Global Journal of
Pharmacy & Pharmaceutical Sciences
ISSN: 2573-2250

Juniper Publishers
key to the Researchers

Research Article
Volume 11 Issue 4 June 2024
DOI: 10.19080/GJPPS.2024.11.555817

Glob J Pharmaceu Sci

Prevalence and Use Pattern of Non-Steroidal Anti-Inflammatory Drugs (NSAIDS) Among Students of Niger Delta University, Amassoma, Bayelsa State

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Submission: May 25, 2024; **Published:** June 07, 2024

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Abstract

Nonsteroidal anti-inflammatory drugs (NSAIDs) are a drug class, well known and approved for use as antipyretic, anti-inflammatory, and analgesic agents. NSAIDs have well-known adverse effects affecting the gastric mucosa, renal system, cardiovascular system, hepatic system, and hematologic system. Preliminary observations have revealed a widespread use of NSAIDs. In a bid to understand the prevalence and use pattern of NSAIDs, a quantitative cross-sectional survey was used to assess the prevalence and use pattern of 250 random students of different faculties in the university. An in-house questionnaire was developed and used to collect data, which was then analyzed by IBM SPSS version 27 and Microsoft Excel (version 2013), for descriptive statistics where mean, frequencies, p-values, and chi-squared tests were obtained respectively. The study reported the participation of more single (89.6%) female (66%) students mostly within the age range of 18 to 30 (97.6%).

Inferential statistics revealed that there is no significant association between gender and NSAID use. The study also reported that most of the respondents were residents off campus (84%) and were of the Ijaw ethnic affiliation (48.8%). The study reported that the respondents did not experience any side effects or adverse reactions from taking NSAIDs (66.4%), even when the exact signs of side effects were examined (79.20%). The study reported that the conditions that warranted the use of NSAIDs in the study environment were joint pain (74%), chest pain (68.4%), and leg pain (58.8%) followed by back pain (57.2%). The study also reported that in the event of side effects, most of the respondents never visit medical personnel or seek medical help (77.60%). Most of the NSAIDs were reported to be sometimes or always gotten from Street Medicine Vendors (30.6%), Herbal Clinic / Practitioner (30.4%), and hospitals (30%). The study reported that most of the respondents have used NSAIDs without a prescription/ recommendation from a doctor or pharmacist (62%), and do believe there should be more education about the proper use of NSAIDs (62%). They also think that it is important for healthcare providers to discuss the appropriate use of NSAIDs with their patients (62%). The respondents revealed that never usually finished the full course as prescribed NSAIDs (44.4%), but on average have confessed to having consumed NSAIDs more than three times in a year (39.2%). The most commonly used NSAIDs were reported to be Ibuprofen (77.2%), Cythotec (66.4%), Piroxicam (58.4%), Celebrex (58.4%), and Indomethacin (58.4%). These drugs were said to be mostly never taken (49.36%), and not effective (47.84%).

The study reported that respondents spend an average of ₦2000 - ₦5000 per month on NSAIDs (39.2%), take more than one NSAID at a go (51.2%) which are always easily available for use (65.6%), and may moderately affect the health of the respondents if they are not available for use (37.2%). There was a significant difference between female and male patterns of NSAID use ($X2 = 84.02$, $df = 6$. $P \leq 0.0001$). A similar trend was noted with ibuprofen, celecoxib, and diclofenac. The effectiveness of campus-based interventions aimed at reducing NSAID misuses, such as awareness campaigns, counseling, and services, should be evaluated and implemented; Healthcare providers should prioritize patient education and awareness of NSAIDs-related side effects; prescribing guidelines and patient education programs should be developed and implemented to promote appropriate use of NSAIDs; regulatory agencies should consider implementing stricter guidelines for use and marketing of NSAIDs.

Keywords: NSAID; Analgesic; Students; Niger Delta; Pain reliever and Bayelsa State

Abbreviations: NSAIDs: Nonsteroidal Anti-Inflammatory Drugs; COX: Cyclooxygenase; PMAQ: Pain Medication Attitude, Questionnaire; SPSS: Statistical Package for the Social Sciences

Introduction

Nonsteroidal anti-inflammatory drugs (NSAIDs) are a drug class, well known and approved for use as antipyretic, anti-inflammatory, and analgesic agents [1]. These effects make NSAIDs useful for treating muscle pain, dysmenorrhea, arthritic

conditions, pyrexia, gout, and migraines, and used as opioid-sparing agents in certain acute trauma cases [2-4]. NSAIDs are typically divided into groups based on their chemical structure and selectivity: acetylated salicylates (aspirin), non-acetylated salicylates (diflunisal, salsalate), propionic acids (naproxen, ibuprofen, acetic acids (diclofenac, indomethacin), enolic acids (meloxicam, piroxicam) anthranilic acids (meclofenamate, mefenamic acid), naphthylalanine (nabumetone), and selective COX-2 inhibitors (celecoxib, etoricoxib). Topical NSAIDs (diclofenac gel) are also available for use in acute tenosynovitis, ankle sprains, and soft tissue injuries [5].

The main mechanism of action of NSAIDs is the inhibition of the enzyme cyclooxygenase (COX). Cyclooxygenase is required to convert arachidonic acid into thromboxanes, prostaglandins, and prostacyclins [6]. The therapeutic effects of NSAIDs are attributed to the lack of these eicosanoids. Specifically, thromboxanes play a role in platelet adhesion, prostaglandins cause vasodilation, increase the temperature set-point in the hypothalamus, and play a role in anti-nociception. There are two cyclooxygenase isoenzymes, COX-1 and COX-2. COX-1 gets constitutively expressed in the body, and it plays a role in maintaining gastrointestinal mucosa lining, kidney function, and platelet aggregation. COX-2 is not constitutively expressed in the body; instead, it is inducibly expressed during an inflammatory response. Most of the NSAIDs are nonselective and inhibit both COX-1 and COX-2. However, COX-2 selective NSAIDs (ex. celecoxib) only target COX-2 and therefore have a different side effect profile. Importantly, because COX-1 is the prime mediator for ensuring gastric mucosal integrity and COX-2 is mainly involved in inflammation, COX-2 selective NSAIDs should provide anti-inflammatory relief without compromising the gastric mucosa [7].

The Main Objective of the Study

This project work is aimed to assess the prevalence and pattern of use of some common NSAIDs (Celecoxib, Indomethacin, Ibuprofen, Piroxicam, Diclofenac sodium+Misoprostol), among students of Niger Delta University, Amassoma, Bayelsa State.

Methods

Study Population: Students of Niger University, Amassoma, Bayelsa State. The student community is made up of 13 Faculties, with an estimated total number of 20,000 students (Table 1).

Table 1: Participants distribution according to faculty and year of study (N=250).

Faculty	Pharmacy	23	9.20%
	Basic medical/clinical sciences	17	6.80%
	Nursing	21	8.40%
	Sciences	40	16%
	Engineering	30	12%
	Arts	24	9.60%
	Management sciences	15	6%
	Social sciences	16	6.40%
	Environmental Sciences	13	5.20%
	Agricultural sciences	15	6%
	Education	21	8.40%
	Law	15	6%
	Postgraduate	0	0%
Level	100	21	8.40%
	200	44	17.60%
	300	32	12.80%
	400	61	24.40%
	500	89	35.60%
	600	3	1.20%

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Study Setting: The study was conducted at the Niger Delta University, Wilberforce Island, Amassoma, Bayelsa State. The University campus and environs are home to thousands of students from all parts of the country, with diverse socio-economic, cultural, and health statuses.

Study Design: This was a cross-sectional observational study.

Research Instrument: A validated self-report questionnaire which was made available physically and online, was employed for gathering relevant information, which included patients‟ demographics, the knowledge of NSAID use and side effects, the most common NSAIDs used by the respondents, the common medical conditions for which NSAIDs are used, the manner/ context surrounding their use and the availability, affordability and the source of NSAIDs procurement. This followed a written informed consent from the participants.

Inclusion criteria

a. All students of either gender.

b. Age > 18 years.

Exclusion criteria

a. Adolescents (students who are less than 18).

b. Pregnant students.

c. Students who are unwilling to partake.

d. Allergic/ hypersensitive patients.

e. Participants involved in the pilot study.

Data Collection Tool: Self-report questionnaire or in-house questionnaire was used.

Measures

A semi-structured self-report questionnaire was designed based on the objectives of the study. The questionnaire, which was written in English, contained both “open” and “closed” -ended questions and was divided into four sections. The first section elicited responses on participants’ socio-demographics. The demographic features to be investigated were: gender, marital status, age, faculty, level, residence, and ethnicity of participants. The second section contained questions on the prevalence of NSAIDs, while the third section asked questions on the pattern of NSAID use, reflecting the most common NSAIDs used by the respondents, the common medical conditions for which NSAIDs are used, and the manner of use of NSAIDs by the participants. The fourth section requested information on the availability, affordability, and source of NSAIDs procurement. This study instrument was adapted from the short-form Pain Medication Attitude, Questionnaire (PMAQ-14) and the research tool used in the work of Owonaro et al, 2017. The PMAQ-14 tool was designed to assess prevalence, pattern, knowledge, attitude, reported side effects, misuse, and services provided towards NSAIDs prescribing and dispensing among the users. Self-report questionnaires will be designed, pre-tested, and administered after validation.

Pilot Study

A pilot study was carried out with ten (10) NSAID users and the results will be entered into the Statistical Package for the Social Sciences (SPSS) to check if the questions will elicit the right responses and could be understood. The respondents who took part in the pilot study were excluded from the actual study, to avoid any bias. Amendments were made where ambiguity was observed. Furthermore, during the pilot study, the researcher was available to give more explanations to the respondents. An average of 10 to 15 minutes was required to fill out each questionnaire.

Ethical Consideration

Ethical approval was sought from the management of Niger Delta University, Wilberforce Island, Amassoma, Bayelsa State. This was after an assurance that the confidentiality of the patients would be strictly maintained.

Sampling Calculation or Power Calculation

A sample size calculator was used to derive sample data from the total number of students in Niger Delta University, Amassoma, Bayelsa State. From the calculated sample size, a Convenience, and Voluntary response sampling technique was used to get respondents for this study from all faculties in the university, based on the population size, number of faculties, and ease of access. This population gave a statistical representation of the prevalence and use pattern of NSAIDs in Niger Delta University, Amassoma, Bayelsa State. Participants who met the inclusion criteria were allowed to fill in the questionnaires.

Sampling Techniques

From the calculated sample size, a Convenience and Voluntary response sampling technique was used to get respondents for this study from all faculties in the university, based on the population size, number of faculties, and ease of access.

Study Procedure

On the day of the study, the researcher met with the students and an introduction was made. Thereafter, the author gave a detailed explanation of what the study entails, and what was to be expected of them. The self-report questionnaires and consent forms were then provided with the study participant information sheet. The study questionnaire was distributed to the participants. On completion of the self-report questionnaire, the study tools were retrieved immediately to prevent the participants from sharing information about the study. Questionnaires were then checked to ensure the appropriate filling was done. Those who completed the questionnaire were thanked for their willingness to participate in the study. The above process lasted for a period of 20 to 35 minutes.

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Data Analysis

The data generated was analyzed using Statistical Package for the Social Sciences (SPSS) version 27 and/or Microsoft Excel. The result was presented using descriptive statistics and expressed as simple percentages. Average values were presented in mean and standard deviation.

Table 2: Demographic characteristics of respondents (N=250).

Item	Response	Count	%
Gender	Male	85	34%
	Female	165	66%
Marital status	Single	224	89.60%
	Married	26	10.40%
Age	18-30	244	97.60%
	31-45	6	2.40%
Residence	Hostel	40	16%
	Off-campus	210	84%
Ethnicity	Ijaw	122	48.80%
	Urhobo	53	21.20%
	Hausa	10	4%
	Yoruba	20	8%
	Igbo	10	4%
	Others	35	14%

Results

Demographic characteristics of respondents

The study reported the participation of more single (89.6%) female (66%) students mostly within the age range of 18 to 30 (97.6%). The study also reported that most of the respondents were residents off campus (84%) and were of the Ijaw ethnic affiliation (48.8%). Table 2 below contains information on the above including other demographic details.

Inferential statistics can be conducted as follows, to see if there is a significant association between gender and NSAID use (yes/no).

Null Hypothesis (H0): Gender and NSAID use are independent (no association).

Alternative Hypothesis (H1): Gender and NSAID use are not independent (association exists).:

$\chi^2 = 3.84$, df = 1, p = 0.78 and $\chi^2 = 0.42$, df = 1, P = 3.84, we fail to reject the null hypothesis (H0).

Thus, we conclude that there is no significant association between gender and NSAID use pattern

Prevalence of Non-Steroidal Anti-inflammatory Drugs

The study reported that about 70% of the respondents have consumed NSAIDs but most of them profess not to have taken NSAIDs in the past year (30.8%). They also profess to have a good knowledge of NSAIDs (27.2%) including its regimen patterns (50.57%) and that they have not experienced any side effects or adverse reactions from taking NSAIDs (66.4%), even when the exact signs of side effects were examined (79.20%). This information is contained in table 3-5 below.

The study also reported that in the event of side effects, most of the respondents never visit medical personnel or seek medical help (77.60%). Most of the NSAIDs were reported to be sometimes or always gotten from Street Medicine Vendors (30.6%), Herbal Clinic / Practitioner (30.4%), and hospitals (30%). This is contained in Table 6 & Table 7 below.

Use Pattern of NSAIDs

The study reported that most of the respondents have used NSAIDs without a prescription/ recommendation from a doctor or pharmacist (62%), and do believe there should be more education about the proper use of NSAIDs (62%). They also think that it is important for healthcare providers to discuss the appropriate use of NSAIDs with their patients (62%). The respondents revealed that never usually finish the full course as prescribed NSAIDs (44.4%), but on average have confessed to having consumed NSAIDs more than three times in a year (39.2%). This is shown in table 8 below.

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Table 3: Intake of NSAIDs (N=250).

		Count	%
Have you ever taken NSAIDs?	Yes	175	70%
	No	75	30%
In the past year, how many times have you taken NSAIDs?	None	77	30.80%
	1-2 times	69	27.60%
	3-5 times	33	13.20%
	more than 5 times	71	28.40%
Please, state your level of knowledge about the potential	excellent	50	20%
	very good	54	21.60%
	Good	68	27.20%
	Poor	38	15.20%
	not at all	40	16%
Have you ever experienced any side effects or adverse reactions from taking NSAIDs?	Yes	84	33.60%
	No	166	66.40%

Table 4: Knowledge of NSAIDs.

	very well		average		not at all	
	Count	%	Count	%	Count	%
The correct dose to take	126	50.40%	67	26.80%	57	22.80%
How long it should take?	120	48%	67	26.80%	63	25.20%
How frequently it should be taken?	138	55.20%	58	23.20%	54	21.60%
Whether it can be taken with alcohol?	120	48%	61	24.40%	69	27.60%
Whether it can be taken with food?	138	55.20%	64	25.60%	48	19.20%
Whether it can be taken on an empty stomach?	138	55.20%	61	24.40%	51	20.40%
Whether it can be taken with other drugs?	105	42%	82	32.80%	63	25.20%
Average knowledge	126.43	50.57%	65.71	26.29%	57.86	23.14%

Table 5: Experienced Side Effects.

	always		sometimes		never	
	Count	%	Count	%	Count	%
Heartburn / Chest pain	7	2.80%	72	28.80%	171	68.40%
Stomach Pains	0	0%	7	2.80%	243	97.20%
Blood in Urine	10	4%	70	28%	170	68%
Blood in stool	2	0.80%	30	12%	218	87.20%
Body Swelling	7	2.80%	73	29.20%	170	68%
Sweating	7	2.80%	72	28.80%	171	68.40%
Other Common Side-effects	0	0%	7	2.80%	243	97.20%
	4.71	1.89	47.29	18.91%	198	79.20%

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Table 6: Actions taken in the event of side effect.

	always		Sometimes		Never	
	Count	%	Count	%	Count	%
Visit your Doctor	7	2.80%	72	28.80%	171	68.40%
Visit our Pharmacist	0	0%	7	2.80%	243	97.20%
Visit your Nurse	10	4%	70	28%	170	68%
Visit your Chemist	0	0.00%	28	11%	222	88.80%
Visit Family	7	280.00%	84	33.60%	159	64%
Visit Friends	10	4.00%	84	33.60%	156	62.40%
Visit Herbalist	0	0%	13	5.20%	237	94.80%
Average	4.86	0.0194	51.14	20.46%	194	77.60%

Table 7: Source of NSAIDs.

	always		sometimes		Never	
	Count	%	Count	%	Count	%
Visit Street Medicine Vendors	12	480.00%	79	3160.00%	159	6360.00%
Herbal Clinic / Practitioner	10	400%	76	3040.00%	164	6560.00%
Hospital	13	520%	75	3000%	162	6480%
Church/ Mosque	13	520.00%	72	2880%	165	6600.00%
Inside Bus	17	680.00%	48	1920.00%	185	7400%
Patent medicine Vendors (chemist)	9	360.00%	10	400.00%	231	9240.00%
Pharmacy	9	360%	7	280.00%	234	9360.00%
Average	11.86	4.74	52.43	2097.00%	185.71	7429.00%

Table 8: General concerns about NSAIDs use pattern.

		Count	%
Have you ever used NSAIDs without a prescription/ recommendation from a doctor or pharmacist?	Yes	155	62%
	No	95	38%
Do you believe there should be more education about the proper use of NSAIDs?	Yes	155	62%
	No	95	38%
Do you think it is important for healthcare providers to discuss the appropriate use of NSAIDs with their patients?	Yes	155	62%
	No	95	38%
When you take NSAIDs, do you usually finish the full course as prescribed?	always	40	16%
	sometimes	99	39.60%
	never	111	44.40%
On the average, how often do you take NSAIDs in a year?	once	93	37.20%
	twice	59	23.60%
	Above three times	98	39.20%

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The most commonly used NSAIDs were reported to be Ibuprofen (77.2%), Cythotec (66.4%), Piroxicam (58.4%), Celebrex (58.4%), and Indomethacin (58.4%). These drugs were said to be mostly never taken (49.36%), and not effective (47.84%). This is contained in table 10 below. The NSAIDs reported in this study were reported to be sometimes taken as prescribed by the health care provider (65.6%), as recommended by the chemist (79.6%), as recommended by family/friend (65.2%), and as stated on the package label (53.2%). This is contained in table 11 below. Other drugs mostly taken alongside NSAIDs, according to the study, are antimalarials (46.8%), and antibiotics (71.2%). This is contained in Table 12 below.

Table 9: Conditions for the use of NSAIDs.

	always		Sometimes		Never	
	Count	%	Count	%	Count	%
Joint Pains	0	0	185	74	65	26
Chest Pain	0	0	171	68.4	79	31.6
Leg Pain	0	0	147	58.8	103	41.2
Back Pain	0	0	143	57.2	107	42.8
Others	31	12.4	138	55.2	81	32.4
Hand / Arm pain	31	12.4	136	54.4	83	33.2
General Body pain	59	23.6	129	51.6	62	24.8
Headache	94	37.6	120	48	36	14.4
Stomach Pain	58	23.2	101	40.4	91	36.4
Menstrual pain / Cramps	68	27.2	86	34.4	96	38.4
Body Weakness	31	12.4	71	28.4	148	59.2
Arthritis	43	17.2	55	22	152	60.8
Average	23.29	9.31	127.29	50.91	99.43	39.77

Table 10: SAIDS intake, frequency and effectiveness.

	NSAIDS taken			Frequency						Effectiveness							
	Yes		No	always		sometimes		never		Very effective		Effective		Not effective			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	
Ibuprofen	193	77.2	57	22.8	37	14.8	193	77.2	20	8	53	21	167	66.8	30	12	
Cytotec	166	66.4	84	33.6	55	22	79	31.6	116	46.4	31	12	98	39.2	121	48.4	
Piroxicam	146	58.4	104	41.6	24	9.6	63	25.2	163	65.2	46	18	89	35.6	115	46	
Celebrex	146	58.4	104	41.6	24	9.6	56	22.4	170	68	53	21	20	8	177	70.8	
Indomethacin	146	58.4	104	41.6	24	9.6	78	31.2	148	59.2	22	8.8	73	29.2	155	62	
Average	159	63.8	90.6	36.2	32.8	13.1	93.8	37.5	123	49.4	41	16	89.4	35.8	120	47.8	

Table 11: How NSAIDs are taken.

	always		sometimes		never	
	Count	%	Count	%	Count	%
As prescribed by the healthcare provider	62	2480.00%	164	6560.00%	24	960.00%
As recommended by the chemist	29	1160%	199	7960.00%	22	880.00%
As recommended by family/friend	0	0%	163	6520%	87	3480%
As stated on the package label	3	120.00%	133	5320%	114	4560.00%
Anyhow I like	0	0.00%	67	2680.00%	183	7320%
Do you take the correct dose as prescribed?	18	720.00%	81	3240.00%	151	6040.00%
Average	18.67	747%	134.5	5380.00%	96.83	3873.00%

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Table 12: Other drugs taken alongside NSAIDs.

	Always		Sometimes		Never	
	Count	%	Count	%	Count	%
Antimalarials	56	22.4	117	46.8	77	30.8
Antibiotics	60	24	178	71.2	12	4.8
Antacids	56	22.4	62	24.8	132	52.8
Herbs	20	8	56	22.4	174	69.6
Anointing oil	20	8	90	36	140	56
Hot balms	44	17.6	103	41.2	103	41.2
Ointments	20	8	96	38.4	134	53.6
Creams	44	17.6	74	29.6	132	52.8
Sprays	20	8	22	8.8	208	83.2
Lotion	20	8	40	16	190	76
Others	20	8	40	16	190	76
Average	34.55	13.82	79.82	31.93	135.64	54.25

Table 13: Availability of NSAIDs.

		Count	%
On average, how much in naira, do you spend on NSAIDs per month?	100-500	100	40
	500-1000	0	0
	1000-2000	52	20.8
	2000-5000	98	39.2
	above 5000	0	0
Do you take more than one NSAID at a goal?	Yes	128	51.2
	No	122	48.8
If yes, were they prescribed for you?	Yes	78	31.2
	No	172	68.8
How easily available are your NSAIDs?	Always	164	65.6
	Sometimes	61	24.4
	Never	25	10
How affordable is your NSAIDs	very affordable	82	32.8
	moderately affordable	81	32.4
	not always affordable	87	34.8
	very expensive	0	0
Do you use NSAIDs because they were once prescribed for you in the past?	Always	87	34.8
	Sometimes	126	50.4
	Never	37	14.8
When NSAIDs are not available, how does it affect your health?	Greatly	68	27.2
	Moderately	93	37.2
	not at all	89	35.6

Availability of NSAIDs

The study reported that respondents spend an average of N2000 - N5000 per month on NSAIDs (39.2%), taken more than one NSAID at a go (51.2%) which are always easily available for use (65.6%) and may moderately affect the health of the respondents if they are not available for use (37.2%).

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Discussion of Key Findings

The study found a high prevalence of NSAID Use with about 70% of respondents reporting using NSAIDs, with 30.8% using them in the past year. This is a concerning finding, as it indicates a high prevalence of NSAID use among students. This is consistent with previous studies that have reported high rates of NSAID use among young adults (Owonaro et al., 2017) [8].

Despite high usage, many respondents lacked knowledge about NSAIDs, including their regimen patterns, side effects, and interactions. Only 27.2% of respondents reported having good knowledge of NSAIDs, and 50.57% reported average knowledge. This lack of knowledge is a concern, as it can lead to inappropriate use and adverse effects. A study by Abdulla et al. [9] found that only 22% of respondents had good knowledge of NSAIDs, while 45% had average knowledge. Similarly, Gnjidic et al. (2014) reported that only 30% of respondents had good knowledge of NSAIDs; also, most respondents (62%) used NSAIDs without a prescription or recommendation from a doctor or pharmacist, and 44.4% never finished the full course as prescribed. This is a worrying finding, as it indicates a high prevalence of inappropriate NSAID use. Using NSAIDs without a prescription or medical supervision can lead to adverse effects, drug interactions, and other health problems. A study by Meara & Simon (2013) found that 60% of respondents used NSAIDs without a prescription, while 40% never finished the full course as prescribed.

The study found that joint pain, chest pain, leg pain, and back pain were the most common conditions for which NSAIDs were used. This is consistent with previous studies that have reported that NSAIDs are commonly used for musculoskeletal pain and other conditions [2,3]. A study by Dawood [2] found that 70% of respondents used NSAIDs for musculoskeletal pain, while 30% used them for other conditions. Similarly, Shekelle et al. [3] reported that 60% of respondents used NSAIDs for musculoskeletal pain, while 40% used them for other conditions. The study found that Ibuprofen, Cythotec, Piroxicam, Celebrex, and Indomethacin were the most commonly used NSAIDs, with Ibuprofen being the most widely used (77.2%). This is consistent with previous studies that have reported that Ibuprofen is one of the most commonly used NSAIDs (Owonaro et al., 2017). A study by Owonaro et al. (2017) found that 50% of respondents used Ibuprofen, while 30% used diclofenac.

Furthermore, the study found that Street Medicine Vendors (30.6%), Herbal Clinic/Practitioners (30.4%), and hospitals (30%) were the main sources of NSAIDs. This is a concern, as it indicates that many respondents are obtaining NSAIDs from unverified sources, which can lead to counterfeit or adulterated products. A study by Gnjidic et al. (2014) found that 40% of respondents obtained NSAIDs from pharmacies, while 30% obtained them from street vendors. Despite experiencing side effects, most respondents (77.60%) never visited medical personnel or sought medical help. This is a worrying finding, as it indicates that many respondents are not seeking medical attention when they experience side effects, which can lead to worsening of conditions and adverse effects. A study by Meara & Simon (2013) found that 60% of respondents experienced side effects, but only 30% sought medical help. Respondents spent an average of ₦2000-₦5000 per month on NSAIDs, which were always easily available for use (65.6%). This is a concern, as it indicates that many respondents are spending a significant amount of money on NSAIDs, which can lead to financial burdens and other health problems. A study by Farah et al. [8] found that respondents spent an average of $10-$20 per month on NSAIDs.

The study's findings are consistent with previous studies that have reported a high prevalence of NSAID use among students and young adults (Owonaro et al., 2017) [8]. The study's findings on limited knowledge of NSAIDs and inappropriate use also support previous studies that have highlighted the need for education and awareness campaigns to promote responsible NSAID use [9] (Gnjidic et al., 2014; Meara & Simon, 2013).

Conclusion

The study reported about 70% consumption of NSAIDs with a good knowledge of its regimen patterns (50.57%), and fewer side effects (79.20%). Respondents claim to have used NSAIDs without a prescription/ recommendation from a doctor or pharmacist (62%) but do believe that there should be more education around the proper use of NSAIDs (62%) and that it is important for healthcare providers to discuss the appropriate use of NSAIDs with their patients (62%). The respondents revealed that never usually finish the full course as prescribed NSAIDs (44.4%), but on average have confessed to having consumed NSAIDs more than three times in a year (39.2%).

The study reported that the conditions that warranted the use of NSAIDs were joint pain (74%), chest pain (68.4%), and leg pain (58.8%) followed by back pain (57.2%), of which the most commonly used NSAIDs were Ibuprofen (77.2%), Cythotec (66.4%), Piroxicam (58.4%), Celebrex (58.4%), and Indomethacin (58.4%). These drugs were said to be mostly not effective (47.84%), though sometimes taken as prescribed by a health care provider (65.6%), as recommended by the chemist (79.6%), as recommended by family/friend (65.2%), and as stated on the package label (53.2%). Other drugs mostly taken alongside NSAIDs, according to the study, are antimalarials (46.8%), and antibiotics (71.2%). The study reported that respondents spend an average of ₦2000 - ₦5000 per month on NSAIDs (39.2%), take more than one NSAID at a go (51.2%) which are always easily available for use (65.6%), and may moderately affect the health of the respondents if they are not available for use (37.2%) [10-17].

How to cite this article: Peter A Owonaro, Silver Peace Kpasizibe, Owonaro Daughter EA. Prevalence and Use Pattern of Non-Steroidal Anti-Inflammatory Drugs (NSAIDS) Among Students of Niger Delta University, Amassoma, Bayelsa State. Glob J Pharmaceu Sci. 2024; 11(5): 555817. DOI:10.19080/GJPPS.2024.11.555817

Acknowledgment

There was no conflict of interest among the authors. The researchers appreciated the statistician,

participants, and researchers for the time.

Conflict of Interest

The Researchers declare that there was no conflict of interest.

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DOI: 10.19080/GJPPS.2024.11.555817

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