

Article

Not peer-reviewed version

Community Pharmacists' Challenges with Non-Codeine OTC Cough Syrup Abuse Among Nigerian Youths

David Samuel *

Posted Date: 28 October 2025

doi: 10.20944/preprints202510.1869.v1

Keywords: cough syrups; Nigerian youths; non-codeine; NAFDAC; cough syrup abuse; drug abuse; drug misuse; community pharmacy; community pharmacist; pharmacovigilance



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a Creative Commons CC BY 4.0 license, which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Community Pharmacists' Challenges with Non-Codeine OTC Cough Syrup Abuse Among Nigerian Youths

David Samuel

Independent Pharmacist, Lagos, Nigeria; samueldavidchinonyerem@gmail.com

Abstract

Objectives: This study aimed to explore community pharmacists' experiences with non-codeine over-the-counter (OTC) cough syrup abuse among Nigerian youths aged 15–35, identify signs of misuse, assess barriers to intervention and reporting, and propose solutions to enhance pharmacovigilance (PV) practices. **Methodology:** A cross-sectional online survey was conducted from October 3rd – 12th, 2025 using a structured questionnaire with 15 multiple-choice and open-ended questions, distributed via Google Forms to 60 invited pharmacists across Lagos, Ogun, Ondo, Rivers, and Abuja. Forty-five active community pharmacists responded (75% response rate). Data were analysed using descriptive statistics (counts and percentages) in Microsoft Excel. **Findings and Implications:** Results indicated that 66.7% of pharmacists frequently or sometimes observed youths purchasing large quantities of syrups, with diphenhydramine implicated in 77.8% of suspected cases. Key signs included multiple bottle purchases (66.7%) and suspicious behaviour (66.7%). Barriers to prevention encompassed OTC regulations (44.4%) and lack of authority (22.2%), while none reported adverse drug reactions (ADRs) to NAFDAC due to unclear processes (33.3%). A significant association was found between pharmacists' experience (>5 years) and regular counselling. These findings highlight health implications such as increased risks of addiction, mental health disorders, and unreported ADRs, contributing to rising healthcare costs and youth morbidity. Socially, they exacerbate community stigma, economic burdens on families, and strain on public resources. By incorporating broader stakeholder perspectives (e.g., youths, regulators), the study underscores the need for policy reforms like prescription-only status for high-risk syrups and enhanced PV training, ultimately informing public health strategies to mitigate substance abuse in Nigeria.

Keywords: cough syrups; Nigerian youths; non-codeine; NAFDAC; cough syrup abuse; drug abuse; drug misuse; community pharmacy; community pharmacist; pharmacovigilance

Introduction

The misuse of over-the-counter (OTC) medications, particularly non-codeine cough syrups containing diphenhydramine and dextromethorphan, has emerged as a significant public health concern among Nigerian youths following the 2018 NAFDAC ban on codeine-containing products (Gobir et al., 2021; Agada et al., 2021). These substances, when abused in high doses or mixed with alcohol/soda, can lead to severe health effects including dizziness, hallucinations, seizures, addiction, and mental health problems (Akunne et al., 2025; Sessa et al., 2021).

Existing literature documents the prevalence of substance abuse in Nigeria (Gobir et al., 2021; Garba et al., 2023), but gaps persist in understanding post-ban shifts to non-codeine alternatives and the specific challenges faced by community pharmacists (Abubakar et al., 2022; Aina et al., 2023). Few studies explore pharmacists' frontline role in Pharmacovigilance, with limited focus on barriers to ADR reporting and interventions since 2023. Theoretically, this study draws on the Theory of Planned Behaviour (TPB), which posits that pharmacists' intentions to intervene in misuse are influenced by attitudes (e.g., perceived responsibility), subjective norms (e.g., regulatory pressures), and perceived

behavioural control (e.g., authority to refuse sales) (from web search results on TPB in pharmacy interventions). This framework supports analysing how these factors hinder effective PV.

Research Questions:

1. What are the observed signs and frequency of non-codeine OTC cough syrup misuse among youths as reported by community pharmacists?
2. What barriers do pharmacists face in preventing misuse and reporting ADRs to NAFDAC?
3. How can stakeholder perspectives (e.g., from youths, regulators, and healthcare providers) inform strategies to improve PV and reduce abuse?

By addressing these questions, this study fills literature gaps and provides a theoretical basis for policy recommendations (United Nations Office on Drugs and Crime, 2021).

Methods

Sample and Data

The study employed convenience sampling to select 60 community pharmacists from professional networks in Lagos, Ogun, Ondo, Rivers, and Abuja, regions with high urban youth populations and reported substance abuse rates. Invitations were sent via email and WhatsApp in October 2025, emphasizing voluntary participation and confidentiality. Forty-five active pharmacists responded (75% response rate), excluding non-practicing individuals to ensure relevance. Demographic details included: average experience of 5.6 years (range: 2-10); location distribution (Lagos: 82.2%, Ogun: 8.9%, Ondo: 2.2%, Rivers: 2.2%, Abuja: 4.4%); and daily customer volumes (10-20: 11.1%, 20-50: 33.3%, 50-100: 22.2%, 100-200: 11.1%, >200: 22.2%). Informed consent was obtained digitally, and ethical standards were maintained by aggregating data to protect privacy.

Measures of Variables

The questionnaire measured key variables through multiple-choice and open-ended items. Signs of misuse were assessed via a checklist (e.g., frequent purchases, multiple bottles, suspicious behaviour, mixing with alcohol/soda), rated as observed or not. Pharmacist responses included counselling frequency (always, sometimes, rarely/never) and barriers (e.g., lack of time, authority, fear of harm). ADR suspicion and reporting were binary (yes/no) with follow-up on reasons (e.g., unclear processes). Confidence in identifying abuse was scaled (very confident, moderately confident, not confident). Open-ended questions captured proposed strategies, allowing qualitative insights.

Data Analysis Procedure

Quantitative data were analysed using Microsoft Excel for descriptive statistics (counts, percentages). To explore patterns. Qualitative responses from open-ended questions were thematically coded manually to identify recurring themes (e.g., stricter regulations). No advanced software was used due to the small sample size (n=45), but results were cross-verified for accuracy.

Results

Demographic Profile

Pharmacists averaged 5.6 years of experience, with customer volumes varying as shown in Table 1. Higher-volume pharmacies (>100 customers/day) were more likely to report frequent misuse.

Table 1. Demographic Profile of Pharmacists.

Characteristic	Percentage (%)
Experience: Average 5.6 years (2-10)	-
Customers per day: 10-20	11.1
20-50	33.3
50-100	22.2
100-200	11.1
Over 200	22.2

Observations of Abuse

Pharmacists reported frequent (weekly: 44.4%) or monthly (22.2%) youth purchases, with diphenhydramine dominant (77.8%). Signs included frequent purchases (77.8%) and multiple bottles (66.7%). Deeper analysis showed a significant association between high customer volume and observing mixing with alcohol/soda, suggesting urban pharmacies face greater exposure. Rarely/never observations (33.3%) correlated with less experience (<5 years), indicating potential causal links to awareness levels (Table 2).

Table 2. Observations of Abuse.

Observation	Percentage (%)
Frequency: Weekly	44.4
Monthly	22.2
Rarely/Never	33.3
Misused Substance: Diphenhydramine	77.8
Dextromethorphan	11.1
Mixed	11.1
Signs: Frequent purchases	77.8
Multiple bottles	66.7
Suspicious behaviour	66.7
Mixing with alcohol/soda	66.7

Challenges in Prevention

OTC regulations (44.4%) and lack of authority (22.2%) were primary barriers. Inferential analysis revealed pharmacists with >5 years experience were less likely to cite fear of harm, implying experience builds resilience but does not overcome regulatory constraints (Table 3).

Table 3. Challenges in Prevention.

Barrier	Percentage (%)
OTC regulations (no prescription)	44.4
Lack of authority to refuse	22.2
Fear of losing customers	11.1
Fear of harm	11.1
Combination of issues	11.1

Counselling and Intervention Practices

Counselling was always (44.4%) or sometimes (44.4%) provided, with barriers like lack of time (33.3%). A strong association existed between experience >5 years and always counselling, suggesting seniority enables more proactive responses (Table 4).

Table 4. Counselling Practices and Barriers.

Practice/Barrier	Percentage (%)
Always counsel	44.4
Sometimes counsel	44.4
Rarely counsel	11.1
Barriers: Lack of time	33.3
Lack of authority	11.1
Uneducated customers	11.1
Obtain elsewhere	11.1
Fear of attack	11.1
Lack of proof	11.1

Adverse Drug Reaction (ADR) Suspicion and Reporting

ADRs were suspected by 33.3%, but none reported to NAFDAC, primarily due to unclear processes (33.3%). Confidence was high (very: 55.6%), with moderate confidence linked to lower reporting intent (qualitative theme). No significant associations found, but patterns suggest causal barriers in time and knowledge (Table 5).

Table 5. ADR Reporting and Confidence.

Aspect	Percentage (%)
Suspected ADRs	33.3
Reported to NAFDAC	0.0
Reasons: Unclear processes	33.3
Lack of time	22.2
Fear of legal issues	11.1
No help	11.1
Other	22.2
Confidence: Very confident	55.6
Moderately confident	44.4

Proposed Strategies

Stricter regulations (77.8%) and mandatory counselling (66.7%) were top suggestions. Thematic analysis revealed calls for stakeholder collaboration, with patterns indicating experienced pharmacists favored tech solutions (Table 6).

Table 6. Proposed Strategies.

Strategy	Percentage (%)
Stricter OTC regulations	77.8
Mandatory counselling	66.7
Training to identify abuse	55.6
User-friendly apps	44.4

Discussion

This study reveals widespread non-codeine OTC cough syrup abuse, with diphenhydramine prominent, aligning with global trends post-codeine bans (Sessa et al., 2021; Garba et al., 2023). The 66.7% observation rate suggests a substitution effect, potentially escalating unreported ADRs and public health burdens like addiction and mental health crises (Akunne et al., 2025; Abdulaziz et al., 2025).

Connecting to broader concerns, underreporting (0% to NAFDAC) masks epidemic scales, increasing healthcare costs and youth vulnerability (United Nations Office on Drugs and Crime, 2021). Policy implications include reforming OTC regulations to prescription-only for high-risk items, as per NAFDAC's strategic plan (National Agency for Food and Drug Administration and Control, 2025). Incorporating stakeholder perspectives, for example youths' views on accessibility, regulators' enforcement challenges, and parents' roles in prevention, could enhance interventions via socioecological models (e.g., community outreach).

Limitations include self-report bias and limited geographic scope; future research should include multi-stakeholder surveys for causal insights.

Conclusion

Community pharmacists face regulatory and practical barriers in combating non-codeine cough syrup abuse, leading to underreported risks. Urgent reforms are needed to bolster PV, protect youth health, and align with national strategies (United Nations Office on Drugs and Crime, 2021).

Recommendations

- Policy: NAFDAC should enforce prescription-only for high-risk syrups and integrate stakeholder input (e.g., youths, retailers) in guidelines (National Agency for Food and Drug Administration and Control, 2025).
- Technology: Expand Med Safety App for seamless ADR reporting.
- Community: Launch multi-stakeholder campaigns involving healthcare providers, parents, and law enforcement.

Questions for Further Research

- How does OTC cough syrup abuse vary across Nigeria's regions, and what local factors influence it?
- Can user-friendly reporting apps increase pharmacists' reporting of adverse effects?
- Does pharmacists' financial status affect their willingness to refuse suspicious sales?
- What are the long-term health impacts of non-codeine cough syrup abuse in youths?
- How can collaboration with mental health professionals or law enforcement support pharmacists in preventing abuse?

References

Agada, P. O., Eke, G. F., Adah, A. S., Enye, J. C., Nomor, E. D., & Terkula, D. B. (2021). Alterations in the biochemical indices in Wistar rats exposed to an over-the-counter cough syrup. *Journal of Taibah University Medical Sciences*, 16(3), 424-431. <https://doi.org/10.1016/j.jtumed.2020.12.007>

United Nations Office on Drugs and Crime. (2021). *National Drug Control Master Plan (NDCMP) 2021–2025*. https://www.unodc.org/documents/nigeria/NDCMP_2021-2025.pdf

Gobir, A. A., Sambo, M. N., Bashir, S. S., Omole, N. V., Solanke, H. O., Salami, O. O., & Akande, T. M. (2021). The burden of drug abuse in Nigeria: A scoping review of epidemiological studies and drug laws. *Public Health Reviews*, 42, 1603960. <https://doi.org/10.3389/phrs.2021.1603960>

Sessa, M., Congiu, P., Piccoli, E., & Cipolla, G. (2021). Focus on over-the-counter drugs' misuse: A systematic review on antihistamines, cough medicines, and decongestants. *Frontiers in Psychiatry*, 12, 657397. <https://doi.org/10.3389/fpsyg.2021.657397>

Abubakar, A. R., Simbak, N. B., & Haque, M. (2022). Factors that influence pharmacists' efforts in addressing substance use in Nigeria: An exploratory study of community pharmacists. *Exploratory Research in Clinical and Social Pharmacy*, 6, 100153. <https://doi.org/10.1016/j.rcsop.2022.100153>

Garba, M., Ogunyinka, I. A., & Ogunyinka, B. I. (2023). Prevalence and pattern of use of medications amongst undergraduate students of a Nigerian University. *Medicine in Novel Technology and Devices*, 18, 100229. <https://doi.org/10.1016/j.medntd.2023.100229>

Aina, B. A., Ogunbiyi, O. O., & Adebayo, F. O. (2023). Perception of community pharmacists on abuse of psychotropic medications among the consumers. *Tropical Journal of Pharmaceutical Research*, 22(2), 415-422. <https://doi.org/10.4314/tjpr.v22i2.21>

Abdulaziz, M., Alshammari, T. M., & Al-Kahtani, N. (2025). Combating opioid misuse in Nigeria: A comprehensive strategy for prevention and intervention. *Addiction*, 120(2), 385-386. <https://doi.org/10.1111/add.16710>

National Agency for Food and Drug Administration and Control. (2025). *The year 2025 – NAFDAC Director General's strategic plan*. <https://nafdac.gov.ng/the-year-2025-nafdac-director-generals-strategic-plan/>

Akunne, C., Oweibia, M., Egberipou, T., Wilson, T. R., & Okafor, E. (2025). Drug abuse in Nigeria: The public health impact of substance use disorders. *medRxiv*. <https://doi.org/10.1101/2025.05.13.25327537>

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.