 (73.5)	36 (26.5)	
Postgraduate (n=26)	19 (73.1)	7 (26.9)	0.968*
Employment status			
Unemployed (n=77)	25 (32.5)	52 (67.5)	
Retired (n=14)	1 (7.1)	13 (92.9)	
Student (n=27)	7 (25.9)	20 (74.1)	
Employed (n=96)	24 (25.0)	72 (75.0)	0.241*
Family income (SR/month)			
<3000 (n=29)	10 (34.5)	19 (65.5)	
3000-5000 (n=41)	11 (26.8)	30 (73.2)	
5001-10000 (n=51)	18 (35.3)	33 (64.7)	
>10000 (n=93)	18 (19.4)	75 (80.6)	0.145*

* Chi-square test

**Student's t-test

4. DISCUSSION

In Saudi Arabia, studies that investigated the pattern of use and misuse of analgesics are still scarce, therefore this study was conducted to evaluate the analgesic use and misuse among adults aged 15-65 years attending general clinics in a primary health care center in Makkah. In our study, the majority of the participants (94.9%) reported using analgesics during the past 6 months; moreover, 58.4% of users claimed that these analgesics were not prescribed. However, the prevalence of analgesics misuse, in terms of non-prescription, using for a longer duration, more frequent usage, or larger dosage was 26.6%. In a similar study conducted in Jeddah among PHC centers attendees aged over 15 years revealed that the prevalence of analgesic use was 84.8% (Babakorand AL Ghamdi, 2018). Also, in Bahrain, the majority of adults aged 20-40 years (90%) used analgesics in the past 6 months (Al-Qallaf et al., 2015). Higher prevalence of analgesics was also reported in Turkey as 73.1% (Ozkan et al., 2019). These figures are higher than those reported in European countries. In Netherland, (Koffeman et al., 2002) the prevalence of using NSAIDs was about 30%. In Spain, (Carrasco-Garrido et al., 2014), the prevalence was 30%. However, they reported the prevalence of analgesics self-medication and not included the prescribed portion. In Norway, (Dale et al., 2019) a prevalence of analgesics used in the past month was 47%. In Germany (Sarganas et al., 2015), the prevalence of analgesics use among adults was 20% in a given week; 8% used prescribed analgesics, and 12 % use OTC analgesics. A comparison of the findings of these studies with our findings is not practical due to variation in the duration of analgesics use as well as the type and pattern of analgesics use.

Following other studies carried out in Jeddah, (Babakorand Al Dhamdi, 2018) Al-Qassim (Saeed et al., 2014) Eastern Province (Khan and Ibrahim, 2013) of Saudi Arabia, as well as the total Saudi population, (Karami et al., 2018), the most frequently used analgesic was paracetamol. This finding could be attributed to the fact that in Saudi Arabia, paracetamol can be easily purchased in many pharmacies and stores. Similar findings were reported outside Saudi Arabia; in Bahrain (Al-Qallaf and Al-Qallaf, 2015) and Norway, (Dale et al., 2015) paracetamol was the most frequently used OTC analgesic. The easy availability of OTC paracetamol makes it frequently associated with the risk of misuse with possible serious effects. Additionally, similar to others, (Babakor and Ghamdi, 2018; Saeed et al., 2014; Khan et al., 2013) Ibuprofen and diclofenac were the second most frequently used analgesics. In Germany, (Sarganas et al., 2015) NSAIDs was the commonest used analgesics.

In the present study, the most frequent indications for using analgesics among the participants were headache, joint pain, and fever. In a study conducted in Jeddah also reported that headache was the most leading health problem for using analgesics (Babakor and Ghamdi, 2018). Among university students in Qassim, (Saeed et al., 2014) Saeed et al. observed that headache was the commonest indication for using analgesics. This common use of analgesics in cases of headache may play a role in delaying the appropriate care and treatment interactions (Tonore, king and noble, 2002). Regarding the reasons for using analgesics without counseling a doctor, having common health problem (48.3%), which is evidenced also by reporting a median score of 3 out of a maximum of 10 for pain intensity indicated using of analgesics, and drug already used previously (39.9%) were most frequently mentioned in the current study. Studies carried out in Jeddah (Babakor and Ghamdi, 2018) and Riyadh (Aljadhey et al., 2015) reported that minor symptoms (54%), time-saving (40%), and previous experience with the drug (40%) were the major reasons for OTC drugs use. All aforementioned factors are influenced by costumers` knowledge and perception as well as previous experience with both the health status and drug efficacy and safety (Hanna and Hughes, 2011; Berry et al., 2004).

Our results revealed no significant difference between males and females regarding the misuse of analgesics. The same has been reported in other numerous studies carried out in Saudi Arabia (Karami et al., 2018; Babakor and Ghamdi, 2018; Almalak et al., 2014;

Elbur, Almalki and Alghamdi, 2016), Germany, (Sarganas et al., 2018), and Norway (Dale et al., 2015). However, in one Turkish study, (Ozkan et al., 2009) females were using significantly more analgesics as compared to males. Fortunately, most of the participants in the current study were aware of the analgesics misuse side effects; with almost a third were aware of hepatotoxicity and nephrotoxicity of analgesic misuse. In a similar study carried out in Jeddah, (Babakor and Ghamdiet, 2018) reported less than half of the participants were aware of analgesics side effects and a minority were aware of nephrotoxic and hepatotoxic risks. So, from the results of the present study, we can conclude that the level of awareness about specific health risks of analgesics is insufficient and the population needs more specific information to improve this finding.

The present study revealed that 17.3% of the participants had any side effects with analgesics use whereas 21% were not sure about that; commonly gastrointestinal disorders. However, these figures are subjected to recall bias, so it might be inaccurate. This could be considered as one of the study limitations. Also, as a cross-sectional study, we could not explore causality. Conduction of the study among patients of only one primary healthcare center in Makkah could possibly affect the generalizability of the results. Finally, the self-reporting nature could be subjected to bias.

5. CONCLUSION

The use of analgesics among the adult population in Makkah, particularly for headache is alarming. Misuse of analgesics is also higher that needs immediate attention. Paracetamol is the commonest used, followed by ibuprofen and diclofenac. The main reasons for analgesics use were having common health problems, previous use of the drug, and high expense of physician's visits. Awareness regarding analgesics side effects is high; however, for particular side effects, it is suboptimal.

Acknowledgments

My great appreciation and thanks to the director of Al-Zaher's primary health care center in Makkah for facilitating my field study and all patients who participated in this study and gave their valuable time.

Author contribution

AAA, FSL and AAK conceptualized the study; methodology, AAA; data collection, AAA, FSL and AAK; data curation, AAA; data analysis, AAA; writing draft, AAA, FSL and AAK; supervision, FSL and AAK. All authors read and approved the final manuscript.

Funding

This study has not received any external funding.

Conflicts of Interest

The authors disclose no conflict of interest.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

Ethical approval was taken first from local committee at Directorate of health affairs in Makkah. Approval from the director of the involved primary health care center was taken before the conduct of the study.

Data and materials availability

All data associated with this study are present in the paper.

Peer-review

External peer-review was done through double-blind method.

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