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ORIGINAL RESEARCH ARTICLE

Prevalence and Usage Pattern of Over-the-Counter Drugs Among Traders in Nnewi North Local Government Area

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Abstract

Background Over-the-counter drugs are commonly used for self-medication to prevent diseases and preserve health. However, inappropriate use poses significant health risks. Literature on over-the-counter drugs among traders is sparse. This study aimed to estimate the prevalence and patterns of over-the-counter drug use among traders in Nnewi North LGA, Anambra State, Nigeria.

Methods A community-based cross-sectional study was carried out in Nnewi, Anambra State, Nigeria, using an interviewer-administered structured questionnaire. The study participants (n = 280) were selected through a multi-stage sampling technique. The structured questionnaire served as the primary data collection tool. The instrument was pretested and validated (Cronbach's alpha = 0.756). Data were analysed using SPSS version 26. Descriptive and inferential statistics, including binary logistic regression, were used to determine factors associated with over-the-counter use.

Results The overall prevalence of over-the-counter drug use was 88.9% (95% CI: 85.0%–93.0%). The most commonly used OVER-THE-COUNTER drugs were analgesics/antipyretics (paracetamol, ibuprofen), antibiotics (amoxicillin, metronidazole), and antimalarials. Logistic regression analysis revealed no significant associations between over-the-counter drug use and sociodemographic factors such as age, marital status, education, or income ($p > 0.05$). The main reasons for self-medication were perceived ability to manage minor illnesses independently (98.3%) and the ease of accessing pharmacies (71.5%).

Conclusion Over-the-counter drug use was highly prevalent among traders, mainly involving analgesics, antibiotics, and antimalarials. The findings reveal inappropriate self-medication practices driven by perceived ability to manage minor conditions and ease of drug accessibility. These results underscore the need for pharmacist counselling, public awareness, and improved regulation to promote responsible over-the-counter drug use.

Keywords Marketing, Over-the-counter drugs, Prevalence, Self-medication

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1 Introduction

The decision to use over-the-counter (OTC) drugs without consulting authorized health professionals is a recognized public health problem worldwide.[1] Among the drugs most commonly used by the population, some require a prescription before dispensing,[2] unlike OTC drugs, which consumers can buy without a medical prescription.[3]

OTC drugs are medications that can be acquired without a prescription, depending on each country's specific regulations.[4] These drugs are generally considered safe and appropriate for unsupervised use by healthcare professionals.[3] Pharmacies traditionally sell them to treat extremely mild symptoms that don't need to be seen by a doctor, including muscle pain, seasonal allergies, etc.[4] A general guideline is to seek medical attention if symptoms persist after one or two days of OTC treatment. However, due to inadequate regulations regarding drugs in many developing countries, as well as some developed ones, there is easy availability of potentially harmful medications as OTC drugs that ideally should only be accessed with a doctor's prescription.[4] Reduced costs, ease of use, accessibility, and the capacity to manage one's own health condition are some of the potential benefits of OTC drugs.[5] However, there is growing evidence that misuse, overuse, or dependency on OTC drugs can cause harm.[6]

OTC medications constitute an essential part of the modern healthcare systems; however, the ease of access also carries notable risks.[7] Globally, the practice of self-medication with OTC drugs is more prevalent than prescription medications.[8] The World Health Organization (WHO) reports that over 50% of all medications used worldwide are prescribed, dispensed, or sold inappropriately, and 50% of patients fail to use these medications correctly, leading to increased rates of morbidity and mortality,[9] underscoring the need for greater awareness and regulatory oversight in the use of OTC drugs. Research shows that only approximately 10%-30% of symptoms experienced by individuals are brought to a physician's attention, with most cases being either endured or self-treated.[10]

The use of OTC drugs is reportedly increasing worldwide, but this trend has not translated into improved health outcomes.[11] The prevalence of self-medication with OTC globally ranges from 11.2 to 93.7%, depending on the target population and country.[12] This indicates that a significant portion of the global population uses medications without professional medical guidance. Self-medication with OTC drugs is a common practice in both developed and developing countries. For instance, studies show self-medication rates in Pakistan, Serbia, and India was 76%,[13] 79.9%,[14] and 78.6%,[15] respectively. In Europe, research studies in Spain reported self-medication incidence ranging from 14% to 90.1%,[16] while in Africa the frequency ranges from 11.9% to 75.7%[17] and from 31.0%[18] to 85.4%[19] in Nigeria. This widespread practice of OTC medications is influenced by a range of factors, including ease of access to drugs, limited availability of healthcare services, patient dissatisfaction with healthcare providers, high costs of prescription medications, and various socioeconomic and demographic variables such as educational level, income, age, and gender.[20] However, cultural values may also impact the prevalence rates.

Though global studies have examined OTC drug use among specific groups such as students, pregnant women, and children, limited research has focused on traders. In Nigeria, while drug use among certain demographics has been studied, little is known about OTC drug use among traders. Traders are a population of interest when assessing the extent of the hard work required in their daily trade. Traders are particularly important in the Nigerian context, owing to the fact that they are very active economically[21] and they include young and older men and women who own stalls or peddle their wares in local markets. They typically work long hours in crowded markets under stressful economic conditions and have limited access to formal healthcare services. This combination of occupational stress, limited healthcare access, and economic pressure increases their likelihood of self-medicating with OTC drugs. Understanding OTC use in this group is crucial to inform targeted interventions and policies. Therefore, the current study aims to assess the prevalence of OTC drug use among traders in Nnewi North Local Government Area (LGA) of Anambra State, Nigeria.

2 Methods

Study design and setting

A community-based cross-sectional study was conducted in Nnewichi and Uruagu Nnewi, Anambra state, Nigeria. These locations were selected to represent the trader population, providing insight into OTC drug use within the Nnewi North LGA.

Study population

The study population included randomly selected individuals aged 18 years and older from the selected markets, with data collection occurring from August 28th to November 27th, 2024. Traders who had been in business for less than one year were not included in the study.

Sampling method

The study participants were selected through a multi-stage

sampling method. In the first stage, two communities were randomly selected from the four communities of Nnewi town using a random number generator. In the second stage, one market from each of the two communities was randomly selected using a simple random sampling technique. In the third stage, fourteen lines were selected from the various sections in each of the selected markets using simple random sampling techniques. The fourth stage involved systematically selecting the seventh shop from a randomly chosen starting point on each line in both markets until the required sample size in each market was reached. In shops with multiple traders, simple random sampling was used to select the participants for the study.

Sample size

The sample size was determined based on Kish Leslie's formula, "n = (z^2×p × q)/d^2", based on previously reported prevalence of OTC use of 80.54%.[19] Assuming a degree of precision of 5%, a standard normal deviate of 95% (1.96), and an attrition rate of 10%, the estimated minimum sample size was 280. No adjustment was made for the multistage design, which may have led to an overestimation of precision; this is acknowledged as a limitation.

Data collection tools and procedures

A pre-tested, interviewer-administered questionnaire was used for data collection. The instrument was developed following the structure of other similar validated tools from previous studies, with slight modifications based on feedback from the pretest to align with the study's objectives. The instrument underwent pilot testing and demonstrated good reliability (Cronbach's alpha = 0.756). It consisted of three sections: Section A: Sociodemographic characteristics of participants, such as age, gender, educational level, and residential area. Section B: Practices regarding OTC drug use and assessment of its prevalence. Section C: Reasons for self-medication with OTC drugs. Data was collected through interviews using a structured Google Form administered by the researcher and a trained research assistant. Although digital tools facilitated data collection, entry, and storage, onsite assistance with digital completion was provided to respondents to minimise selection bias and prevent duplicate entries and submissions.

Operational Definitions

OTC drug use was defined as the use of any non-prescribed medication within the past six months.

Data processing and analysis procedure

The questionnaire was collected immediately, after which it was cross-checked to ensure proper completion and the absence of blank spaces. The Data were entered, cleaned, and coded in Excel, then exported to and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were presented as frequencies, means, and percentages, and the variables were presented using appropriate tables and charts. Chi-square tests were used to assess associations between categorical variables at a 95% confidence level. Prevalence estimates were presented with 95% confidence intervals. In addition to bivariate analyses, binary logistic regression was performed to identify independent predictors of OTC drug use. Adjusted odds ratios (AORs) with 95% confidence intervals were calculated, and statistical significance was set at $p < 0.05$. Permission was obtained from the traditional ruler of the town as well as the market authorities to carry out the research. Participants were well informed about the study objectives, and verbal informed consent was obtained before administration of the questionnaire, which also emphasized the right to non-participation. Data confidentiality was preserved according to the Helsinki Declaration of Bioethics.

3 Results

Sociodemographic Profile

The study involved male and female traders with a mean age of 38.77 ± 12.65 years, and mainly between 18 and 39 years (51.1%). There are more females (71.1%) than males (28.9%), mainly Christians (97.9) and of Igbo ethnicity (99.6%). Most respondents are married (71.8%), have secondary education (63.2%) as the highest level of education, and earn a monthly income of less than 50,000 Naira (74.6%). The majority have been trading mainly between 1-5 years (38.6%) with an average of 11.21 ± 9.69 years (Table 1).

Prevalence of OTC Drug Use Among Traders in Nnewi

Table 2 shows the prevalence of the practice of OTC drug use among traders in Nnewi. The overall prevalence of OTC drug use among traders was 88.9% (95% CI: 85.0%–93.0%). Chi-square analysis indicated a statistically significant association ($\chi^2 = 169.73$, df = 1, $p < 0.001$). Among these, 47.0% reported using OTC drugs occasionally, while 36.1% reported frequent use. Most traders (73.6%) took drugs based on self-decision for conditions such as fever, headache, or pain, and 57.4% reported consuming OTC drugs whenever they felt sick, compared to 42.6% who used them for minor conditions only.

Source, Storage, and Duration of OTC Drug Use

As shown in Table 2, Pharmacies and chemists were the primary sources of OTC medications, with 80.0% obtaining drugs from chemists. About 48.6% of

Table 1 Sociodemographic profile of the respondents (n = 280)

Variable	Frequency	Percent
Age (years)		
18-37	143	51.1
38-57	112	40
58-78	25	8.9
Mean ± SD		**38.77 ± 12.65**
Sex		
Female	199	71.1
Male	81	28.9
Marital status		
Single	70	25
Married	201	71.8
Divorced/Separated	4	1.4
Widowed	5	1.8
Religion		
Christianity	274	97.9
Traditionalist	6	2.1
Ethnicity		
Igbo	279	99.6
Isoko	1	0.4
Highest level of education		
No formal education	5	1.8
Primary	25	8.9
Secondary	177	63.2
Tertiary	59	21.1
Postgraduate	14	5
Average monthly family income (Naira)		
< 50,000	209	74.6
100,000-149,000	18	6.4
150,000-199,000	13	4.6
200,000-299,000	21	7.5
> 300,000	19	6.8
How long have you been trading (years)		
1-5	108	38.6
6-10	66	23.6
11-15	39	13.9
16-20	34	12.1
21-25	12	4.3
26-30	6	2.1
> 30	15	5.4
Mean ±SD		**11.21 ± 9.69**

respondents purchased OTC drugs to store for future use. The most common storage locations were the bedroom or an open table (84.3%), whereas 15.7% stored drugs in a medicine box. Regarding disposal, 44.6% discarded medications within six months of use, 30.6% discarded them after expiry, and 23.1% were unsure when to discard.

Table 2 Distribution of responses on the prevalence of the practice of OTC drug use among traders in Nnewi (n = 280)

Variable	Frequency	Percent
In case of fever/headache/pain/cough/ other cases, you take drugs based on		
Doctor's advice	21	7.5
Self-decision	206	73.6
Advice of family members/friends	17	6.1
Local pharmacy compounder	34	12.1
Never take a medicine	2	0.7
Practice self-medication with OTC drugs		
No	31	11.1
Yes	249	88.9
Frequency of practice of self-medication with OTC drugs#		
Often	90	36.1
Occasionally	117	47.0
Seldom	42	16.9
When do you consume OTC drugs#		
When symptoms are minor	106	42.6
Whenever I feel sick	143	57.4
Place for obtaining OTC drugs#		
Pharmacy	33	19.3
Chemist	216	80
Obtain OTC drugs to keep for future use#		
No	128	51.4
Yes	121	48.6
Length of stay of OTC drug before discard*		
0-6 months after use	54	44.6
6-12 months after use	2	1.7
After it has expired	37	30.6
I don't know	28	23.1
Place of storage of OTC drugs*		
Medicine box	19	15.7
Bedroom/on an open table	102	84.3

#: (n = 249); *: (n = 121)

Over-the-counter drug use among traders in Nnewi was high, with a prevalence of 88.9% (95% CI: 85.0%–93.0%), and the association was statistically significant ($\chi^2 = 169.73$, $p < 0.001$) as shown in Figure 1.

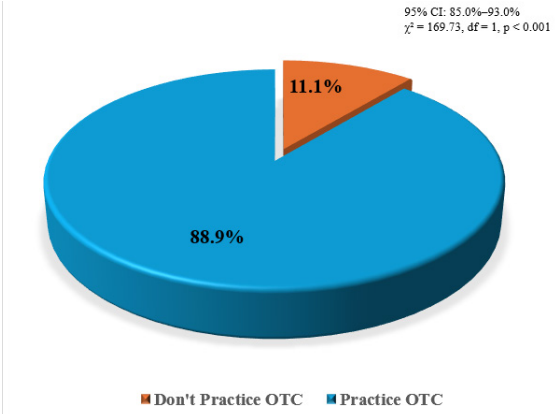
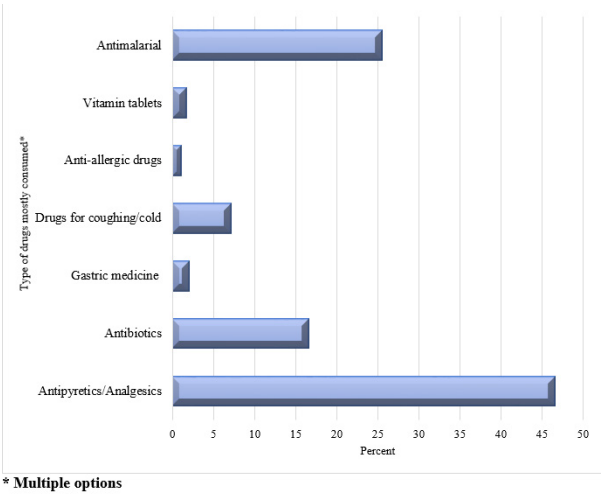


Figure 1 Prevalence of OTC drug use among traders in Nnewi (n = 280)

The Type of Drugs Mostly Consumed by Traders in Nnewi

The most frequently used OTC drugs were analgesics/antipyretics (46.5%), followed by antimalarials (25.5%), and antibiotics (15.9%) such as amoxicillin and metronidazole. Vitamins and anti-allergic drugs were the least reported (1.6% and 1.0%, respectively), as shown in Figure 2.



*** Multiple options**

Figure 2 Distribution of study participants based on the type of OTC drugs used (n = 280)

Reasons Associated with OTC Drug Use Among Traders in Nnewi

Table 3 shows the distribution of responses on reasons associated with OTC drug use among traders in Nnewi. It is shown that "if it's a minor condition, I can take the initiative," and "If it is a minor condition, the pharmacy is a reliable place to go" were very influential in their practice of self-medication with OTC drugs. Also, "Going to the hospital wastes my time" and "It is necessary for me to have drugs at home that I can use to treat minor conditions" were seen to be influential in their practice of self-medication with OTC drugs. However, "I do not like visiting the hospital" was not influential in their practice of self-medication with OTC drugs. Thus, the most influential factors included the belief that they could manage minor illnesses independently (98.3%) and that pharmacies were easily accessible (71.5%). Other notable reasons were the perception that hospital visits waste time (62.1%) and the necessity of keeping drugs at home for minor ailments (63.6%).

Table 3 Distribution of responses on reasons associated with OTC drug use among traders in Nnewi

Reason for purchasing OTC drugs	SA n (%)	A n (%)	N n (%)	D n (%)	SD n (%)	Mean
I do not like visiting the hospital.	5 (1.8)	110 (39.3)	82 (29.3)	81 (28.9)	2 (0.7)	3.12
Going to the hospital wastes my time	53 (18.9)	121 (43.2)	71 (25.4)	33 (11.8)	2 (0.7)	3.67
If it's a minor condition, I can take the initiative.	113 (40.4)	165 (58.9)	2 (0.7)	0 (0)	0 (0)	4.39
If it is a minor condition, the pharmacy is a reliable place to go.	108 (38.6)	120 (42.9)	52 (18.6)	0 (0)	0 (0)	4.20
It is necessary for me to have drugs at home that I can use to treat minor conditions.	59 (21.1)	119 (42.5)	77 (27.5)	23 (8.2)	2 (0.7)	3.75

SA: Strongly Agree; A: Agree; N: Neutral; D: Disagree, SD: Strongly Disagree. The means were interpreted as follows: Very influential (4.20-5.00), Influential (3.4-4.19), Neutral (2.60-3.39), Uninfluential (1.80-2.59), Very uninfluential (1.00-1.79).

Factors Associated with OTC Drug Abuse Among Traders in Nnewi

There was no statistically significant relationship between the prevalence of OTC and sociodemographic variables used to assess the factors associated with OTC drug use among traders in Nnewi, implying that no sociodemographic factor was associated with OTC drug use among traders (Table 4). Additionally, Bivariate analysis showed no statistically significant associations between OTC drug use and sociodemographic variables, including age ($p = 0.155$), sex ($p = 0.408$), marital status ($p = 0.716$), education ($p = 0.873$), or income ($p = 0.276$). This suggests that OTC drug use was widespread across all demographic categories, indicating cultural and occupational uniformity among traders (Table 5).

Table 4 Factors associated with OTC drug abuse among traders in Nnewi

Variable	Prevalence		$\chi 2$	p-value
	Don't Practice OTC n (%)	Practice OTC n (%)		
Age (years)				
18-37	16 (11.2)	127 (88.8)	3.727	0.155
38-57	15 (13.4)	97 (86.6)		
58-78	0 (0)	25 (100)		
Sex				
Female	24 (12.1)	175 (87.9)	0.683	0.408
Male	7 (8.6)	74 (91.4)		
Marital status				
Single	7 (10)	63 (90)	1.356	0.716
Married	24 (11.9)	177 (88.1)		
Divorced/Separated	0 (0)	4 (100)		
Widowed	0 (0)	5 (100)		
Religion				
Christianity	31 (11.3)	243 (88.7)	0.763	0.382
Traditionalist	0 (0.0)	6 (100)		
Highest level of education				
No formal education	0 (0)	5 (100)	1.232	0.873
Primary	2 (8)	23 (92)		
Secondary	21 (11.9)	156 (88.1)		
Tertiary	7 (11.9)	52 (88.1)		
Postgraduate	1 (7.1)	13 (92.9)		
Average monthly family income (In Naira)				
< 50,000	25 (12)	184 (88)	5.115	0.276
100,000-149,000	1 (5.6)	17 (94.4)		
150,000-199,000	0 (0)	13 (100)		
200,000-299,000	1 (4.8)	20 (95.2)		
> 300,000	4 (21.1)	15 (78.9)		
How long have you been trading (in years)				
1-20	29 (11.7)	218 (88.3)	1.077	0.584
21-40	2 (6.7)	28 (93.3)		
> 40	0 (0)	3 (100)		

Table 5 Binary Logistic Regression Analysis of Factors Associated with OTC Drug Use Among Traders (n = 280).

Variable	B	S.E.	Wald	df	Sig.	AOR	95% CI
Age (years)	0.186	0.362	0.266	1	0.606	1.205	0.593-2.447
Marital status	-0.102	0.397	0.066	1	0.797	0.903	0.414-1.966
Religion	19.276	16399.287	0.000	1	0.999	2.35×10^{8}	0.000
Ethnicity	-23.530	40193.052	0.000	1	1.000	0.000	0.000
Education	0.078	0.275	0.080	1	0.777	1.081	0.631-1.854
Income	0.074	0.165	0.201	1	0.654	1.077	0.780-1.486
Trading duration (years)	0.638	0.762	0.702	1	0.402	1.893	0.425-8.423
Constant	5.252	43409.921	0.000	1	1.000	190.894	— —

4 Discussion

This descriptive cross-sectional study aimed to address the limited research on the prevalence of OTC drug use among traders. The study involved 280 traders in two markets in Nnewi, Anambra State, Southeastern Nigeria. The study showed that there are more females than male traders with a mean age of 38.77 ± 12.65, mainly between 18–39 years, mainly Christians, and of Igbo ethnicity. The majority were married, with the highest level of education as secondary education, and earned a monthly income of less than 50,000 Naira. The majority of the participants have been trading mainly between 1 and 5 years, with an average of 11.21 ± 9.69 years.

Self-medication with OTC drugs is a recognized public health issue worldwide,[19] with its prevalence varying by country and population, ranging from 11.2 to 93.7%.[19] In this study, the prevalence of OTC drug use was high, with 88.9% of participants reporting self-medication. Thus, this study observed that OTC drug use is very prevalent in Nnewi North LGA. This is in line with the study done by Chautrakarn et al.[12] who reported a high prevalence among the working-age population in metropolitan areas of Thailand, as well as Sánchez-Sánchez et al.[22] who reported a high prevalence in the entire Spanish population. This discovery also aligns with Iheanacho and Adam, who also documented high rates of OTC drug use in Nigeria,[23] as well as Bassi et al.[24] who had reported a prevalence of 69.4% across the 6 geopolitical zones. Ogbodu et al.[25] who reported a prevalence of 68% amongst undergraduate students at the University of Lagos, Oguamanam and Akeem[26] reported a high prevalence in Southeastern Nigeria, and Onyedinefu and Osuagwu[27] also reported a high prevalence in Awka South, reinforcing the notion that OTC drug use is widespread in Nigeria. While self-medication can provide benefits, such as the relief of minor ailments and reduced healthcare costs, it also poses risks, particularly when drugs are used incorrectly. In this study, traders often self-medicate for conditions such as fever, headache, pain, and cough, typically based on their own judgment. This finding is consistent with reports from Akinnawo et al.[10] and Onyedinefu and Osuagwu,[27] who observed similar self-medication practices in Southwest Nigeria and Awka South, respectively. The study further revealed that most traders obtain the OTC drugs from the chemist, with more than half buying the drugs to keep for the future. They stored the OTC drugs mainly in the bedroom/on an open table, where they stayed for 0-6 months after use before being discarded. This aligns with the study by Akande-Sholabi and Akinyemi,[12] who reported that a significant proportion of respondents stored their medications in a medicine box (cabinet). This practice is concerning, as the bedroom and medicine cabinet are not the ideal places to store medication because of the heat and humidity, which can cause the drugs to lose their potency and shorten their shelf life;[19] this is in addition to the risk of accidental poisoning by children and other related risks associated with improper storage of medications.[12] Antipyretics and antimalarials were the OTC medications most frequently used by the study participants, which aligns with the findings of Onyedinefu and Osuagwu.[27] This is also consistent with findings by Bekele et al.[28] who identified pain-relief medications like paracetamol as the most commonly used OTC drugs. The prevalence of antipyretics and analgesics can be attributed to work-related stress and physical strain, which frequently lead traders to seek relief from symptoms such as headaches. The factors affecting self-medication with OTC drugs in different subgroups of the population are different and of paramount importance. Factors influencing self-medication vary across different population groups. In this study, sociodemographic factors, such as age, gender, and educational level, did not significantly affect the use of OTC drugs. This finding is consistent with research by Onyedinefu and Osuagwu,[27] who also found no significant correlation between sociodemographic

characteristics and OTC drug use in Awka South LGA.

The primary reasons for self-medication, according to the participants, were the time-consuming nature of hospital visits, easy access to pharmacies, and the perceived severity of their illnesses. These reasons align with findings from other studies, which cite convenience, cost-effectiveness, and perceived non-seriousness of ailments as key factors influencing self-medication.[29,19] While the high rate of OTC drug use indicates accessibility and affordability, it raises public health concerns. Easy availability of antibiotics without prescription, for instance, contributes to antimicrobial resistance. Pharmacist-led education and stricter regulation of OTC sales could help curb this trend.

The lack of significant association between sociodemographic factors and OTC use suggests possible cultural and economic homogeneity among traders. As most respondents were Igbo (99.6%) and engaged in similar economic activities, shared cultural norms and comparable stress levels may explain the uniformity in medication behaviour. Additionally, the Igbo cultural emphasis on self-reliance and integration of traditional and modern medicine may normalise self-treatment practices. While the study found no statistically significant relationship between sociodemographic factors and OTC drug use, the high overall prevalence of self-medication is concerning and underscores the growing problem of OTC drug use, especially in developing countries.

5 Conclusion

This study discovered a high prevalence of OTC drug use among traders in Nnewi North LGA, with analgesics, antibiotics, and antimalarials being the most often used. Easy availability and apparent self-efficacy in managing minor ailments were the key factors influencing this practice. These results highlight the general inappropriate and unsupervised use of OTC medicines and highlight the need for public education, pharmacist-led counselling, and stricter regulatory control to confirm rational drug use. Further studies are necessary to assess the long-term health influences and to develop sustainable interventions associated with the WHO guidelines. The cross-sectional design limits causal inference. Self-reported data and recall bias may have affected accuracy, and excluding less-experienced traders could limit generalizability. Targeted awareness campaigns and stricter enforcement of OTC drug regulations are essential. Community pharmacists should play a central role in educating consumers on appropriate self-medication, while enhanced access to affordable healthcare services may reduce unnecessary reliance on OTC drugs.

Declarations

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Authors' Contributions
All authors contributed equally.

Availability of Data and Materials
The data will be provided on request

Conflict of Interest
None.

Consent for Publication
Not applicable.

Ethical Considerations
This research work was done with approval from the Nnamdi Azikiwe University Teaching Hospital Ethics Committee (NAUTHEC), Anambra State, Nigeria, under the Code of Ethics NAUTH/CS/66/VOL.16/VER.3/187/2024/132

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