ORIGINAL RESEARCH

Knowledge and Use of Over the Counter Analgesics among Medical and Nonmedical Students of the University of Lagos

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ABSTRACT

Background: Use of analgesics for pain alleviation is common. Analgesics are widely available and are generally perceived to be safe. Studies evaluating students' use of analgesics elsewhere exists, but limited data is available about knowledge and use in Nigeria.

Objectives: To assess knowledge and use of over the counter (OTC) analgesics among undergraduate students of the University of Lagos.

Method: The study was carried out among medical and nonmedical undergraduate students of the University of Lagos. Data was collected using a semi-structured, self-administered questionnaire which consisted of 35 close-ended questions relating to use and knowledge about analgesics. Knowledge was assessed using a set of seven questions. Correct scores were summed up and categorized as poor or good. Frequencies, percentages and statistical inferences were done using SPSS version 20.0

Results: About 405 students responded with about two-thirds reporting using analgesics, paracetamol being the most commonly used. The most common indications for use were headache, general body pain and menstrual pain. Respondents revealed that playing an active role in their health (28.2%) and avoid long waiting hours at the clinic (25.4%) were the major reasons for analgesic use. Even though medical students had a higher average score of knowledge than nonmedical students (2.71 vs. 1.60; χ^2= 3.36: p = 0.0445), their knowledge was still poor.

Conclusion: OTC analgesic use is prevalent among students and is attributed to their need to play an active role in their health and avoid long waiting times at the clinic. Both medical and non-medical students' knowledge about analgesics was poor.

Keywords: Knowledge, OTC Analgesic, Students, University of Lagos, OTC drug use

INTRODUCTION

Pain remains one of the main reasons for medical consultation worldwide[1]. Healthcare professionals and individuals have various therapeutic options and interventions for treating pain with analgesics being at the forefront. Analgesics remain the most common method of treatment especially for the relief of pain such as headaches, fever, toothache, musculoskeletal injuries and menstrual cramps[2-4]. Aspirin, paracetamol and ibuprofen and their combinations are available in pharmacies as over the counter (OTC) drugs. The extent of their use globally cannot be underestimated, and this is probably encouraged by their availability, cheap cost and individual perceptions[4-6].

Despite the safety of these OTC analgesics when used appropriately, serious side effects may occur when used outside the acceptable guidelines[2]. This may be of concern as there are a number of risks associated with their use. For example, paracetamol is one of the leading causes of deliberate self-poisoning and hepatotoxicity at single doses in excess of 6 grammes[7-10]. Non-Steroidal Anti-inflammatory Drugs (NSAIDs) have been known to have adverse effects on the gastrointestinal tract directly (e.g. peptic ulcer) and on the afferent renal arterioles of the kidneys[11,12]. In addition, the average consumer may not be aware of the various OTC products that combine analgesics or are included as part of the active ingredients e.g. cold and flu medications[13]. Unfortunately, media adverts of these products may play a crucial role in the publics' choice[14,15]. Youths (15-25) are especially exposed to the media, and university students make a sizeable fraction of this age group[16]. These university students are often faced with rigorous academic activities that require them to stay healthy and so they may resort to "quick fix" consumption of analgesics when faced with pain.

French *et al*[6]. investigating the reasons for the use of mild analgesics among students in Coventry University in the United Kingdom noted that medication knowledge is one of the factors that influence the rate of self-medication students. Several reports have revealed that good knowledge is an insignificant predictor of the rate of medicine use though it offers the advantage of making the individual more careful during medication use[5,6,17]. Poor medication knowledge of university students has been reported by some studies[15-18]. This is of major concern because if their relative state of medication knowledge cannot be fully ascertained, then the risk associated with their use raises concerns of incorrect self-diagnosis, drug interaction, and use other than for the original indication[15-18]. A major contributor to good medication knowledge is the source of OTC analgesics; that is, where the students obtain these medications from. The person that recommends a painkiller should be able to pass some cautionary details about the medications. Several studies have reported that analgesic use by students are due to their exposure to medical information via the media (particularly the non- medical students) as well as other sources such as family, friends and from community pharmacies. Studies in the United States and Pakistan have shown that the pharmacy is the major source of OTC medications[19,20]. Hence the effectiveness of these sources in communicating some of these details about the appropriate use of OTC analgesics to the public is very important. The use of OTC analgesics is a relevant public health issue, but studies that present data representing university students in Nigeria are few. Most studies focus on OTC self-medication practices of university students[15-18]. However, the prevalence of the practice of self-medication with OTC analgesics among university students in Southwestern Nigeria has not been widely studied. This study describes the knowledge and use of OTC analgesics among undergraduate students in the University of Lagos with a focus on their course of study (medical or non-medical) as a possible factor influencing use. Data obtained will be useful in determining the need to develop programmes towards addressing OTC analgesic use among university students.

METHODS

This cross-sectional study was carried out among University of Lagos undergraduate students across all faculties during the semester in May and June 2016. The faculties were later divided into two groups - medical and non-medical students. Non-medical students included students from nine faculties in the Akoka Campus (Arts, Business Administration, Education, Engineering, Environmental Science, Law, Science and Social Sciences) while the Medical Students included students from the four faculties in the Idi-Araba Campus (Basic Medical Sciences, Clinical Sciences,

Dental Sciences and Pharmacy). Students recruited for the study were between 200 - 500 levels in both campuses and participant's consent was obtained verbally before questionnaire completion.

The sample size for this study was calculated from the estimated population size of 58,000 undergraduate students of the University of Lagos at the time of this study. In calculating the sample size, the desired margin of error was 5% and a confidence interval of 95% was also used which corresponds to a Z-score of 1.96. The proportion (prevalence) of self-medication used was 0.5[4]. A stratified sampling technique was done using proportionate allocation strategy. This ensured that the sample size in each faculty is proportional to the faculty population of students.

Data for this study was collected using a pre-designed semi-structured, self-administered questionnaire, which consists of 35 close-ended questions divided into three sections of demographic data; use (pattern and type) and reasons for OTC analgesics use; and knowledge about OTC analgesics. The students' knowledge about OTC analgesics was assessed using a set of seven questions relating to identification, dose and side effects, with the option to pick a single correct answer. Each respondent's correct score were summed up and categorized as poor (0-4) and good (5-7) score.

All data collected were coded and analysed using Statistical Package for Social Sciences (SPSS) version 20.0. Results were presented in frequencies and percentages with appropriate statistical inferences made using Pearson's χ^2 test and multiple logistic regression analysis at statistical significance $\rho < 0.5$ (95% CI).

RESULTS

A total of 405 out of 436 questionnaires administered were completed and returned by students, giving a response rate of 92.8%. Both students' groups (medical and non-medical, 200 vs. 205) show similar socio-demographic characteristics (Table 1). Most of the respondents were female (64%). Majority of the respondents reported no smoking habit (95.1%) while over a quarter of the respondents admits to alcohol intake habit (28.9%).

Table 1: Socio-demographic Characteristics of the Students

Variables	Total (%) (N=405)	Med. Students (%) (n=200)	Nonmed. Students (%) (n= 205)
Gender			
Female	259 (63.9)	117 (58.5)	142 (69.3)
Male	146 (36.1)	83 (41.5)	63 (30.7)
Age range			
16-20yrs.	273 (67.4)	115(57.5)	158 (77.1)
21-25yrs.	114 (28.2)	74(37)	40 (19.5)
>26yrs.	18 (4.4)	11(5.5)	7 (3.4)
Smoking Habit			
No	385 (95.1)	192 (96.0)	193 (94.1)
Yes	20 (4.9)	8(4.0)	12 (5.9)
Alcohol Habit			
No	288 (71.1)	140 (70.0)	148 (72.2)
Yes	117 (28.9)	60 (30.0)	57 (27.8)

Key: Med.=medical; nonmed.=nonmedical; yrs.=years

Approximately 67.7% (274) of the respondents reported taking OTC analgesics (Table 2). It is noteworthy that there is no significant difference in OTC analgesic use between medical and non-medical students (66.0% vs. 69.3%; *P* >0.05). Paracetamol (73.5%) was the most commonly used OTC analgesic among the respondents. Frequency of use of analgesics among medical and non-medical students is not statistically different (P>0.05). The most common indications for OTC analgesic use among the respondents were headache (33.4%), general body pain (19.1%) and menstrual pain (17.6%).

Table 2: Use of Analgesics

Variables	Total (%) N=405	Medical Students n (%)	Non-Medical Students n (%)	ρ value
Do you take painkillers?				
Yes	274 (67.7)	132 (66.0)	142(69.3)	0.4821
No	131 (32.3)	68 (34.0)	63 (30.7)	
Which OTC Analgesic do you regularly use?				
Paracetamol only	200 (73)	94 (71.2)	106 (74.6)	0.0146*
Ibuprofen only	14 (5.1)	12 (9.1)	2 (1.4)	
Aspirin	2 (0.7)	2 (1.5)	-	
Paracetamol or Ibuprofen in combination (with each other/others)	37 (13.5)	13 (9.9)	24 (16.9)	
Others (Other NSAIDs, Tramadol)	21 (7.7)	11 (8.3)	10 (7)	
Frequency of use				
Always	5 (1.8)	3 (2.2)	2 (1.4)	0.3774
Occasionally (once/twice a month)	103 (37.6)	56 (42.4)	47 (33.1)	
Sometimes e.g. when I want to sleep	26 (9.5)	12 (9.2)	14 (9.9)	
Only when ill	140 (51.1)	61 (46.2)	79 (55.6)	
Indications for use				
Headache	194 (33.4)	98 (33.5)	96 (33.2)	0.3311
General body pain	111 (19.1)	59(20.2)	52(18)	
Menstrual Pain	102 (17.6)	55(18.8)	47(16.3)	
Malaria/Fever	81(20)	41(20.5)	40(19.5)	
Migraine	42 (7.2)	21(7.2)	21(7.3)	
Cold/Catarrh	32 (5.5)	13(6.5)	19(9.2)	
Others	19 (1.5)	5(2.5)	14(6.8)	

Respondents revealed that the desire to play an active role in their health (28.2%) and avoid long waiting hours in the clinic (25.4%) were the major reasons fuelling their OTC analgesic use. Responses to reasons for self-medicating OTC analgesics from both medical and non-medical students were not statistically different (P>0.05) as shown in Table 3.

The medical students had a higher average score than the non-medical students (2.71 vs. 1.60; χ^2= 3.36: p = 0.0445). However, even with this higher average score they are still categorized as having poor analgesic medication knowledge score (0-4) (Table 4).

Gender, course of study and knowledge of analgesics were the main variables tested for potential predictor of OTC analgesic use in these two groups of students. Chi-square statistical analysis of these variables revealed varying levels of influence on OTC analgesic use among medical and nonmedical students. For example, females were more inclined to self-medicating OTC analgesics than their male colleagues (OR = 3.14; 95% CI: 2.03 – 4.85). Also, a poor knowledge of analgesics influenced self-medication practice among students in both campuses (OR=2.12; 95% CI: 1.68 – 2.68). Course of study had insignificant influence on self-medication practice of OTC analgesics among medical and nonmedical students (Table 5).

Table 3: Reasons for OTC Analgesic use

Variables	Total (%)	Medical Students n (%)	Non-Medical Students n (%)	ρ value
I want to play an active role in my health	161 (28.2)	84 (28.5)	77 (28.0)	
I don't want to go to my physician due to long waiting time for the physician	145 (25.4)	87 (29.5)	58 (21.1)	
I don't want to burden the physician/pharmacist because my ailment is not important	97 (17.0)	47 (15.9)	50 (18.2)	
My relatives, friends, media told me I can manage such symptoms on my own	91 (16.0)	43 (14.6)	48 (17.5)	0.2078
The physician told me that I can manage such symptoms on my own	44 (7.7)	22 (7.0)	22 (8.0)	
The prescribed treatment from my physician was not successful	19 (3.3)	6 (2.0)	13 (4.7)	
I don't trust my physician	13 (2.3)	6 (2.0)	7 (2.5)	

Table 4: Knowledge on Analgesic Medication

Variables (Correct responses)	Medical Students n=200 (%)	Non-Medical Students n=205 (%)	ρ value
Q1. Which of the following contain PCM?			
Panadol	142(71)	80(39)	
Panadol extra	85(42.5)	44(21.4)	
Ibucap	17(8.5)	11(5.3)	
Emcap	18(9)	6(2.9)	
Alabukun	18(9)	8(3.9)	
Q2. Max daily dose of PCM is?			
8 tablets	37(18.5)	14.0(6.8)	
Q3. Side effects of PCM include?			
Hepatotoxicity	34(17)	1(0.5)	
Renal Failure	5(2.5)	1(0.5)	12.59
G.I complications/ulcer	6(3.0)	1(0.5)	(0.0000*****)
Q4. Which reduces swelling?			
NSAIDS (Ibuprofen/aspirin)	104(52.0)	40(19.5)	
Q5. Which most likely to cause addiction?	136 (68.0)	84(41.0)	
Codeine			
Q6. Which is usually associated with a small risk of heart disease or stroke			
Ibuprofen, Paracetamol, Codeine	33(16.5)	19(9.3)	
Q7. Which conditions would Ibuprofen not normally be appropriate for?			
Diabetes, Obesity, Pregnancy, Menopause	103(51.5)	62(30.2)	
Average Score	2.71	1.6	3.36 (0.0445*)

DISCUSSION

The use of OTC analgesics among the students of University of Lagos was high. They also demonstrated a poor knowledge of these medicines dose and adverse effects. Despite the medical students' curriculum

focused on medicine use and patient care, it still had no influence on use and knowledge of OTC analgesics. Nevertheless, there was a significant difference between the medical and non-medical students regarding OTC analgesic use. A possible reason for this can be attributed to lectures and examination stress during their academic session, as medical students cannot afford to fall ill; hence they would seek quick relief from illnesses to get back on track[16,17,21]. Paracetamol was reported as the most commonly used OTC analgesic among the respondents. Many studies have reported similar results regarding paracetamol use as an OTC analgesic amongst students[5,21-29]. Paracetamol is the most widely used over-the-counter analgesic globally, so discovering this among students is understandable. Paracetamol is the oldest, cheapest and generally considered to be one of the safest analgesics used for managing symptoms such as headache, cold, body pains and fever[24].

Table 5: Predictors of OTC analgesic use among Medical and Non-medical Students

Variables	Items	Number of Students (n = 274) (%)	χ^2	ρ value	OR (95% CI)
OTC Analgesic use	**Gender**				
	Male	75 (27.4)	26.51	<0.001*	3.14*
	Female	199 (72.6)			(2.03 - 4.85)
	Course Status				
	Medical	132 (48.2)	0.36	0.482	0.86
	Nonmedical	142 (51.8)			(0.57 – 1.31)
	Knowledge of Analgesics				
	Good	85 (31.0)	39.87	<0.001*	2.12*
	Poor	189 (69.0)			(1.68 – 2.68)

Findings from this study showed that headache is the main indication for the use of OTC analgesics amongst the students, which is similar to earlier studies on analgesic use among students[5,6,30,31].The prevalence of headache among students may be due to stress and inadequate sleep especially during assessment and examination periods. Many often turn to OTC analgesics such as paracetamol due to the shortage of time and because they consider it unnecessary to visit a physician's office for minor discomforts[6,16,17]. Female students (72.6%) consume more analgesics than their male colleagues (OR = 3.14; 95% CI: 2.03 – 4.85). A previous study concluded that 'gender-roles', 'social support, 'stress' theories, biological difference related to the female hormones coupled with the use of analgesics for menstrual pain could be the major reason for this behaviour[32].

The study revealed no significant difference between the two groups of students (66.0% vs. 69.3%; *P* = 0.4821) regarding the incidence and reasons for use of OTC analgesics. Medical students are taught pharmacology of drugs and their side effects and are perceived to have more knowledge than their non-medical counterparts. This was reported by Ketis *et al.*[21] in a previous study conducted on University students in Slovenia. The result revealed a statistically non-significant difference of self-medication with analgesics between the medical and non-medical students (92.8% vs. 91.9%) respectively[21]. Another study conducted in Palestine[16] inferred that the high use of OTC medicines amongst the non-medical students may be due to experience acquired

from previous use which builds up their confidence and also from the fact that many of the students believe the illnesses were simple. Other reasons may be that the medical students knowledge on medication has made them more confident hence encouraging the use of these analgesics[16,17]. In another study in Karachi, Syed *et al.*[15], opined that university students may not care much about the implications of using analgesics and as such behaviour is not affected by knowledge. In addition, this study also revealed that these students' desires to avoid long waiting time for the physician as well as need to play an active role in their health are the main reasons for self-medicating OTC analgesics. These reasons were emphasized by other studies conducted among university students[18,21,28-31].

Evaluation of the student's knowledge on analgesic using the seven knowledge-based questions gave a low overall average score for all students (31.4%). This is also comparable to the low average score observed among Aston University (United Kingdom) students and it was concluded that, a medical related degree did not significantly increase scores in the analgesic knowledge test[5]. On the contrary in this study, medical students scored higher average score than the non-medical students (2.71 vs. 1.60; χ^2= 3.36: $p < 0.05$), implying that medical students are a slightly more knowledgeable about analgesics than non-medical students. However, these results reveal that these students have poor knowledge of dosage and adverse effect of overdosing common OTC analgesics like paracetamol and NSAIDs which are hepatotoxicity and nephrotoxicity respectively[7,11,25,27,30]. Previous studies have confirmed the association between gastro intestinal side effects and frequent use of non-steroid anti-inflammatory drugs (NSAIDs) such as ibuprofen, diclofenac, hence predisposing these students to these effects that they are not aware of[27].

Furthermore, cost-effectiveness, time saved in getting OTC drugs from the pharmacy than clinic visit, successful previous self-medication practice and current open drug market in Nigeria might possibly be the major factors that affects the frequency of OTC analgesics use as reported by some studies[33,34].

CONCLUSION

Over the counter analgesic use is prevalent amongst medical and non-medical students of the University of Lagos and this is attributed to their desire to avoid wasting time at the clinic and play an active role in the maintenance of their health. Both medical and nonmedical students' have poor knowledge of dosage, side-effects and presence of common analgesics in other OTC products. Although, medical students demonstrated a better knowledge score than their nonmedical counterparts, this did not translate to better use of OTC analgesics.

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