

Original Article

Utilization of Analgesics among Adults in Alexandria

Engy Hussein¹, Zahira Gad², Iman Wahdan² †

¹ Pharmacist, Alexandria, Egypt

² Department of Epidemiology, High Institute of Public Health, Alexandria University, Egypt

Abstract

Background: Rational use of medicine can be defined as receiving medications appropriate to the clinical needs, in doses that meet the individual requirements and for an adequate period of time. Relieving or treating pain is one of the most common reasons for using analgesics. It has been reported that non-prescribed and improperly used analgesics has reached worrisome levels.

Objectives: The aim of the present study was to assess the magnitude and to determine the pattern of analgesics utilization among adults in Alexandria, to identify the factors associated with frequent analgesics use and misuse, and to investigate the adults' knowledge concerning analgesics use.

Methods: The study was conducted using a cross-sectional approach. It included 607 adults attending 30 private pharmacies in the 8 districts of Alexandria. A predesigned structured interviewing questionnaire was used to collect data from the adults attending the selected pharmacies.

Results: More than three quarters of the adults (82%) reported taking one or more analgesics. Nearly two-thirds (64.1%) used to take only one analgesic, while 29.9% used to take two analgesics and 6% used to take three or more analgesics. There was a statistically significant association between age, gender, hyperacidity and analgesics use. Paracetamol was used by more than one quarter (27.5%) of analgesic users, while non steroidal anti-inflammatory drugs (NSAIDs) were used by 86.6% of them. More than one third (37.3%) of the studied adults were considered frequent analgesic users, while about 16.5% were misusers.

Conclusion: Utilization of analgesics was widely prevalent among adults in Alexandria, and it is the responsibility of Ministry of Health and Population, universities, physicians and pharmacists to rationalize the use of analgesics.

Key words: Analgesics misuse, NSAIDs, paracetamol, rational use of medicine

Available on line at:

www.ebscohost.com/academic/arab-world-research-source

www.Askzad.com

†Correspondence:

Email: imanwahdan@yahoo.com

Suggested Citations:

Hussein E, Gad Z, Wahdan I. Utilization of Analgesics among Adults in Alexandria. JHIPH. 2015; 45(1):16-24.

INTRODUCTION

Rational use of medicine requires that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".⁽¹⁾ Worldwide, more than 50% of all medicines are prescribed, dispensed, or sold inappropriately. Also 50% of patients fail to take medicines correctly.^(2,3)

Pain represents a major clinical, social and economic problem, with a prevalence ranging from 8% to more than 60%, depending on the patient population.⁽⁴⁾ Estimates suggest that 20% of adults

suffer from pain globally and 10% are newly diagnosed with chronic pain each year.⁽⁵⁾ One of the most common reasons for using analgesics is relieving or treating pain. It has been reported that non-prescribed and improperly used analgesics has reached worrisome levels.⁽⁶⁾

Analgesics are classified into opioids and non opioids. Opioid analgesics are principally used in the relief of severe or chronic malignant pain, and may produce dependence. Non-opioid analgesics are used for the mild to moderate pain, for fever and they all except paracetamol have anti-inflammatory effects.^(7,8) Non-opioid analgesics include non steroidal anti-inflammatory drugs (NSAIDs) and paracetamol. NSAIDs can be classified into salicylates (aspirin) and

non-salicylates.^(9,10) In Europe, Harald Breivik et al (2005), declared that almost half of chronic pain sufferers (55%) were taking non prescribed analgesics; over the counter NSAIDs and paracetamol (43%), and weak opioids (13%).⁽¹¹⁾ Not only improper or irrational use of analgesics can lead to increased morbidity and mortality rates and deterioration of the quality of life, but also it can give rise to misusing of health care resources and increasing of health care costs.⁽⁶⁾ Therefore, analgesic use and its characteristics are a major public health issue.⁽¹²⁾

In Egypt, analgesics can be obtained either with or without a prescription. Both the availability and the perceived safety of the non-prescribed analgesics have likely contributed to their widespread use.

The aim of the present study was to assess the magnitude and to determine the pattern of analgesics use, to identify the factors associated with frequent analgesics use and misuse, and to investigate the adults' knowledge concerning analgesics use.

METHODS

Study Design and Setting: the study was conducted using a cross sectional approach. The study participants were adults aged 18 years old and over and attending private pharmacies either for purchasing non-opioid analgesics, other medications or for any other purpose. Adults using analgesics for prophylaxis were not included in the study. Based on an expected frequency of 20% adults suffering from pain,⁽⁵⁾ a design effect of 2, the required sample at 95% confidence level was 510 adults. The sampling units were selected using a multistage cluster sampling technique. There are 4640 pharmacies distributed in the 8 districts of Alexandria. Thirty pharmacies were randomly selected and were proportionately allocated according to the number of pharmacies in the 8 selected districts of Alexandria.

Data collection: a predesigned structured questionnaire was used for interviewing adults attending the selected pharmacies. The collected data included the sociodemographic characteristics (age, sex, marital status, level of education, occupation and residence), the analgesics intake during the past six months (number, types, prescribers, doses, method of administration, frequency and purpose of use and adverse effects) and smoking habits. Also, data were collected about the knowledge of adults regarding contraindications, interactions and adverse effects and the source(s) of information about analgesics. A pilot study was carried out to pretest the constructed questionnaire, to determine the need for any modification, estimate the average time required for each interview and determine any difficulties that may arise during the implementation of the study. It showed that the main difficulty was that some of the

adults attending the pharmacies were in a hurry and had little time to respond to the questions and some of them rejected the idea of answering the questions.

Any analgesic user was considered to misuse analgesics if he was: taking more than the recommended dose, self-medicating with therapeutic doses, taking analgesics freely while being one of high risk population, concomitantly using medications that may interact with NSAIDs, using two products containing identical ingredients or using the same class of analgesic ingredients (e.g. NSAIDs) during the same period of time or exceeding the maximum recommended duration of use which is 10 days.^(13,14)

Frequent analgesic users were defined as monthly use of at least seven analgesic tablets (from 3 to 6 tablets per week) or using analgesics daily or few times a week.^(15,16)

Statistical Analysis: The collected data were revised and coded and SPSS version 20 software was used for tabulation and analysis. Descriptive statistics were calculated including count, percentage, arithmetic mean (x) and standard deviation (SD). Analytical statistics including Pearson's chi square test and Monte Carlo Probability test were used to describe the categorical data.

Ethical statement

The researcher sought the approval of the Ethics Committee of the High Institute of Public Health for conducting the study. The study procedure conformed to the international research guidelines, the ethical guidelines of the 1975 Declaration of Helsinki and Guidelines of the International Conference on Harmonization for Good Clinical Practice. A verbal consent was obtained from the study participants. Confidentiality and voluntary participation were stressed upon when describing the purpose of the study to all participants. Anonymity and confidentiality were guaranteed and maintained.

RESULTS

Magnitude of use of analgesics

More than three quarters of adults (82%) reported taking one or more analgesics. Nearly two-thirds (64.1%) of those using analgesics used to take one analgesic. Approximately one third (29.9%) used to take two analgesics and 6% used to take three or more analgesics

Pattern of analgesics use

It appears from table 1 that more than one third (35.5%) of adults who were using analgesics were in the age group from 25 to less than 35 years compared to 25.7% of adults who were not using analgesics in the same age group. The difference between the two groups was found to be statistically significant. Males

who were using analgesics constituted 46.4% while females constituted 53.6%. The difference between the two groups was found to be statistically significant.

There was no significant association between analgesic intake and occupation or marital status or place of residence.

Table 1: Association between socio-demographic characteristics and analgesic use among the studied adults, Alexandria, 2014

Socio-demographic data	Analgesic use				Test of significance	
	Yes (n=498)		No (n=109)		X ²	P
	No	%	No	%		
Age						
<25	89	17.9	26	23.9	10.0	0.040*
25-	177	35.5	28	25.7		
35-	114	22.9	18	16.5		
45-	67	13.5	19	17.4		
55+	51	10.2	18	16.5		
Gender					5.4	0.020*
Male	231	46.4	64	58.7		
Female	267	53.6	45	41.3		
Education					4.9	0.425
Illiterate	35	7.0	13	11.9		
Read and write	36	7.2	5	4.6		
Primary school	10	2.0	3	2.8		
Secondary school	159	31.9	29	26.6		
Preparatory school	47	9.4	12	11.0		
University	211	42.4	47	43.1		
Occupation					7.4	0.118
Student	36	7.2	13	11.9		
Professional	159	31.9	28	25.7		
Non Professional	181	36.3	40	36.7		
House wife	102	20.5	19	17.4		
Retired/Not working	20	4.0	9	8.3		
Marital Status					0.77	0.680
Single	153	30.7	38	34.9		
Married	328	65.9	68	62.4		
Divorced /Widowed	17	3.4	3	2.8		
Residence					0.48	0.490
Urban	420	84.3	89	81.7		
Rural	78	15.7	20	18.3		

* p < 0.05 (significant)

Table 2 shows that 24.1% of the studied adults who were taking analgesics were smokers. Ninety percent of those who were smoking daily were taking analgesics. Those who were smoking 10-20

cigarettes/day constituted 36% of the adults taking analgesics. No significant association was found between smoking and analgesic intake. Table 3 shows that paracetamol was used by 27.5% of the studied adults.

Table (2): Association between smoking and analgesic use in the studied adults, Alexandria, 2014

Smoking	Analgesic use (n=607)				Test of significance	
	Yes		No		X ²	P
	No	%	No	%		
Smoking					0.01	0.957
Yes	120	24.1	26	23.9		
No	378	75.9	83	76.1		
Frequency of cigarette smoking					MCP	0.373
Daily	108	90.0	21	80.8		
Someday	6	5.0	2	7.7		
Not at all (former smoker)	6	5.0	3	11.5		
No. of cigarettes /day					0.65	0.723
<10	22	19.3	3	13.0		
10-20	41	36.0	8	34.8		
>20	51	44.7	12	52.2		

MCP: Mont Carlo Probability

Paracetamol was taken for self-medication by 41.6% of adults. Less than one quarter (23.4%) of adults had a prescription, 18.2% took it after consultation of a pharmacist, 15.3% after asking their friends and/or relatives. The source of information was the internet and the television in only 1.5% of paracetamol users. Regarding the frequency of paracetamol use, it was less than once monthly in 31.4% of paracetamol users, twice weekly and once to twice monthly in 16.8% each. About 15% used paracetamol once per week. Those who reported taking paracetamol everyday amounted to 13.9%. It also appears from the table that the reasons for taking

paracetamol were headache (89.1%), followed by fever (10.9%) and dental pain (10.2%). The only route of administration of paracetamol was the oral route as mentioned by the studied adults. Paracetamol was administered in a dose of 500 mg daily in more than two thirds (65.7%) of adults. Those who took 1000 mg daily and 2000-3000 mg/day constituted 32.8% and 1.5% respectively. Regarding the side effects of paracetamol, 97.8% of adults who were utilizing paracetamol reported no side effects, and 2.2% mentioned suffering from gastrointestinal side effects. All adults using paracetamol mentioned continuing taking it despite of its side effects.

Table 3: Pattern of paracetamol use among studied adults, Alexandria, 2014

Paracetamol data		No. (n=498)	%
Paracetamol			
	Yes	137	27.5
	No	361	72.5
Source of consultation^a			
	Physician	32	23.4
	Pharmacist	25	18.2
	Friend/relative	21	15.3
	Self	57	41.6
	Other (internet and TV)	2	1.5
Frequency			
	The first time	1	0.7
	Once/wk	20	14.6
	Twice/ wk	23	16.8
	Less than one/ m	43	31.4
	Everyday	19	13.9
	4 times/ wk	8	5.8
	1-2 /m	23	16.8
Reasons for using paracetamol^a			
	Headache	122	89.1
	Fever	15	10.9
	Dental pain	14	10.2
	Muscle pain	7	5.1
	Low back pain	9	6.6
	Abdominal pain	3	2.2
	Dysmenorrheal	10	7.3
	Shoulder pain	4	2.9
	Leg and knee pain	5	3.6
	Other	3	2.2
	Rheumatoid	1	0.7
Route of administration			
	Orally	137	100.0
Dose			
	500 mg/day	90	65.7
	1000 mg/day	45	32.8
	2000-3000 mg/day	2	1.5
Side effects			
	GIT effects	3	2.2
	No	134	97.8
Continuity after suffering from side effects			
	Yes	3	100.0

^a more than one answer was allowed

In the present study, NSAIDs were used by 86.6% of the studied adults. NSAIDs were taken as self-medication by 39.5% of adults. It is obvious from table 4 that one quarter (25.9%) took NSAIDs after consultation of a pharmacist, 22.8% had a prescription, and 18.3% took them after

asking their friends and or relatives. Only 0.8% obtained their information from the internet and the television before choosing NSAIDs for their pain treatment. Regarding the reasons for taking NSAIDs, headache constituted 77%, followed by dental pain (22.8%) and

low back pain (9.4%). The route of administration of NSAIDs was the oral route in 97.4%, parenteral route in 5.1%, rectal route in 0.8% and topical application in 0.4% of NSAIDs users. Regarding the side effects of NSAIDs, 87.2% of adults who were utilizing NSAIDs reported no side effects. Less than one-sixth (15.7%) reported gastrointestinal side effects, 1.2% reported

headache and dizziness, 1% mentioned suffering from kidney disorders and only 0.2% reported having rash or itching. Among those who reported experiencing NSAID adverse effects, 71.1% mentioned continuing taking NSAIDs and less than one third 31.1% stopped taking NSAIDs.

Table 4: Pattern of use of NSAIDs among studied adults, Alexandria, 2014

NSAIDs Data		No. (n=498)	%
NSAIDs			
	Yes	432	86.6
	No	66	13.3
Source of consultation^a			
	Physician	111	22.8
	Pharmacist	126	25.9
	Friend/relative	89	18.3
	Self	192	39.5
	Other (internet and TV)	4	0.8
Reasons for using NSAIDs^a			
	Headache	378	77.0
	Fever	27	5.5
	Dental pain	112	22.8
	Muscle pain	41	8.4
	Low back pain	46	9.4
	Abdominal pain	9	1.8
	Dysmenorrhea	2	0.4
	Shoulder pain	42	8.6
	Leg and knee pain	13	2.6
	Other	39	7.9
	Rheumatoid	15	3.1
Route of administration			
	Oral	478	97.4
	Parenteral	25	5.1
	Rectal	4	0.8
	Topical	2	0.4
Side effects			
	No	428	87.2
	GIT effects	77	15.7
	Headache and dizziness	6	1.2
	Rash/itch	1	0.2
	Kidney disorder	5	1.0
	Others	1	0.2
Continuity after side effects			
	Yes	64	71.1
	No	28	31.1

^a More than one answer was allowed

Factors associated with frequent analgesics use and misuse

Table 5 shows that more than one third (37.3%) of studied adults were defined as frequent analgesics users. A statistically significant association was found between old age (55 years old and more) and frequent analgesics use. Also, frequent analgesic use was more

common among females than males, however no significant association was found between gender and frequent analgesics use. There was a significant association between primary education and frequent analgesics use. No significant association was found between occupation, marital status, place of residence and frequent analgesics use. Smoking among males

was significantly associated with frequent analgesics use. In contrast, no significant association was found between smoking among females and frequent analgesics use. It appears from table 6 that analgesics were misused by one-sixth (16.5%) of the studied adults. No significant association was found between the socio-demographic factors and the analgesics misuse. Smoking among males was statistically associated with analgesics misuse. In contrast, no association was found between smoking among

females and analgesics misuse.

Knowledge of adults about side effects, interactions and contraindications of analgesics

Table 7 shows that more than one quarter (26%) of the studied adults did not know whether analgesics may cause side effects or not. Among those who knew that analgesics can cause side effects, gastrointestinal problems were mentioned by 42.1% of them, incorrect answers were mentioned by 20.1% and 18.3% did not know what these side effects were.

Table 5: Association between socio-demographic characteristics and frequent analgesics use among studied adults, Alexandria, 2014

Socio-demographic data	Frequent analgesic users (n=498)				Test of significance	
	No		Yes		X ²	P
	No.	%	No.	%		
Age						
<25	55	61.8	34	38.2	9.9	0.042*
25-	104	58.8	73	41.2		
35-	71	62.3	43	37.7		
45-	40	59.7	27	40.3		
55+	42	82.4	9	17.6		
Gender					0.96	0.327
Male	150	64.9	81	35.1		
Female	162	60.7	105	39.3		
Education					17.3	0.004*
Illiterate	20	57.1	15	42.9		
Read and write	24	66.7	12	33.3		
Primary school	2	20.0	8	80.0		
Secondary school	91	57.2	68	42.8		
Preparatory school	26	55.3	21	44.7		
University	149	70.6	62	29.4		
Occupation					4.5	0.344
Student	23	63.9	13	36.1		
Professional	109	68.6	50	31.4		
Non Professional	111	61.3	70	38.7		
House wife	58	56.9	44	43.1		
Retired /not working	11	55.0	9	45.0		
Marital Status					0.11	0.946
Single	96	62.7	57	37.3		
Married	206	62.8	122	37.2		
Divorced /widowed	10	58.8	7	41.2		
Residence					0.97	0.324
Urban	267	63.6	153	36.4		
Rural	45	57.7	33	42.3		

*p<0.05 (significant)

As regards analgesic interactions, it is evident from the table that 60.5% of the respondents didn't know whether analgesics can interact with other medications or not. Among those adults who believed that analgesics interact with other medications, 84.8% did not know what these medications were. Table 7 also illustrates that almost half of the respondents (49.8%) knew that analgesics should be used with precautions in certain diseases, like heart diseases, peptic ulcer and liver disease as mentioned by 32.9%, 13.3% and

12.3% respectively. Regarding the source of information on analgesic use, the study revealed that 37.7% of the studied adults read the pamphlet when they needed any information about analgesics, 35.7% consulted their pharmacist and only 29.8% consulted their physicians. Only 3.3% depended on their own experience. Other sources of information were mentioned by 3.1% of adults. These sources were family members and/or friends, and information from the internet.

Table 6: Association between socio-demographic characteristics and analgesics misuse among studied adults, Alexandria, 2014

Socio-demographic data	Analgesic misuse (n=498)				Test of significance	
	No		Yes		X ²	P
	No	%	No	%		
Age						
<25	74	83.1	15	16.9	5.4	0.248
25-	152	85.9	25	14.1		
35-	95	83.3	19	16.7		
45-	50	74.6	17	25.4		
55+	45	88.2	6	11.8		
Gender					0.24	0.622
Male	195	84.4	36	15.6		
Female	221	82.8	46	17.2		
Education					2.6	0.763
Illiterate	30	85.7	5	14.3		
Read and write	29	80.6	7	19.4		
Primary school	9	90.0	1	10.0		
Secondary school	130	81.8	29	18.2		
Preparatory school	37	78.7	10	21.3		
University level	181	85.8	30	14.2		
Occupation					2.1	0.722
Student	33	91.7	3	8.3		
Professional	133	83.6	26	16.4		
Non Professional	150	82.9	31	17.1		
House wife	84	82.4	18	17.6		
Retired /Not working	16	80.0	4	20.0		
Marital Status					1.9	0.374
Single	130	85.0	23	15.0		
Married	270	82.3	58	17.7		
Divorced /Widowed	16	94.1	1	5.9		
Residence					0.15	0.701
Urban	352	83.8	68	16.2		
Rural	64	82.1	14	17.9		

Table 7: Distribution of the studied adults according to their knowledge regarding analgesics, Alexandria, 2014

Knowledge items	No.(n=607)	%
Analgesics side effects		
Yes	349	57.5
No	100	16.5
Did not know	158	26.0
Side effects?^a		
GIT problems(correct)	147	42.1
Headache and dizziness(correct)	13	3.7
Rash(correct)	4	1.1
Edema(correct)	2	0.6
Renal problems(correct)	31	8.9
Hepatic problems(correct)	14	4.0
Cardiac problems(correct)	4	1.1
Incorrect answer	70	20.1
Did not know	64	18.3
Interaction with other drugs		
Yes	171	28.2
No	69	11.4
Did not know	367	60.5
Drugs?^a		
Anti-coagulants	5	2.9
Anti-diabetics	8	4.7
Anti-hypertensive	13	7.6
Did not know	145	84.8
Precautions with certain diseases		
Yes	302	49.8
No	37	6.1
Did not know	268	44.2
Diseases?^a		
Heart diseases (correct)	99	32.9
Peptic ulcer (correct)	40	13.3
Kidney disorder (correct)	32	10.6
Liver disease (correct)	37	12.3
Asthma (correct)	24	8.0
Incorrect answer	40	13.3
Did not know	62	20.6

^a More than one answer was allowed

DISCUSSION

The present study showed that 82% of the studied adults used to take one or more analgesics. A nearly similar result was reported in Turkey (2009),⁽⁶⁾ where the prevalence of analgesics use amounted to 73.1%. Also, in Iran (2012), Sarahoodi et al, reported that 76.6% of Iranian university students were self-medicated with analgesics once or more during the 3 months of the study.⁽¹⁷⁾ In contrast, in Scotland (2005), 37% of adults reported using non-prescription analgesics.⁽¹⁸⁾ A comparable result was reported in a population-based survey in Spain (2014), where 43% of the respondents reported taking non-opioid analgesics.⁽¹⁹⁾ These discrepancies in the magnitude of analgesics use could have occurred because of the restricted laws in the European countries on over the counter (OTC) analgesics, where a limited number of analgesics are allowed to be taken without prescription, which lead to reduced availability to the public. However, in Egypt non-opioid analgesics are widely and freely sold without prescription.

As regards the number of analgesics used by the studied adults, the current study revealed that nearly two-thirds of the studied adults (64%) used one analgesic only and one-third (29.9%) of the analgesic users used two analgesics during the six months prior to the interview. These findings were inconsistent with Pauolse et al, in USA (2005), where 7% of frequent monthly analgesic users reported using two or more analgesics and about 94 % used to take one analgesic on frequent basis.⁽¹⁴⁾

Regarding age, it was found that age was significantly associated with analgesics use, where the use of analgesics was most frequent among middle-aged adults (from 25 to less than 35 years old). Similarly in Turkey (2009),⁽⁶⁾ Bulgaria (2004),⁽²¹⁾ and Spain (2002),⁽¹⁸⁾ age was statistically related to analgesics use.

In the present study, the proportion of females using analgesics was more than males, and they amounted to 53.6% of the studied adults. The gender difference in analgesics use was statistically significant. Several studies showed that females used analgesics more than males as in Turkey (2009),⁽⁶⁾ Bulgaria (2004),⁽²¹⁾ Sweden (2002)⁽²²⁾ and Spain (2002).⁽²³⁾ It has been suggested that this gender

Difference is associated with biological, psychological, and social factors.

In the current study, no significant association was found between the place of residence and analgesics use, a finding which was inconsistent with studies conducted in Finland (2005)⁽²⁴⁾ and Spain (2002)⁽²³⁾ where the place of residence and the demographic region were associated with analgesics use. These discrepancies in results can be explained by the fact that the above studies were performed among adults living in the whole country in different regions

with different lifestyles and different urbanization levels that affect analgesics use and self- medication in general. In addition, analgesics use might also be associated with local accessibility of pharmaceutical services and following experience and consumption of medicines. Also, the geographical pharmacy density may differ from area to another. On the other hand, the current study was performed only in Alexandria, where nearly the accessibility to analgesics is quite constant all over the governorate. Also, attitudes and behavior of adults towards analgesics seemed to be not affected by different place of residence since the majority of the studied adults in Alexandria are living in urban areas.

Although, studies conducted in Turkey (2009),⁽⁶⁾ USA (2005),⁽¹⁴⁾ and Sweden (1993 and 1996)⁽²⁵⁾ showed an association between the level of education and analgesic use, this association was not significant in the present work. Similarly, in the present study the prevalence of analgesic use was higher in adults educated in secondary schools and universities with no statistical significance.

Regarding smoking, the current study showed no significant association between smoking in females and analgesic use. According to Isacson et al. (2002),⁽²²⁾ smoking was not associated with analgesics use. In contrast, Jhon et al, in Germany (2006),⁽²⁶⁾ declared that current and former heavy smokers were more likely to use analgesics than never smokers. Another study was performed by Antonov et al, in Sweden (1998),⁽²⁷⁾ illustrated that smoking, being overweight and poor physical function were associated with prescription analgesic use and with non-prescription analgesics use among women. In Spain, Mesas et al (2011),⁽²⁸⁾ declared that analgesics use was most frequent among tobacco users. The discrepancy in results of the studies was explained by the fact that most of the previous studies were conducted in western countries, where the behavior of adults could be different from the behavior of Egyptian adults.

Regarding the knowledge of adults about side effects of analgesics, the current study showed that more than half of the studied adults (57.5%) knew that analgesics may cause side effects, and gastrointestinal problems were the most commonly mentioned side effects (41.1%). Also more than half of the studied adults (60.5%) did not know whether analgesics can interact with other medications or not and almost half of the study sample (49.8%) knew that analgesics should be used with precautions in certain diseases.

Several studies were conducted around the world to investigate knowledge about analgesics. A study conducted by Elaine Cham et al (2002),⁽²⁹⁾ found that 40% of studied adults didn't know about toxic interactions or gastrointestinal side effects of analgesics, which is a nearly similar result to the present study. More than 60% did not know the relationship between these drugs and hepatic and

renal disease, and more than 80% did not know the relationship between aspirin and adverse effects in asthmatics.

Another study conducted in Czech Republic (2013)⁽³⁰⁾ to investigate the elderly knowledge towards ibuprofen use, illustrated that a higher percent (57.8%) of them, compared to the current study, were not aware of any adverse effects of ibuprofen and 16% believed that ibuprofen had no adverse effects at all. In the same study, knowledge of interactions of ibuprofen was very low. Most of the study participants (84%) were not aware about its interactions.

CONCLUSION AND RECOMMENDATIONS

The present study indicates that utilization of analgesics was widely prevalent among adults in Alexandria. NSAIDs were the most commonly used analgesics. About one third of analgesic users were frequent analgesic users and 16.5% used analgesics irrationally. It is recommended to ban self-medication with NSAIDs at doses higher than the recommended OTC daily dose, to educate medical students, prescribers and practicing pharmacists about the rational use of analgesics and a warning label should be displayed to all prescription-strength NSAIDs for informing consumers that this analgesic should not be used without a prescription.

Conflict of Interest

All authors declare no conflict of interest.

REFERENCES

- Kulkarni SV, Bande TR, Deshamukh VK, Chaudhari SR. Rational use of medicines: As an overview. *AJPTR*. 2012; 2(3): 401-23.
- World Health Organization. The Pursuit of responsible use of medicines: Sharing and learning from country experiences. Geneva: WHO; 2012. 78 p.
- World Health Organization. Promoting rational use of medicines: core components. Geneva: WHO; 2002. 6 p.
- Phillips CJ. Pain management: Health economics and quality of life considerations. *Drugs*. 2003; 63(2): 47-50.
- Goldberg DS, Mc Gee SJ. Pain as a global health priority. *BMC public health*. 2011; 11: 770-5.
- Ozkan O, Hamzaoglu O, Erdine S, Balta E, Domac M. Use of analgesics in adults with pain complaints: prevalence and associated factors, Turkey. *RSP*. 2009; 43(1): 140-6.
- Harvey RA, Champe PC, Finkel R, Clarke MA, Cubeddu LX. *Lippincott's illustrated review: Pharmacology*. 4th ed. New York: Lippincott Williams and Wilkins; 2006.
- World Health Organization. WHO model formulary. Geneva: WHO; 2008. 10 p.
- Troy DB, Beringer P. *Remington: The Science and Practice of Pharmacy*. 21st ed. Philadelphia: Lippincott Williams and Wilkins; 2006.
- American Pain Society. *Pain: current understanding of assessment, management, and treatments*. Pennsylvania, Washington: National Pharmaceutical Council; 2001. 96 p.
- Breivik H, Collett B, Ventafridda VC, Cohen R, Gallacher D. Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. *European Journal of Pain*. 2006; 10: 287-333.
- Mesas AE, Llano JD, Magro IS, Macoski M, Sarria MA. Trends and factors associated with analgesics use in Spain from 1993 to 2006. *Medicina Clinica*. 2011; 137(2): 55-61.
- Heard K. Non-prescription analgesics: misunderstood and abused. *Emergency Medicine*. 2009; 41(5): 25-9.
- Food and Drug Administration. Assessment of Safety of aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs). Hampshire: FDA and McNeil Company; 2002. 19 P.
- Hargreave M, Andersen TV, Nielsen A, Munk C, Liaw KL, Kjaer SK. Factors associated with a continuous regular analgesic use. A population based study of more than 45 000 Danish women and men 18-45 years of age. *Pharmacoepidemiology and Drug Safety*. 2010; 19(1): 65-74.
- Paulose-Ram R, Hirsch R, Dillon C, Gu Q. Frequent monthly use of selected non-prescription and prescription non-narcotic analgesics among U.S. adults. *Pharmacoepidem. Drug Safe*. 2005; 14(4): 257-66.
- Sarahroodi S, Jamshid AM, Sawalha A F, Mikaili P, Safaeian L. Pattern of self-medication with analgesics among Iranian University students in central Iran. *Journal of Family and Community Medicine*. 2012; 19(2): 125-9.
- Porteous T, Bond C, Hannaford P, Sinclair H. How and why are non-prescription analgesics are used in Scotland. *Family Practice*. 2005; 22 (1): 78-85.
- Garrido PC, López de Andrés A, Barrera VH, Trujillo I, Fernandez-de-las-Peñas C, Palacios-Ceña D, et al. Predictive factors of self-medicated analgesic use in Spanish adults: a cross-sectional national study. *BMC Pharmacology and Toxicology*. 2014; 15(36).
- Porteous T, Bond C, Hannaford P, Sinclair H. How and why are non-prescription analgesics are used in Scotland. *Family Practice*. 2005; 22 (1): 78-85.
- Lefrova A, Getova I. Study on consumers' preferences and habits for over-the-counter analgesics use. *Cent Eur J Publ Health*. 2004; 129(1): 43-5.
- Isacson D, Bigefors K. Epidemiology of analgesic use: a gender perspective. *European Journal of Anesthesiology*. 2002; 26: 5-15.
- Bassols A, Bosch F, Banos J. How does the general population treat their pain? A survey in Catalonia, Spain. *J Pain Symptom Manage*. 2002; 23(4): 318-28.
- Linden KA. *Pharmacoepidemiological study of medicine use among Finnish conscripts*. Finland: Institute of Military Medicine; 2005.
- Antonov K, Isacson D. Use of analgesics: in Sweden the importance of socio demographic factors, physical fitness, health and health-related factors, and working conditions. *Soc Sci Med*. 1996; 42(11):1473-81.
- John U, Alte D, Hanke M, Meyer C, Völzke H, Schumann A. Tobacco smoking in relation to analgesic drug use in a national adult population sample. *Drug and alcohol dependence*. 2006; 85 (1): 49-55.
- Antonov KI, Isacson DG. Prescription and non prescription analgesic use in Sweden. *Ann Pharmacother*. 1998; 32 (4): 485-94.
- Mesas AE, Llano JD, Magro IS, Macoski M, Sarria MA. Trends and factors associated with analgesics use in Spain from 1993 to 2006. *Medicina Clinica*. 2011; 137(2): 55-61.
- Cham E, Hall L, Ernst AA, Weiss SJ. Awareness and Use of over-the-counter pain medications: A Survey of Emergency Department Patients. *South Med J*. 2002; 95(5): 529-35.
- Matoulkovva P, Dosedal M, Ryekov B, Kubana A. Information and awareness concerning ibuprofen as an ingredient in over the counter analgesics: A questionnaire based survey of residents of retirement. *Acta Poloniae Pharmaceutica*. 2013; 70(2): 333-8.