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Original Research

Awareness and Determinants of Analgesic Abuse Among Undergraduate Students of University of Port Harcourt, Rivers State, Nigeria: A Descriptive Cross-sectional Study

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Abstract

Background: Rising incidents of deaths due to analgesic abuse are public health concerns globally. A good level of awareness and understanding of the determinants of analgesic abuse can reduce mortalities associated with the condition. This study assessed the awareness and determinants of analgesic abuse among undergraduate students of the University of Port Harcourt.
Methodology: A descriptive cross-sectional study design with multi-stage sampling was employed. An online self-administered questionnaire was used to collect information from 362 undergraduate students at the University of Port Harcourt. The data was analyzed using IBM Statistical Product and Service Solutions (SPSS) version 27. Data were summarized using means, frequency, proportions, Chi-square, and regression analysis; a p-value of <0.05 was considered significant.
Results: The awareness of risks associated with analgesic abuse was low in 47.4% and high in 10.9% of the respondents. Pharmacy students and females had higher levels of awareness. Peer pressure, availability of analgesics on campus/local stores, offer of analgesics by peer(s), and knowledge of someone who has experienced the adverse effects of analgesic abuse were significant determinants; however, only availability of analgesics on campus/local stores and offer of analgesics by peer were significant determinants of analgesic abuse from the bivariate logistic regression.
Conclusion: The result showed that the majority of the respondents had low levels of awareness of risks associated with analgesic abuse, with females and pharmacy students showing higher levels of awareness. Peer pressure, availability of analgesics on campus/local stores, offer of analgesics by peers, and knowledge of someone who has experienced the adverse effects of analgesic abuse were significant determinants of analgesic abuse. Comprehensive educational/awareness programmes that cut across all departments and genders addressing analgesic abuse and policies to regulate the availability of analgesics on campus should be established in the institution.

Keywords: Analgesic; Analgesic abuse; Awareness; Determinants.

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Introduction

Analgesics are drugs frequently used to treat pain [1]. They may be classified as either non-opioid (non-narcotics) or opioid (narcotics), with opioid analgesics like tramadol, codeine, and morphine being used to treat mild to severe pain and are derived from opium [2]. Non-opioid analgesics such as non-steroidal anti-inflammatory medicines (NSAIDS), like aspirin, ibuprofen, diclofenac, and paracetamol (acetaminophen) have pain-relieving, antipyretic, and anti-inflammatory qualities and are a class of medications that are frequently used to treat fever and flu, headaches, and mild-to-moderate pain [2]. The term "substance abuse" describes the harmful or hazardous use of psychoactive substances, such as alcohol, illegal drugs, and anlgesics3.However, the term "analgesic abuse" refers to the dangerous or detrimental use of analgesics, such as when they are used more than the recommended.[3] However, the term "analgesic abuse" refers to the dangerous or detrimental use of analgesics, such as when they are used more than the recommended dosage or for purposes other than medical ones and it has become a major global public health issue that affects both developed and developing nations [1]. Although most analgesics are safe, some of them contain psychotropic substances like caffeine or codeine, which can lead to addiction and abuse [4]. Frequent use and abuse of analgesics can result in several health complications, including ibuprofen's potential to induce renal failure, acetaminophen's potential to cause liver malfunction, and aspirin's propensity to cause gastrointestinal bleeding and ulcers, of which a lot of analgesic users, including undergraduate students, are unaware of these negative consequences [2].

Over the past three decades, there has been a notable increase in the frequency of analgesic usage [5]. The improper use of analgesics can have negative effects on quality of life and health, which can lead to resource mismanagement and higher healthcare expenses [4]. Between 2002 and 2011, an estimated 25 million people were recorded to use analgesics for purposes other than medical purposes [6]. According to WHO estimates, the use of cocaine and opioids contributed 0.7% of the world's disease burden in 2004 [3]. In 2010, 16,651 deaths annually were linked to prescription opioid analgesics [6]. In 2010, there were 15.5 million opioid-dependent individuals worldwide, with the most afflicted regions being Eastern Europe (288.4 per 100,000), North America (292.1 per 100,000), Australia (278.6 per 100,000), and Sub-Saharan Africa (263.5 per 100,000) [6]. According to the study on the global burden of diseases, injuries, and risk factors, 40.5 million individuals were dependent on opioids in 2017, and 109,500 people died from an overdose of opioid analgesics [7]. In 2019, over 600,000 deaths worldwide were linked to drug usage: with nearly 80% of these deaths involving opioids, with approximately 25% resulting from an overdose of opioid analgesics [8]. The rising abuse of opioid analgesics in recent years can be attributed, in part, to the greater accessibility of opioid analgesics used to treat chronic pain as well as the rising use of extremely strong opioids that are becoming more widely available on the illicit drug market [8].

The number of age-standardized deaths from opioid analgesic abuse per 100,000 persons of various nations was measured in 1980 and 2021 and the results showed that the age-standardized rate of opioid analgesic abuse-related mortality in Germany increased from 0.5 per 100,000 persons in 1980 to 1.4 per 100,000 people in 2021; 0.4, 0.3, and 2.1 per 100,000 people in 1980 to 0.6, 0.8, and 3.0 per 100,000 people in 2021 in Israel, the Netherlands, and Russia respectively; 0.6 and 0.9 per 100,000 persons in 1980 to 3.7 and 15.4 per 100,000 people in 2021, in the United States and the United Kingdom respectively [9]. Additionally, age-standardized mortality from opioid analgesic abuse increased in Senegal, Uganda, and Tunisia from 0.5, 0.6, and 0.7 per 100,000 people in 1980 to 0.6, 0.8, and 1.0 per 100,000 people in 2021, respectively and there was no change in the result gotten from South Africa or Nigeria between the two years (1980 and 2021), of which South Africa recorded 1.0 per 100,000 people, whereas Nigeria recorded 0.1 per 100,000 people in both years [9]. University students, particularly those at the University of Port Harcourt, have a high rate of analgesic abuse and in addition to treating pain, students take analgesics to reduce stress, anxiety, experimentation, curiosity, peer pressure, stay awake, and other reasons [10]. The abuse frequently stems from a lack of awareness about the dangers of abusing

analgesics combined with easy access to these medications [2,10]. This might have a negative impact on the student's social and academic lives.

However, in several African universities, including the University of Port Harcourt, studies on this serious issue are sparse. This gap limits the university's capacity to address it successfully. Developing successful intervention techniques requires an understanding of undergraduate students' awareness of and determinants or factors contributing to their usage of analgesic misuse. To tackle this problem, a thorough evaluation of the level of awareness as well as the underlying causes of abuse is necessary. This study attempts to offer insights unique to the Nigerian context by concentrating on the University of Port Harcourt, which can be extended to other settings throughout the nation. Previous research has mostly focused on the adult population, or secondary school students. Although research on drug abuse in Nigeria is growing, studies focusing on "analgesic abuse" and "university students" are still lacking. This research will fill this gap by providing data on the awareness of analgesic abuse and identifying key determinants influencing abuse among students. This information will be valuable for formulating targeted educational programs and policy interventions to curb abuse and promote safe analgesic use.

This study aims to assess the awareness of factors associated with analgesic abuse and to identify the determinants of analgesic abuse among undergraduate students of the University of Port Harcourt, Rivers State, Nigeria.

Methods

Study design

A descriptive cross-sectional study was employed for this study.

Study setting

The study was conducted in the University of Port-Harcourt popularly known as UNIPORT [11]. It is in Choba in Port-Harcourt, Obio-Akpor Local Government Area, Rivers state [12]. It is in the north-western part of Port Harcourt, the capital city of Rivers State [13]. The university which provides numerous academic and non-academic services and facilities to students currently has 14 faculties which are located amongst the three campuses of the university namely Abuja, Delta and Choba campuses, all occupying approximately 3.84 square kilometers of built-up land area [11]. The healthcare services available to the students and staff of the University of Port Harcourt include the O. B. Lulu-Briggs Health Center, primarily, and the University of Port Harcourt Teaching Hospital (UPTH) [14, 15].

Study participants

The participants for this study included all undergraduate students currently enrolled in the university of Port-Harcourt.

Sample size

The minimum sample size was determined using the Cochran's formula:

$$n = \frac{z^2 pq}{e^2}$$

n is the sample size in terms of number of students, e is the error tolerance (level) or margin of error set at 0.05, a prevalence rate (p) was estimated as 0.694 from a similar study conducted in Nigeria[16], q = (1-p), z is z-score value found on the z-score table (1.96). The calculated sample size was adjusted for non-response assuming a non-response rate of 10%. Hence the minimum sample size for this study was estimated to be 362 students.

Sampling technique

A multi-stage sampling technique was used. The University has 14 faculties which are Basic medical sciences, Clinical sciences, Humanities, Social sciences, Science, Science laboratory technology, Education, Engineering, Management sciences, Agriculture, Pharmaceutical science, Dentistry, Law, and Communication and media studies [17]. The first stage was the selection of four faculties from the list of fourteen faculties in the university using simple random sampling by balloting, the second stage was selection of 1 department from the list of departments in each of the four faculties through simple random sampling by balloting. Department of fine arts and design was selected from the faculty of humanities, department of Anatomy was selected from the faculty of basic medical sciences, department of petroleum engineering was selected from the faculty of engineering and department of pharmacy was selected from the faculty of pharmaceutical sciences. The third stage was selection of the students' classes/levels to be studied from each department through simple random sampling by balloting. Students in the second and third year 200 and 300 level were selected from the department of Fine Arts and design, while first and second year 100 level and 300 level were selected from the department of anatomy, second year and fifth year students 200 level and 500 level were selected from the department of petroleum engineering and 200 level and 400 level was selected from the department of Pharmacy. The fourth stage was selection of respondents using non-proportional allocation of the stratified random sampling method where at least 40 students for each selected level were chosen.

Study instrument

It was a semi-structured self-administered questionnaire. The questionnaire was divided into five sub-sections starting with a brief introduction of the study and the principal investigators. It also sought the consent of participants. The first section covered the Socio-demographic information of the participants, the second section assessed the awareness and the risk associated with analgesic abuse, the third section assessed the patterns of analgesic abuse among the participants, the fourth section assessed the factors influencing analgesic use and the fifth section assessed the prevalence of analgesic abuse among the participants.

The questionnaires were designed using "Microsoft forms" and distributed online. A pretest was conducted among 60 students in Medicine and surgery department (10 students each from 100 to 600level). Feedback was gotten from them, and corrections were made before distribution to the selected respondents. The aim of the research was explained to the selected students, as well as the instructions on how to fill the questionnaire, and informed consent was gotten. The link to the questionnaire was then sent to each selected respondent, and each respondent was followed up until all the responses were received.

Data analysis

The data was cleaned by inspecting the questionnaires for completeness and analyzed using IBM Statistical Product for Service Solutions (SPSS) version 27 [18].

Numerical variables were summarized as means and standard deviations, while categorical data was summarized using proportions and percentages.

The association between categorical variables was analyzed using the Chi square test (or Fischer's test, when necessary) and bivariate logistic regression analysis to characterize the dependence of each response variable on explanatory variable and describe the outcome or response variable. A P value < 0.05 will be considered statistically significant.

Ethical clearance

Ethical approval was obtained from the ethical committee of University of Port Harcourt following the laid down protocol. Informed consent was obtained from each of the respondents before proceeding with the data collection.

Study duration

This study was carried out from January 2024 to July 2024.

Results

Table 1: Sociodemographic characteristics of undergraduate students at the University of Port Harcourt.

Variables (N=384)	Frequency	Percentage
Gender		
Male	207	53.9
Female	177	46.1
Age category		
≤17 years	34	8.9
18 – 20years	183	47.7
21 – 23years	120	31.3
≥24years	47	12.2
Year of Study		
First-year	41	10.7
Second-year	145	37.8
Third-year	94	24.5
Fourth-year	50	13.0
Fifth-year	54	14.1
Course of Study		
Pharmacy	103	26.8
Petroleum Engineering	102	26.6
Anatomy	94	24.5
Fine Art	85	22.1
Marital Status		
Single	375	97.7
Married	6	1.6
Others	3	0.8
Religion		
Christianity	375	97.7
Islam	6	1.6
Traditional African Religion	2	0.5
Others (non-religious)	1	0.3

Ethnicity		
Igbo	171	44.5
Yoruba	37	9.6
Hausa	5	1.3
Others	171	44.5

The results show that the majority of the respondents were males (207 students; 53.9%), aged 18-20 years (183 students; 47.7%), the mean +/- SD was 20.59+/-2.71, Christian (375 students; 97.7%) and of the Igbo tribe (171 students; 44.5%), with most being single and in their second year of study. Also, petroleum engineering had the highest number of respondents.

Table 2: Awareness of analgesic abuse among undergraduate students at the University of Port Harcourt

Variables (N=384)	**Frequency**	**Percentage**
Knowledge of analgesics (painkillers)		
Yes	338	88.0
No	46	12.0
Awareness of potential risks associated with analgesic abuse		
Not at all aware	82	21.4
Slightly aware	84	21.9
Moderately aware	84	21.9
Very aware	108	28.1
Extremely aware	26	6.8
Have Education or information about the safe use of analgesics		
Never	108	28.1
Rarely	78	20.3
Occasionally	119	31.0
Frequently	47	12.2
Always	32	8.3
Can identify the potential side effects of analgesic abuse		
Not at all	91	23.7

To a small extent	122	31.8
To a moderate extent	124	32.3
To a large extent	34	8.9
Completely	13	3.4
Information about analgesics		
Healthcare professionals	153	39.8
Internet	152	39.6
Family or friends	74	19.3
Others (Not stated)	5	1.3
Know the potential risk of long-term analgesic use		
Yes	186	48.4
No	143	37.2
Don’t know	55	14.2
Recognize the signs of analgesic addiction		
Yes	97	25.3
Partially	126	32.8
No	161	41.9
Received education on risk associated with analgesic abuse		
Yes	202	52.6
No	182	47.4
Awareness of alternative pain management techniques beside analgesics		
Yes	170	44.3
No	214	55.7
Analgesics are safe to use without medical supervision		
Strongly disagree	61	15.9
Disagree	139	36.2
Neutral	129	33.6

Agree	50	13.0
Strongly agree	5	1.3
Occasional use of analgesics is harmless		
Strongly disagree	44	11.5
Disagree	100	26.0
Neutral	110	28.6
Agree	113	29.4
Strongly agree	17	4.4
Management of pain without analgesics		
Not confident at all	41	10.7
Slightly confident	107	27.9
Moderately confident	143	37.2
Very confident	73	19.0
Extremely confident	20	5.2
Analgesics are the best solution for pain management		
Yes	136	35.4
No	248	64.6
Analgesic use is a sign of weakness		
Yes	47	12.2
No	337	87.8
Analgesic abuse is a serious problem among university students		
Yes	258	67.2
No	126	32.8
Risks associated with analgesic abuse compared to other substances		
Much lower	52	13.5
Lower	107	27.9
Similar	142	37.0

Higher	60	15.6
Much higher	23	6.0

The results show that most respondents knew about analgesics 338 students (88%) but had varying levels of awareness about the risk associated with analgesic abuse, with 108 students (28.1%) being moderately aware, and 202 students (52.6%) having received education on the risks. Additionally, 186 students (48.4%) of respondents knew the potential long-term risks of analgesic use, and 214 students (55.7%) were unaware of alternative pain management techniques. Respondents' attitudes towards analgesic use were mixed, with 139 students (36.2%) disagreeing that analgesics are safe to use without medical supervision, 113 students (29.4%) believing occasional use is harmless, and 248 students (64.6%) not believing analgesics are the best solution for managing pain.

Table 3: Level of awareness of analgesic abuse among undergraduate students at the University of Port Harcourt.

Awareness of Risks	**Frequency**	**Percentage**
High	42	10.9
Moderate	160	41.7
Low	182	47.4
Total	**384**	**100.0**

Low;0-49.9%, Moderate;50-69.95%, High; 70-100%

The results show that majority of respondents had a low awareness of the risk associated with analgesic abuse (182 students; 47.4%).

Table 4: Factors affecting analgesic abuse among undergraduate students at the University of Port Harcourt

Variables (N=384)	**Frequency**	**Percentage**
Pressure from friends to use analgesics		
Not at all	343	89.3
Slightly	26	6.8
Moderately	9	2.3
Very	4	1.0
Extremely	2	0.5
Pressured by social media to use analgesics		
Not at all	356	92.7
Slightly	18	4.7

Moderately	5	1.3
Very	3	0.8
Extremely	2	0.5
Pressure to use analgesics due to their availability on campus or in local stores		
Yes	29	7.6
No	355	92.4
Use of analgesics to enhance academic performance		
Yes	33	8.6
No	351	91.4
Offered analgesic by a peer		
Yes	91	23.7
No	293	76.3
Knowledge of someone who has experienced negative consequences due to analgesic abuse		
Yes	122	31.8
No	262	68.2

The results show that most respondents did not feel pressure at all from friends or peers to use analgesics (343 students; 89.3%), most respondents did not feel pressured by social media to use analgesics (356 students; 92.7%), majority of respondents did not feel pressured to use analgesics due to its availability at local stores (355 students; 92.4%). Most respondents did not use analgesics to enhance academic performance (351 students; 91.4%). Most respondents had never been offered analgesic by a peer (293 students; 76.3%), and most respondents did not know anyone who had experienced the negative consequences of analgesic abuse (262 students; 68.2%).

Table 5: Association between sociodemographic factors and awareness of analgesic abuse

Sociodemographic factors	**Awareness of risks associated with analgesic abuse**			
	High n (%)	**Moderate n (%)**	**Low n (%)**	**Total n (%)**
Gender				
Male	19 (9.2)	81 (39.1)	107 (51.7)	207 (100.0)
Female	23 (13.0)	79 (44.6)	75 (42.4)	177 (100.0)
	Chi Square = 3.711; p-value = 0.156			

Age category				
≤17 years	2 (5.9)	15 (44.1)	17 (50.0)	34 (100.0)
18 – 20years	15 (8.2)	76 (41.5)	92 (50.3)	183 (100.0)
21 – 23years	19 (15.8)	53 (44.2)	48 (40.0)	120 (100.0)
≥24years	6 (12.8)	16 (34.0)	25 (53.2)	47 (100.0)
	Chi Square = 7.796; p-value = 0.253			
Year of study				
First year	4 (9.8)	18 (43.9)	19 (46.3)	41 (100.0)
Second year	12 (8.3)	60 (41.4)	73 (50.3)	145 (100.0)
Third year	5 (5.3)	38 (40.4)	51 (54.3)	94 (100.0)
Fourth year	14 (28.0)	31 (62.0)	5 (10.0)	50 (100.0)
Fifth year	7 (13.0)	13 (24.1)	34 (63.0)	54 (100.0)
	*Chi Square = 44.998; p-value = 0.0001**			
Course of Study				
Pharmacy	21 (20.4)	54 (52.4)	28 (27.2)	103 (100.0)
Petroleum Engineering	10 (9.8)	36 (35.3)	56 (54.9)	102 (100.0)
Anatomy	9 (9.6)	46 (48.9)	39 (41.5)	94 (100.0)
Fine Art	2 (2.4)	24 (28.2)	59 (69.4)	85 (100.0)
	*Chi Square = 42.621; p-value = 0.0001**			
Marital Status				
Single	40 (10.7)	158 (42.1)	177 (47.2)	375 (100.0)
Married	2 (33.3)	1 (16.7)	3 (50.0)	6 (100.0)
Others	0 (0.0)	1 (33.3)	2 (66.7)	3 (100.0)
	Fisher's Exact = 4.002; p-value = 0.360			
Religion				
Christianity	42 (11.2)	157 (41.9)	176 (46.9)	375 (100.0)
Islam	0 (0.0)	3 (50.0)	3 (50.0)	6 (100.0)
Traditional African Religion	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)
Non-religious	0 (0.0)	0 (0.0)	1 (100.0)	1 (100.0)
	Fisher's Exact = 3.792; p-value = 0.782			
Ethnicity				
Igbo	21 (12.3)	74 (43.3)	76 (44.4)	171 (100.0)
Yoruba	4 (10.8)	12 (32.4)	21 (56.8)	37 (100.0)
Hausa	0 (0.0)	2 (40.0)	3 (60.0)	5 (100.0)
Others	17 (9.9)	72 (42.1)	82 (48.0)	171 (100.0)
	Fisher's Exact = 2.669; p-value = 0.848			

Statistically Significant

The results show the relationship between sociodemographic and level of awareness of analgesic abuse. Those in fourth year had a higher level of awareness compared to those in other years of study, this was statistically significant with a p value = 0.0001. Those in pharmacy had the highest level of awareness compared to other courses of study, this finding was statistically significant with a p value = 0.0001. All other socio-demographic factors had no statistically significant relationship with level of awareness of analgesic abuse. It also shows that those of Igbo ethnicity had a higher awareness of risk associated with analgesic abuse (21 students; 12.3%) compared to other tribes.

Table 6: Bivariate logistic regression analysis of awareness of risks associated with analgesic abuse

Variables	Coefficient(B)	OR	95% CI	p value
Year of study				
1st/2nd year	0.181	1.199	0.790; 1.820	0.395
>2nd year[R]		1		
Course of study				
Non medically related	1.134	3.109	2.049; 4.720	0.0001*
Medically related[R]		1		

R – Reference category; OR – Odds Ratio; CI – Confidence interval; **Statistically significant*

Dependent variable: Awareness

This regression table explores the relationship between sociodemographic variables and awareness of risks associated with analgesic abuse. Those who were in their first and second year of study were 1.199 times less likely to be aware of the risk associated with analgesic abuse, however this finding was not statistically significant. Those who were in non-medically related causes were 3.109 times less likely to be aware of the risks associated with analgesic abuse.

Table 7: Factors contributing to the abuse of analgesics among undergraduate students at the University of Port Harcourt

Factors contributing to the abuse of analgesics	Analgesic Abuse		
	Yes n (%)	**No n (%)**	**Total n (%)**
Pressure from peers or friends to use analgesics			
Not at all	25 (7.3)	318 (92.7)	343 (100.0)
Slightly	5 (19.2)	21 (80.8)	26 (100.0)
Moderately	3 (33.3)	6 (66.7)	9 (100.0)
Very	1 (25.0)	3 (75.0)	4 (100.0)
Extremely	1 (50.0)	1 (50.0)	2 (100.0)
	*Fisher's Exact = 14.971; p-value = 0.003**		
Pressured by social media to use analgesics			
Not at all	29 (8.1)	327 (91.9)	356 (100.0)

Slightly	2 (11.1)	16 (88.9)	18 (100.0)
Moderately	1 (20.0)	4 (80.0)	5 (100.0)
Very	2 (66.7)	1 (33.3)	3 (100.0)
Extremely	1 (50.0)	1 (50.0)	2 (100.0)
	Fisher's Exact = 12.722; p-value = 0.009		
Pressure to use analgesics due to their availability on campus or in local stores			
Yes	12 (41.4)	17 (58.6)	29 (100.0)
No	23 (6.5)	332 (93.5)	355 (100.0)
	*Fisher's Exact p-value = 0.0001**		
Use of analgesics to enhance academic performance			
Yes	5 (15.2)	28 (84.8)	33 (100.0)
No	30 (8.5)	321 (91.5)	351 (100.0)
	Fisher's Exact p-value = 0.206		
Offered analgesic by a peer			
Yes	19 (20.9)	72 (79.1)	91 (100.0)
No	16 (5.5)	277 (94.5)	293 (100.0)
	*Chi Square = 19.926; p-value = 0.0001**		
Knowledge of someone who has experienced negative consequences due to analgesic abuse			
Yes	20 (16.4)	102 (83.6)	122 (100.0)
No	15	247 (94.3)	262 (100.0)

(5.7)

*Chi Square = 11.436; p-value = 0.001**

The results show the factors influencing analgesic abuse. Effect of peer pressure on analgesic abuse was significant at a p value =0.003. availability of local stores for purchase of analgesics also had a significant effect with p value=0.0001, as those who felt pressured by the availability of analgesics were more likely to abuse it. Knowledge of someone who had experienced negative consequences to analgesic abuse was also significant at p value=0.01.

Table 8: Bivariate logistic regression analysis of factors contributing to the abuse of analgesics among undergraduate students at the University of Port Harcourt

Variables	Coefficient(B)	OR	95% CI	p value
Do you feel pressure from peers or friends to use analgesics?				
No	0.469	1.598	0.579; 4.405	0.365
Yes[R]		1		
Do you feel pressure to use analgesics due to their availability on campus or in local stores?				
No	1.712	5.539	2.055; 14.929	0.0001*
Yes[R]		1		
Have you ever been offered analgesic by a peer?				
No	1.031	2.805	1.260; 6.244	0.012*
Yes[R]		1		
Do you know someone who has experienced negative consequences due to analgesic abuse?				
No	0.542	1.719	0.770; 3.840	0.186
Yes[R]		1		

R – Reference category; OR – Odds Ratio; CI – Confidence interval; **Statistically significant*

Independent variable: Factors

The results show that those who felt no pressure from peers were 1.598 times less likely to abuse analgesics, this finding was however not statistically significant. Respondents who did not feel pressured by the availability of analgesics on campus were 5.539 times less likely to abuse analgesics, this finding was statistically significant with a p value of 0.0001. Those who were not offered analgesics by peers were 2.805 times less likely to abuse analgesic, this finding was statistically significant with a p value of 0.012.

Discussion

The aim of this study is to assess the awareness of factors associated with analgesic abuse and to identify the determinants of analgesic abuse among undergraduate students at the University of Port Harcourt, Rivers State, Nigeria.

The respondents were observed to have a low level of awareness of the risks associated with analgesic abuse; this is in keeping with the study conducted among medical and non-medical students of the University of Lagos which showed poor level of awareness of the adverse effect of analgesic use [19].This finding is also like that seen in the study conducted among secondary school students in an urban setting in Nigeria, where majority of respondents were unaware of complications of substance use [20]. However, this finding was different from that seen in the study conducted among undergraduate students in a tertiary institution in south-west Nigeria where majority (about sixty-seven percent) of the respondents were aware of the risk associated with analgesic abuse [1]. This finding was similar to that shown in the study conducted among construction workers in Ga-East municipality, Ghana and among mechanics working at Suame Magazine, Ghana were low levels of awareness was seen [2,21] and different from that seen in the study conducted among adults in Kiyunga town council, Uganda [22]. This finding was also different from that seen in the study conducted in a primary healthcare center at Makkah and that conducted among health science students in Riyadh, Saudi Arabia, where majority of the respondents had high level of awareness of the adverse effects of analgesic use [1,23]. This finding was similar to that seen in the study conducted among female students of Jazan University, Saudi Arabia where majority of the respondents had low level of awareness of the adverse effects of analgesic abuse [24]. This finding was different from that seen in a study conducted among Jordanian population in Amman were a high level of awareness of the risk associated with analgesic abuse was recorded [25].

Pharmacy students had a higher level of awareness compared to students of other departments, this is in line with a similar study done among medical and pharmacy students in a tertiary institution in Nigeria, pharmacy students had a significantly better knowledge [26]. Although no comparison was made between Pharmacy students and medical students in this study since the department of medicine was not among the selected departments during ballot.

There was an observed difference between level of awareness among the two genders (male and female), with females having a higher level of awareness than males, this is like the finding shown in the study conducted among non-medical students in the University of Lagos where female students had a good level of awareness compared to male students [27].

The relationship between year of study and level of awareness was statistically significant with a p-value of 0.0001, with fourth-year students having a higher level of awareness compared to other years of study. This is in line with a study done on the knowledge of non-narcotic analgesics among non-medical students at the university of Lagos where more fourth-year students had a fair knowledge of analgesics compared to other levels [27].

The finding from the study shows that peer pressure, availability of analgesic on campus or in local stores, offer of analgesic by a peer(s) and knowledge of someone who has experienced the adverse effect of analgesic abuse were significant determinants of analgesic abuse among undergraduate students at the university of Port Harcourt, Rivers State, Nigeria. However, results from the bivariate logistic regression showed that only availability of analgesics on campus or local stores and offer of analgesics by a peer were significant determinants of analgesic abuse among undergraduate students at university of Port Harcourt, Rivers State, Nigeria. A similar study conducted among students at University of Port Harcourt showed peer pressure, family influence, and the mass media to be determinants of analgesic abuse [28]. Although family influence and mass media were not significant determinants in this study, peer pressure was shown to be a significant determinant of analgesic abuse in this study. A study conducted among undergraduate students at Niger Delta University; Bayelsa State showed availability of analgesic to be a

significant determinant of analgesic abuse [29] which is in keeping with the finding shown in this study. The study conducted among undergraduate students in a tertiary institution in Southwest Nigeria showed that peer pressure is a significant determinant of analgesic abuse [26] which is in keeping with the finding shown in this study. In a study conducted among students in Aminu Saleh college, Bauchi, curiosity, family members, ignorance and desire for pleasure were seen to be determinants of analgesic abuse [30]. These findings were different from those shown in this study. In a study conducted among construction workers in the Ga-East municipality, Ghana, Television and radio advertisement were seen to be a significant determinant of analgesic abuse [2]; which was different from that shown in this study. In a study conducted among students in Ordu, Turkey, separation from immediate family members was seen to be a determinant of analgesic abuse [31]. This finding was different from that shown in this study.

Limitations of the study

The study is a descriptive cross-sectional study; hence it does not have a temporal sequence. That is, it limits its ability to establish causality between variables, as it only provides a snapshot of analgesic abuse awareness and determinants among the respondents at a single point in time.

Implications of the findings of the study

The findings of this study have significant implications for both education and public health, especially among tertiary institutions in Nigeria. The findings of this study showed a low level of awareness about the risk associated with analgesic abuse and this suggests a serious need for educational and awareness programmes to be organized to educate the students on the adverse effects of analgesic abuse. The findings also showed a disparity in the level of awareness among students from different departments, with pharmacy students showing higher level of awareness than the rest, highlighting the role of academic exposure in shaping the students' knowledge of the adverse effects of drugs. The study also showed gender disparity, with females having a higher level of awareness than males. These findings suggest a comprehensive awareness and educational intervention which should cut across all departments and both genders equally to effectively address this issue. The fact that peer pressure and the availability of analgesics on campus or in local stores were significant determinants of analgesic abuse among the respondents signifies the role of social environment in influencing the student's behavior. These findings imply that addressing the problem of analgesic abuse may require not just educational campaigns but also policy interventions aimed at regulating the availability of analgesics within and around the campus. In addition, the influence of peer dynamics, as evidenced by the offer of analgesics by peers and knowledge of someone who has suffered analgesic abuse, suggests that interventions should also focus on altering social norms and behaviors related to drug use, especially analgesics among the students of the institution. Further research can be done to explore the reasons for the low awareness levels and gender disparities observed in this study.

Conclusion

This study investigated the awareness and determinants of analgesic abuse among undergraduate students at the University of Port Harcourt, Rivers State, Nigeria. The findings indicate a low level of awareness of the risk associated with analgesic abuse, with females and pharmacy students showing higher level of awareness. Peer pressure, availability of analgesic on campus or in local stores, offer of analgesic by a peer(s) and knowledge of someone who has experienced the adverse effect of analgesic abuse were significant determinants of analgesic abuse. The study's findings have implications for educational/awareness programmes, comprehensive interventions which cut across all departments and levels and both genders addressing the issue of analgesic abuse and policy interventions to regulate the availability of analgesics within and around the campus. Also, there is need for future longitudinal studies on this topic to explore the complex relationships between analgesic abuse determinants and awareness over time hence overcoming the limitation of this study.

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References:

1. Alharbi A., Lodhi FS., Khan AA. Prevalence and pattern of analgesic misuse among patients attending primary health care center in Makkah, Saudi Arabia. Medical Science. 2020;24(105):3182-3190.
2. Badzi CD, Ackumey MM. Factors influencing use of analgesics among construction workers in the Ga-East municipality of the Greater Accra region, Ghana. Ghana Med J. 2017 Dec;51(4):156-163.
3. WHO. Substance abuse [Internet]. Brazzaville:AFRO WHO; c2024 [updated 2024 Feb; cited 2024 Jun 14] Available from: https://www.afro.who.int/health-topics/substance-abuse
4. Karami N,Altebainawi AF, Alfarki SA, Aldossari NB, Asiri AN, Aldahan MS, Alqhtani TR. Knowledge and attitude of analgesics use among Saudi population: A cross-sectional study. International Journal of medical science and public health 2018 Jan;7(2):137-43.
5. Becker W, Starrels J. Prescription drug misuse: Epidemiology, prevention, identification and management. Update Feb 2018;Available at: https://maadi-clinical.byethost8.com/d/topic.htm?path=prescription-drug-misuse-epidemiology-prevention-identification-and-management&i=1[Accessed Jan 2015]
6. Dart RC, Surratt HL, Ciccro TJ, Parrino MW, Severtson SG, Bucher-Bartelson B. et al. Trends in opioid analgesic abuse and mortality in the united states. N Engl J Med. 2015 Jan;372(3):241-248. DOI: 10.1056/NEJMsa1406143
7. Degenhardt L, Grebely J, Stone J, Hickman M, Vickerman P, Marshall BDL. Global patterns of opioid use and dependence: harms to populations, interventions and future action. Drug use. 2019 Oct;394(10208):p1560-1579. DOI: 10.1016/50140-6736(19)32229-9
8. WHO. Opioid overdose [Internet]. Washignton DC; c2023 [updated 2023 August 29; cited 2024 Jun 14] Available from: https://www.who.int/news-room/fact-sheets/detail/opioid-overdose
9. Ortiz-ospina E, Roser M. Opioid use disorder death rate [Internet]. Data adapted from: IHME, Global burden of disease. Retrieved from: https://ourworldindata.org/grapher/death-rate-from-opioid-use [online resource]
10. Jatau AI, Sha'abau, Gulma KA,Shitu Z, Khalid GM, Isa A, et al. The Burden of drug abuse in Nigeria: a scoping review of epidemiological studies and drug laws. Public Health Rev. 2021 Jan;42(1603960) https://doi.org/10.3389/phrs.2021.1603960
11. Ugwoha E, Benneth A. Assessment of Energy content and evaluation of suitable management technology for solid waste generation in Universities in Port Harcourt. Uniport J Eng Sci Res [online]. 2019;3(1):2616–1192.
12. Wikipedia. University of Port Harcourt. [online]. 2021 [Accessed 9 March 2024]. Available from: https://en.m.wikipedia.org/wiki/University_of_Port_Harcourt
13. Uzoma C, Ebele O. Climate change mitigation and adaptation capabilities of avenue tree species at the University of Port Harcourt, Nigeria. Advances in Applied Science Research. 2015;6:40-49

14. The University of Port Harcourt. Health services department. [online]. Uniport;Choba PH. 2012 Oct [Accessed 9 March 2024]. Available from: https://www.uniport.edu.ng/schools/2019-01-31-08-20-51/2019-01-31-10-41-55/25-about-uniport/contacts/270-health-services-department.html
15. The University of Port Harcourt Teaching Hospital (UPTH). About UPTH. [online]. UPTH: Choba PH. Available from: upthng.com/about-upth/
16. Bassi PU, Osakwe AI, Builders M, Ette Ettebong, Kola G, BingaB,Oreagbai. I. Prevalence and Determinants of Self Medication Practices among Nigerians, African Journal of Health Sciences 2021 34 (5): 634-649.
17. UNIPORT. About us [Internet].Choba. 2023 [Accessed 9 March 2024]. Available from: https://www.uniport.edu.ng/15-faculties.html
18. SPSS. FullForms. [online]. Available from: https://www.google.com/amp/s/amp.fullforms.com/SPSS
19. Olugbake OA, Akinola AA, Ekiran OO. Knowledge and Use of over-the-counter analgesics among medical and non-medical students of the University of Lagos. Journal of Basic and Social Pharmacy Research, 2019;1(1):37-45
20. Oshodi OY, Aina OF, Onajole AT. Substance use among secondary school students in an urban setting in Nigeria: prevalence and associated factors. Afr J Psychiatry (Johannesbg). 2010 Mar;13(1):52-7. doi: 10.4314/ajpsy.v13i1.53430. PMID: 20428599.
21. Arthur-Norman P, Bruce-Out DA, Aboagye AA, Aboagye RA, Ansong J. Across-sectional study on prevalence of self-medication of analgesics among mechanics at Suame Magazine, Ghana. Asian Journal of Research in Nursing and health. 2024;7(1):70-79.
22. Tendo T, Nakasolo S. Determination of individual factors contributing to increased misuse of analgesics among adults in Kiyunga HC IV, Kiyunga town council, Luuka District, A cross-sectional study. SJ Pharmacy and pharmacology Africa. 2024 Aug;1(8): doi: https://doi.org/10.51168/reffj231
23. Al Essa M, Alshehri A, Alzahrani M, Bustami R, Adnan S, Alkeraidees A, Mudshil A, Gramish J. Practices, awareness and attitudes toward self-medication of analgesics among health sciences students in Riyadh, Saudi Arabia. Saudi Pharm J. 2019 Feb;27(2):235-239. doi: 10.1016/j.jsps.2018.11.004
24. Salih S, Madkhali AA, Al-hazmi WM, Al-khaldy AY, Moafa TA, Al-gahtani EZ, Al-muhib MO. Knowledge, attitude and practices on over the counter oral analgesics. IJMDC. 2019; 3(4): 311-315. doi:10.24911/IJMDC.51-1544048783
25. Al-Samydai A, Al-Elairre LA, Abbadi SH, Al-Khareisha L. Measuring awareness of over the counter analgesic use and risks associated with it among Jordanian population in Amman. Asian Journal of research and development. 2018;6(5):9-15DOI:http://dx.doi.org/10.22270/ajprd.v615.429
26. Durowade KA, Elegbede OE, Pius- Imue A,Omezie M, Bello C, Mark-Uchendu A, et al Substance use: prevalence, pattern and risk factors among undergraduate students in a tertiary institution in southwest Nigeria. Journal of community medicine and primary health care 2021;(33)2:
27. Opeoluwa O A, Alexander AV, Kofoworola A. Knowledge of Non-Narcotic Analgesics and their Use among Non-Medical Students of the University of Lagos. *The Nigerian Journal of Pharmacy* 2016;*50*(2).

28. Ogbanga M. The incidence of Narcotics abuses among students of University of Port Harcourt. African Scholar Journal of Humanities and Social Sciences(JHSS-6) , 2019;(15) 6:2110-2086.
29. Owonaro AP, Eniojukan FJ. Pattern, knowledge and other contextual correlates of use of pain killers among students of Niger delta university, IOSR Journal of Pharmacy and Biological sciences Mar 2016(11)2:28-36
30. Shehu MG. Effects of drug abuse on students' performance, a case of Aminu saleh college of education, Bauchi. Journal of issues in special education 2019 Dec;17(1):14-24.
31. Öztaş D, Kalyon A, Ertuğrul A, Gündoğdu Ç, Balcıoğlu H, Saglan Y, et al. Evaluation of Risk Factors Affecting Substance Use among Tenth-Grade Students. BioMed Research International. 2018;1(4):1-11. 10.1155/2018/1407649