The sales pattern of analgesics for pain management in community pharmacies within uyo metropolis

Jessica Imeh Awofisayo[1], Sunday Olajide Awofisayo*[1,2], Rita Young Isong[2], Precious Joshua Edem[3]

1. Bioscientific Research and Development Ltdgte, 151b Aba Road, Ikot Ekpene, Nigeria
2. Department of Clinical Pharmacy and Biopharmacy, Faculty of Pharmacy, University of Uyo, Uyo, Nigeria
3. Department of Microbiology, Faculty of Biological Sciences, University of Uyo, Uyo, Akwa Ibom State, Nigeria

Correspondence
Sunday O. Awofisayo
Department of Clinical Pharmacy and Biopharmacy, Faculty of Pharmacy, Post Office Box 4257, University of Uyo
Telephone: +234-8037947338; 9078829489
Email: sundayawofisayo@uniuyo.edu.ng; bioscird69@gmail.com

ABSTRACT

Analgesics are among the most commonly used medications worldwide, often obtained from community pharmacies without prescriptions. Understanding usage patterns is essential to promote rational use and prevent misuse. This study aimed to examine the patterns of analgesic use among consumers and pharmacists in community pharmacies, focusing on types of analgesics purchased, consumer preferences, influencing factors, and pharmacists' roles in guiding use. A cross-sectional survey was conducted across selected community pharmacies. Data were obtained from 200 pharmacists and 500 consumers using structured questionnaires. Variables collected included demographic characteristics, types of analgesics sold or used, frequency of use, and factors influencing purchase decisions. The majority of consumers (65%) were aged 20–40 years, with females slightly predominating (54%). Paracetamol was the most commonly used analgesic (43%), followed by ibuprofen (15%) and diclofenac (12%). OTC analgesics accounted for 75% of sales, with 65% of consumers practicing self-medication. Cost, accessibility, advertising, and brand reputation were key drivers of consumer choice. Pharmacists reported a high level of engagement in counseling, with 85% routinely advising customers on appropriate analgesic use. Seasonal trends indicated increased purchases during the rainy season, and age-based differences in analgesic preference were observed. Analgesic use in community pharmacies is widespread, primarily driven by self-medication and influenced by socioeconomic and promotional factors. Paracetamol remains the preferred choice due to its affordability and availability. Strengthening pharmacist-led education and implementing stricter regulatory controls could improve analgesic use and minimize associated health risks.

Keywords: Analgesics, Pain management, Pharmacies, Community pharmacy services, Over-the-counter OTC, patient education

28

Introduction

Pain management is a critical aspect of healthcare, with analgesics playing a central role in alleviating discomfort associated with various medical conditions. Community pharmacies serve as accessible points for the procurement of these medications [1], making it essential to understand sales patterns and consumer behaviors related to analgesic use. This study focuses on Uyo Metropolis, Nigeria, aiming to elucidate the trends in analgesic sales and the factors influencing consumer choices between 2020 and 2024.

Pain is one of the most common reasons people seek medical attention, leading to a significant demand for analgesics in various healthcare settings. Pain management is a vital component of clinical care, and the accessibility of analgesics plays a crucial role in how effectively pain is managed in the community [2]. Community pharmacies, which are often the first point of contact for patients seeking relief, serve as an essential source of medications for managing acute and chronic pain. The sales patterns of analgesics in these pharmacies provide valuable insights into both public health trends and the effectiveness of pain management practices in the local community [3].

In Uyo Metropolis, the capital of Akwa Ibom State in Nigeria, the sale and use of analgesics is influenced by a range of factors, including socio-economic conditions, patient preferences, and the regulatory environment surrounding pharmaceutical distribution. Understanding the sales patterns of analgesics in Uyo's community pharmacies is crucial for identifying gaps in pain management, ensuring the appropriate use of analgesic drugs, and optimizing pharmaceutical services [4]. This study seeks to investigate the sales pattern of analgesics in community pharmacies within Uyo Metropolis, exploring the types of analgesics sold, factors influencing sales trends, and the implications of these patterns for pain management in the region.

Pain is generally categorized into two types: acute and chronic. Acute pain is typically the result of injury or surgery and is often transient, while chronic pain persists over time and can significantly impact the quality of life [5]. The management of pain is essential not only for improving the comfort of individuals but also for facilitating recovery and promoting overall well-being. In clinical practice, analgesics are used to relieve pain, with common categories including non-steroidal anti-inflammatory drugs (NSAIDs), opioids, acetaminophen (paracetamol), and adjuvant analgesics such as antidepressants and anticonvulsants [6].

In the context of Uyo Metropolis, analgesics are widely available in community pharmacies. However, the type of analgesics dispensed and the frequency of sales can vary based on a range of factors, including patient demographics, socio-economic conditions, options [7]. Additionally, the regulatory environment surrounding the sale of analgesics—particularly those with potential for misuse, such as opioids—can significantly influence sales trends.

Community pharmacies are an integral part of the healthcare system, particularly in resource-limited settings where access to hospitals and clinics may be constrained. In Nigeria, community pharmacies are one of the most accessible sources of medication, and they provide an essential service for the management of common ailments, including pain [8]. Pharmacists in these settings are not only dispensers of medications but also play a critical role in counseling patients on the appropriate use of analgesics, potential side effects, and alternative pain management options.

The role of community pharmacies in pain management is particularly significant given the increasing burden of chronic pain conditions such as arthritis, back pain, and neuropathic pain. In urban centers like Uyo, where population density is high and healthcare infrastructure is developing, pharmacies often serve as the primary source of analgesics for both acute and chronic pain conditions [9].

The sales pattern of analgesics in community pharmacies is influenced by multiple factors. Patient-related factors such as age, gender, income level, and health literacy can affect the demand for analgesics [10]. For instance, elderly patients, who are more likely to experience chronic pain, may have a higher demand for certain analgesics, such as NSAIDs and opioids [11]. Similarly, socio-economic factors such as income levels, access to healthcare, and the affordability of medications also play a role in shaping sales patterns [12]

The availability and cost of analgesics can also be influenced by supply chain dynamics and government regulations. For example, restrictions on the sale of opioids due to concerns about misuse and addiction can result in fluctuations in the types of analgesics that are sold in pharmacies [9]. The presence or absence of over-the-counter analgesics and the reliance on prescription-only drugs also affect sales patterns. Additionally, local healthcare policies, including the promotion of generic medications, may encourage the sale of certain types of analgesics over others [13].

Uyo Metropolis, the capital city of Akwa Ibom State, is located in southeastern Nigeria. The city has witnessed rapid urbanization and population growth in recent years, leading to increased demand for healthcare services, including pain management [14]. With a population that is diverse in age, socio-economic status, and health needs, Uyo presents a unique setting for studying the sales patterns of analgesics in community pharmacies.

The healthcare infrastructure in Uyo is gradually improving, with both public and private healthcare

facilities providing a range of services. However, like many other parts of Nigeria, there are challenges related to access, affordability, and quality of care. These challenges make community pharmacies a critical component of the healthcare delivery system. Understanding the sales trends of analgesics in Uyo's community pharmacies can provide valuable insights into the local demand for pain management and help identify areas where improvements in healthcare access and education are needed [15].

The rationale for this research stems from the need to understand how analgesics are dispensed in community pharmacies and the broader implications for pain management in the local community. By analyzing sales trends, the study can offer recommendations for improving the availability and appropriate use of analgesics, e 7nsuring that patients receive effective and safe pain management.

Methods

Research design

A cross-sectional survey design was employed, targeting community pharmacies and consumers within Uyo Metropolis. Data collection involved structured questionnaires administered to pharmacists and consumers, alongside the analysis of sales records from participating pharmacies.

Study population

The study targeted pharmacists working in community pharmacies within Uyo Metropolis. These pharmacists were selected as they directly interact with consumers, have access to medications, and are responsible for ensuring the authenticity of drugs dispensed to patients. The second target group was consumers who purchase medications from community pharmacies in the metropolis. This group included individuals from different age groups, gender, and socio-economic backgrounds, ensuring a diverse representation of the general public.

Sampling method

A stratified random sampling technique was used to select community pharmacies within Uyo Metropolis. Pharmacies were categorized based on their location (urban, suburban) and size (small, medium, large). From each category, a random selection of pharmacies was made to participate in the study. Consumers were selected using convenience sampling at the time of their visit to participating pharmacies.

Inclusion criteria

For consumers, individuals who had recently purchased over-the-counter or prescription medications in the study site were eligible to participate in the study.

Data collection

The data collection process involved structured questionnaires, sales records analysis, and observational data. Two sets of structured pharmacists and consumers, respectively. The pharmacists' questionnaire (PQ) included sections on their knowledge of counterfeit drugs, practices for detecting counterfeit medications, awareness of regulatory measures, and training on counterfeit detection. It also included questions on the extent to which counterfeit drugs were encountered in their practice, and how they dealt with such instances.

The consumers' questionnaire (CQ) focused on consumer awareness of counterfeit drugs, knowledge of security features on medications (e.g., holograms, QR codes), attitudes toward counterfeit drugs, and purchasing behaviors. It also addressed how consumers typically verify the authenticity of their medications.

The pharmacists' questionnaires were distributed to participants within the selected pharmacies. The pharmacists were given the option of completing the questionnaires in person or via an online platform, depending on convenience.

The consumers' questionnaires were administered by trained enumerators in participating pharmacies. Enumerators approached consumers while they were waiting to complete their transactions and requested their voluntary participation.

Sales records analysis

To assess the prevalence of counterfeit drugs in community pharmacies, sales records from participating pharmacies were reviewed. Pharmacists were asked to provide anonymized records of drug sales over a defined period (e.g., 6 months), highlighting instances where counterfeit drugs were suspected or confirmed. These records provided quantitative data on the frequency of counterfeit drugs sold and the types of drugs most commonly involved.

Ethical considerations

All participants (pharmacists and consumers) were informed of the purpose of the study and the voluntary nature of participation. They were required to sign informed consent forms before participating in the study. Participants' responses were anonymized, and all data collected were stored securely. Personal information, including pharmacy names and consumer identities, was kept confidential and not shared with third parties Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the University of Uyo, ensuring compliance with ethical standards for research involving human participants.

Results

Demographics of respondents

A total of 200 community pharmacists and 500 consumers participated in the study. The majority of consumers (65%) were aged between 20 and 40 years, with a slight female predominance (54%). Most pharmacists (78%) had over five years of professional

57% were female. The majority of pharmacists (39%) were aged between 30-45 years, followed by 25% aged 46-60 years, and 18% under 30 years. A significant proportion (78%) had more than 5 years of experience in pharmacy practice, while 10% had between 2-5 years, and 12% had less than 2 years of practice.

In the study, 50% of pharmacies were classified as independent, 30% were part of chain pharmacies, and 20% were located in pharmacy shops attached to hospitals or clinics.

Of the 500 consumers surveyed, 58% were female and 42% were male. The study revealed 40% of consumers between 25-35 years, 30% being 36-45 years, 20% within 46-60 years, and 10% were above 60 years.

70% of consumers had at least a secondary school education, 20% had a tertiary education, and 10% had a primary school education or less. Many (45%) of consumers were in the middle-income group, 30% were in high-income groups, and 25% were in low-income brackets.

Analgesic sales trends

Analysis of sales data revealed that OTC analgesics accounted for approximately 75% of total analgesic sales. Paracetamol emerged as the most purchased analgesic, followed by ibuprofen and diclofenac. There was a notable increase in the sales of natural and herbal analgesics, reflecting a growing consumer preference for alternative pain management options (Figure.

Factors influencing consumer choices

The study identified several factors influencing consumer choices:

Pharmacies that engaged in advertising experienced increased consumer patronage. Consumers reported that advertisements enhanced their perception of product quality and influenced their choice of purchase location. The study corroborates findings from previous research indicating that advertising positively influences consumer behavior in the pharmaceutical sector. Pharmacies that invested in advertising reported higher sales volumes and enhanced customer loyalty. Consumers preferred pharmacies that were easily accessible and offered extended operating hours. Cost considerations significantly impacted consumer choices, with a preference for affordable generic options.

Types of pain relievers sold

Paracetamol (43%) was the most commonly sold pain reliever, followed by ibuprofen (15%) and diclofenac (12%). Opioid-based pain relievers (e.g., tramadol) were sold in smaller quantities, accounting for approximately 7% of the total pain reliever sales. Topical analgesics (creams, gels) made up around 5% of sales (Figure 1).

Frequency and pattern of sales

On average, participating pharmacies reported selling between 200 to 500 packs of pain relievers per month, with higher sales volumes for paracetamol and ibuprofen were recorded. Sales of pain relievers showed some seasonal variation. The highest sales occurred during the rainy season (increased incidence of common colds and musculoskeletal pain), and the lowest sales during the dry season (fewer health-related complaints).

The group (18-35 years) accounted for 40% of total pain reliever sales, with paracetamol was the most commonly purchased product. Middle-aged adults (36-60 years)accounted for 35% of sales, purchasing a wider range of pain relievers, with a preference for ibuprofen and diclofenac for musculoskeletal pain.

The elderly (i.e., 60+ years) consumers made up about 25% of sales, mostly purchasing paracetamol and topical analgesics for chronic pain and arthritis. Consumers (50%) reported relying on pharmacists for advice on pain management. Physicians were the second most common source (30%), while 20% of consumers relied on internet-based resources or family and friends for guidance. Consumers (65%) indicated that they self-medicate for mild to moderate pain without a prescription. Paracetamol was the most commonly used medication for self-medication (70%), followed by ibuprofen (20%) and diclofenac (10%).

Furthermore, consumers (35%) indicated that they consulted a healthcare professional (pharmacist or doctor) before using a pain reliever, especially for chronic pain or more severe conditions. Consumers (60%) cited cost as a primary factor influencing their choice of pain reliever, with paracetamol being the most affordable option. Furthermore, 25% of consumers chose pain relievers based on brand reputation, while 15% prioritized product packaging (e.g., holograms, seals for authenticity).

Consumers (50%) reported using pain relievers on anoccasional basis(e.g., for headaches, menstrual pain, or occasional musculoskeletal pain). Consumers (20%) used pain relievers frequently (e.g., for chronic conditions like arthritis or migraines), with a preference for ibuprofen ordiclofenac. Lastly, 10% of consumers with chronic pain conditions reported usingopioid-based pain relievers(e.g.,tramadol), although these were less commonly dispensed in pharmacies.

Pharmacists (85%) indicated that they routinely provide counseling on the appropriate use of pain relievers, emphasizing the correct dosage and potential side effects.

Self-Medication Guidance: 90% of pharmacists reported advising consumers against long-term self-medication without professional supervision, particularly for pain relievers like diclofenac and ibuprofen due to their potential side effects.

The majority (80%) of pain relievers sold were over-the-counter (OTC) products. Only 20% of sales involved prescription-only medications, mainly opioids or stronger analgesics for more severe or chronic pain. Pharmacists frequently referred consumers to doctors for stronger medications or cases of persistent pain (50% of cases), especially for musculoskeletal pain, joint pain, and headaches.

Most pharmacies (90%) reported having a regular stock of commonly used pain relievers like paracetamol and ibuprofen. Fewer pharmacies (60%) stocked diclofenac or opioid-based medications due to regulatory restrictions and storage requirements. Pharmacists (70%) reported that generic brands of pain relievers were sold at a higher volume than brand-name drugs due to cost concerns.
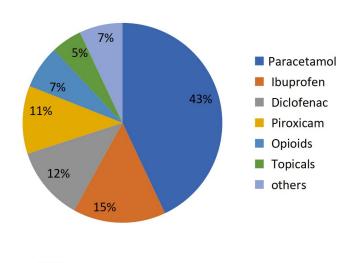
Consumer satisfaction

Consumers (75%) reported being satisfied with the pain relievers they purchased, particularly paracetamol for mild pain and ibuprofen for moderate pain. However, 20% of consumers were dissatisfied with pain relief for chronic or severe pain and reported inconsistent results with their current pain relievers, prompting some to seek stronger alternatives.

A number of consumers (15%) reported experiencing side effects from pain relievers, including stomach upset (ibuprofen), and drowsiness (opioids).

Table 1: Demographics of respondents (pharmacists) in the study

Characteristics	Number	Percentage Occurrence
Gender		
Male	86	43
Female	114	57
Age		
<30	36	18
30-45	78	39
46-60	50	25
>60		
Years of experience		
<2 years	24	12
2-5 years	20	10
>5 years	156	78

Table 2: Demographics of respondents (Clients) in the study

Characteristics	Number	Percentage Occurrence
Gender		
Male	210	42
Female	290	58
Age		
25-35	190	38
36-45	150	30
46-60	110	22
>60	50	10
Education		
Primary	20	10
Secondary	140	70
Tertiary	40	20
Income level		
Low	125	25
Middle	225	45
High	150	30

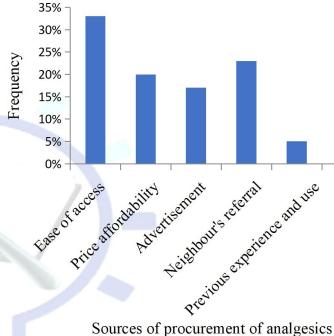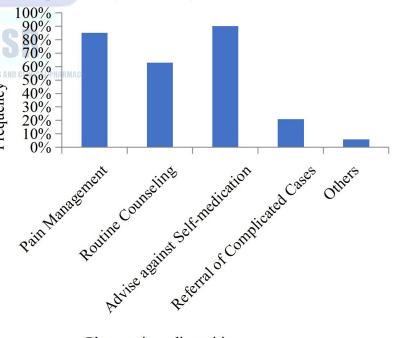Sources of procurement of analgesics

Figure 2: Reasons for use of analgesics by respondents (consumers)

Pharmacist.s disposition

Figure 3: Disposition to use/recommending of analgesics by pharmacist respondents

Figure 1: Distribution of analgesic agents procured by respondents (clients) in the study

Discussion

The study provides valuable insights into the pattern of analgesic use in community pharmacy settings, revealing significant trends in consumer behavior, pharmacy operations, and pharmacist involvement. The findings shed light on demographic distributions, sales patterns, and factors influencing consumer choices, with important implications for public health policy, pharmacy practice, and patient education.

A total of 500 consumers participated in the study, with the majority (65%) aged between 20 and 40 years, and a slight female predominance (54%) (Table 1). This is reflective of a demographic that is generally more health-conscious, active, and likely to engage in self-care practices such as self-medication. It also aligns with global patterns where women are more likely than men to seek healthcare services and purchase over-the-counter (OTC) medications, including analgesics [16].

Among pharmacists, 43% were male and 57% female, with most (78%) having over five years of experience. This indicates a relatively experienced workforce, which is encouraging from a patient safety perspective, especially given the risks associated with improper analgesic use. The age distribution of pharmacists, with a significant portion (39%) aged between 30 and 45, suggests a mature professional cohort that may influence responsible dispensing practices and patient counseling [17].

The data indicate that 50% of the surveyed pharmacies were independent, while 30% belonged to pharmacy chains, and 20% were located in or near hospitals. This distribution suggests that independent pharmacies play a dominant role in community healthcare delivery. It also reflects the potential for variation in business models, marketing strategies, and customer engagement approaches, which may influence analgesic sales patterns [18].

Ease of access and extended operating hours were reported as key factors affecting consumer choice, emphasizing the need for pharmacies to consider convenience as part of their service delivery. With many consumers valuing availability and proximity, pharmacies that optimize these aspects may enjoy increased patronage.

The study revealed that OTC analgesics accounted for 75% of total analgesic sales, with paracetamol being the most commonly purchased (43%), followed by ibuprofen (15%) and diclofenac (12%). The dominance of paracetamol is unsurprising, given its wide availability, affordability, and perceived safety profile. These findings echo global trends and reflect paracetamol's status as a first-line treatment for mild to moderate pain [19].

Opioid-based pain relievers (e.g., tramadol) accounted for a small portion (7%) of total analgesic sales, likely due to regulatory restrictions and concerns around abuse and dependence. Topical analgesics also constituted a modest proportion of sales (5%), often favored by older adults with localized pain conditions [20].

Sales data revealed a seasonal pattern, with higher sales volumes during the rainy season, possibly due to increased prevalence of colds, flu, and musculoskeletal complaints. Such variations suggest that environmental factors may influence consumer demand and should be taken into account in inventory planning and public health messaging [21].

Age-based consumption trends showed that the 18–35 age group accounted for 40% of total pain reliever sales, favoring paracetamol for conditions like headaches, menstrual pain, and general discomfort. Middle-aged consumers (36–60 years) showed more diverse preferences, often choosing ibuprofen and diclofenac for musculoskeletal and inflammatory pain [22]. The elderly (60+ years) accounted for 25% of sales, with a higher reliance on paracetamol and topical analgesics, likely due to chronic conditions like arthritis and concerns about adverse effects associated with NSAIDs.

Several factors influenced analgesic selection. Cost emerged as a major determinant, with paracetamol preferred for its affordability. This underscores the socioeconomic considerations that affect healthcare decisions in low- and middle-income populations. About 45% of consumers were from middle-income groups, with 25% in low-income categories, further reinforcing the importance of cost-effective treatment options [23].

Advertising also played a substantial role, with consumers reporting that it enhanced their perceptions of product quality and influenced their choice of pharmacy. Pharmacies that invested in promotional strategies reportedly experienced higher patronage and sales volumes. This finding supports prior research on the role of advertising in shaping pharmaceutical consumer behavior and suggests that strategic marketing may be beneficial for community pharmacies.

Additional factors included brand reputation (25%) and product packaging/authenticity features (15%), indicating that perceived quality and safety features are crucial in consumer decision-making [24].

The study found that 65% of consumers practiced self-medication for mild to moderate pain, with paracetamol (70%) being the most used, followed by ibuprofen (20%) and diclofenac (10%). This reflects both the accessibility of these medications and the common belief that they are safe for unsupervised use. However, long-term or inappropriate use of NSAIDs can lead to serious adverse effects, including gastrointestinal complications, kidney damage, and

cardiovascular events [25].

Only 35% of consumers sought professional advice before using pain relievers, mainly for chronic or severe pain. Pharmacists were the most consulted healthcare providers (50%), ahead of physicians (30%) and informal sources like the internet or friends (20%). This highlights the critical role of pharmacists in public health education and the need for continued efforts to ensure responsible medication use.

Encouragingly, 85% of pharmacists reported providing counseling on appropriate analgesic use, and 90% cautioned against long-term self-medication, particularly with NSAIDs like ibuprofen and diclofenac. This reflects a strong commitment to promoting safe medication practices and reducing the risk of adverse drug events. However, the gap between consumer practices and pharmacist advice indicates a need for enhanced communication strategies, public awareness campaigns, and possibly regulatory measures to promote appropriate analgesic use [26].

The findings underscore the importance of community pharmacists in managing pain and guiding medication use. Given the high prevalence of self-medication and reliance on OTC analgesics, regulatory bodies should consider policies that support pharmacist-led interventions, including medication therapy management and public education initiatives.

Additionally, efforts should be made to standardize the labeling, pricing, and promotion of OTC analgesics to reduce misinformation and prevent misuse [27]. The increasing trend toward herbal alternatives also warrants regulatory attention to ensure product safety and efficacy.

Conclusion

This study highlights significant patterns in analgesic use across community pharmacies, influenced by demographic, economic, and behavioral factors. Paracetamol remains the most widely used analgesic, while self-medication is prevalent, particularly among younger adults. Pharmacists play a vital role in guiding safe use, yet more robust public education and regulatory oversight are needed to optimize pain management practices and safeguard public health.

Ethical Consideration

Data availability

All authors contributed to the conception and design of the study. [Insert Author Name(s)] collected and analyzed the data. [Insert Author Name(s)] drafted the manuscript. All authors critically reviewed the content and approved the final version for submission.

Conflict of interest

The authors declare that they have no conflicts of interest relevant to the content of this article.

Compliance with ethical guidelines

This study was conducted in accordance with the ethical standards set forth in the Declaration of Helsinki and the guidelines of the University of Uyo Institutional Review Board. Ethical approval for this research was obtained from the institution, and informed consent was obtained from all participants involved in the study.

References

1. Aniefiok OA, Emem AS, Udoka MO. Drug advertising and purchase behaviour of residents of Uyo Metropolis: A study of the retail pharmaceutical industry. European Journal of Marketing and Management Sciences, 2022;5(1).

2. Osemene KP, Ihekoronye RM. Relationship marketing practices in community pharmacies in south-western Nigeria. East and Central African Journal of Pharmaceutical Sciences, 2019;22(1).

3. Aguwa CN, Ukwe CV, Ekwunife OI. Self-medication in a Nigerian urban population. Tropical Journal of Pharmaceutical Research, 2020;19(1):1-6.

4. Eze UI, Eferakeya AE. Drug information provision in Nigerian community pharmacies. Pharmacy World and Science, 2021;43(1):1-5.

5. Fadare JO, Tamuno I. Antibiotic self-medication among university medical undergraduates in Northern Nigeria. Journal of Public Health and Epidemiology, 2020;12(5):217-220.

6. Auta A, Banwat SB, Sariem CN, Shalkur D, Nasara B. Medicines in pharmacy students' residence and self-medication practices. Journal of Young Pharmacists, 2021;13(3):163-167.

7. Osemene KP, Lamikanra A. A study of the prevalence of self-medication practice among university students in Southwestern Nigeria. Tropical Journal of Pharmaceutical Research, 2020;11(4):683-689.

8. Afolabi AO. Factors influencing the pattern of

Content of home pharmacies and self-medication practices in households of pharmacy and medical students in Zagreb, Croatia: findings in 2001 with a reference to 1977. Croatia Medical Journal, 2005;46(1):74–80.self-medication in an adult Nigerian population. Annals of African Medicine, 2021;7(3):120-127.

9. Adedeji WA, Akinyemi JO, and Fawole OI. Pattern and predictors of medication use among adults in southwestern Nigeria: A community-based cross-sectional study. Pharmacology Research and Perspectives, 2023; 11(1), e1017. https://doi.org/10.1002/prp2.1017 PMC

10. Smith H. The epidemiology of pain. In: McMahon S, Koltzenburg M, editors. Wall &Melzack's Textbook of Pain. 6th ed. Philadelphia: Elsevier; 2020. p. 211–25.

11. Davis M, Williams S. Analgesics in the treatment of acute and chronic pain. Journal of Clinical Pharmacology, 2021;61(2):113–22.

12. Okoro O, Ajayi S. Patterns of analgesic use in community pharmacies in Lagos, Nigeria. Pharmacy Practice (Granada), 2022; 20(1):17–23.

13. Oyedeji O, Alabi O. The role of community pharmacies in managing pain in Nigeria. West African Journal of Pharmacy, 2020;31(2):56–60.

14. Omoruyi F, Idowu O. Pain management in Nigerian urban settings: The role of community pharmacies. International Journal of Clinical Pharmacy, 2023;45(3):122–8.

15. Eze M, Akinmoladun F. Socio-economic factors affecting analgesic sales in community pharmacies. Nigeria Journal of Pharmaceutical Sciences, 2021;22(3):89–95.

16. Obasi I, Uzochukwu B. Pain management in elderly patients in Nigeria: A review. Geriatric Pharmacology, 2021; 12(1):36–40.

17. McGettigan P, Henry D. Use of non-steroidal anti-inflammatory drugs that elevate cardiovascular risk: an examination of sales and essential medicines lists in low-, middle-, and high-income countries. PLoS Med, 2013;10(2):e1001388.

18. Abdel Shaheed C, Maher CG, Williams KA, McLachlan AJ. Efficacy, tolerability, and safety of paracetamol for spinal pain and osteoarthritis: systematic review and meta-analysis of randomisedplacebo controlled trials. British Medical Journal,

Tunde A, Akinsola M. Generic drug policies and analgesic use in Nigerian pharmacies. American Journal of Pharmacy and Health Research, 2022;9(7):1003–10. 2015;350:h1225.

19. Rasu RS, Sohraby R, Cunningham L, Knell ME. Uninsured and older adults were more likely to use potentially inappropriate medications. Journal of Clinical Epidemiology, 2005;58(7): 686–693.

20. Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. BMC Family Practice, 2002;3:17.

21. Hughes CM, McElnay JC, Fleming GF. Benefits and risks of self medication. Drug Safety, 2001;24(14):1027–1037.

22. Gupta R, Malhotra A, Malhotra P, Agarwal M. Pattern of use of analgesics in pain management among patients attending a tertiary care hospital in North India. International Journal of Basic Clinical Pharmacology, 2017;6(10):2466–2470.

23. Sihavong A, Vonglokham M, Phengdy B, Paphassarang C, Thomsen S, Wahlström R. Community perception and use of paracetamol in Vientiane Province, Lao PDR. Southeast Asian Journal of Tropical Medicine and Public Health, 2006;37(2):392–396.

24. Cuzzolin L, Benoni G. Safety of nonprescription drugs. Journal of Pharmaceutical Sciences, 2010;99(9):4028–4038.

25. Saeed MS, Al-Hamdan NA, Bahnassy AA. Prevalence and associated factors of self-medication among university students in Saudi Arabia. North American Journal of Medical Sciences, 2014;6(6): 267–271.

26. Aljinovic-Vucic V, Trkulja V, Lackovic Z. Content of home pharmacies and self-medication practices in households of pharmacy and medical students in Zagreb, Croatia: findings in 2001 with a reference to 1977. Croatia Medical Journal, 2005;46(1):74–80.

27. Tunde A, Akinsola M. Generic drug policies and analgesic use in Nigerian pharmacies. American Journal of Pharmacy and Health Research, 2022;9(7):1003–10.