

**THE CHALLENGES OF DRUG DISTRIBUTION AND REGULATION IN PUBLIC
SECONDARY HEALTH FACILITIES: A CASE STUDY OF LAGOS STATE, NIGERIA.**

Moses Oluremi Adeyi

Department of Transport Research & Intelligence
Nigerian Institute of Transport Technology (NITT), Zaria

moadeyi1@gmail.com +2348023783731

Abstract

Drug regulation and distribution are essential components of a functional health system to ensure that safe and effective medicines are made available to patients when needed. This study examined the challenges of drug distribution and regulation in Lagos State, Nigeria. A total of 140 questionnaire was administered to the selected staff members of National Agency for Food, Drug Administration and Control (NAFDAC) and Pharmaceutical Council of Nigeria (PCN) in Lagos State, out of which 122 copies representing 87.1% was completely filled and returned. Descriptive statistical method was employed for data analysis using statistical package for Social Science (SPSS) version 2.0. Spearman rank was also used to test the hypothesis of the study while frequency counts, percentages were used for the study's result analysis and discussion. The findings showed that PCN and NAFDAC have implemented a wide range of measures like inspection, public awareness campaign and imposition of penalty like fine, seizure etc.to ensure compliance with National drug distribution standards and combat circulation of substandard and falsified medicines. The study also revealed that the level of inter-agency collaboration between PCN and NAFDAC is not strong. The result from the spearman rho showed that the relationship between challenges of drug distribution is significant at 0.05 and 0.01 level. The study recommended strict enforcement of National Drug Distribution Guidelines (NDDG) of 2012 by the regulators in order to control the influx of non-professional and quacks in the drug distribution chain. The study also recommended improved collaboration between PCN and NAFDAC. This is crucial for effective drug distribution and regulation of narcotic drugs and psychotropic substances.

Keywords: Drug distribution and regulation, NAFDAC, PCN, Secondary health facilities,

1.0 Introduction

In Nigeria, drug regulation and control are managed by several regulatory agencies, including the National Agency for Food and Drug Administration and Control (NAFDAC), the Pharmacists Council of Nigeria (PCN), and the National Drug Law Enforcement Agency (NDLEA). These agencies operate with the common goal of ensuring the safety, efficacy, and quality of pharmaceuticals while preventing the distribution of counterfeit and substandard drugs. However, effective regulation requires more than just the independent operations of each agency; it necessitates strong interagency collaboration to ensure coordinated and efficient oversight of the pharmaceutical sector. Effective drug regulation in Nigeria requires collaboration between NAFDAC, PCN, and NDLEA to address the complexity of the pharmaceutical sector. The challenges of counterfeit drugs, illegal drug distribution, and abuse of controlled substances transcend the mandate of any single agency, making interagency collaboration essential for comprehensive regulation (Erhun, Babalola, & Erhun, 2011).

Counterfeit drugs are a significant public health issue in Nigeria. NAFDAC plays the primary role in detecting and addressing counterfeit drugs through surveillance and inspection. However, successful efforts to curb counterfeit drug distribution often require the collaboration of PCN and NDLEA. PCN ensures that only registered pharmacists are permitted to dispense drugs, while NDLEA works to prevent the distribution of counterfeit and illicit drugs, particularly those that contain controlled substances (Akunyili, 2005). Joint operations between these agencies enhance their capacity to identify and prosecute those involved in counterfeit drug production and distribution.

Collaboration between NAFDAC, PCN, and NDLEA is crucial in the regulation of narcotic drugs and psychotropic substances. NAFDAC regulates the importation and manufacturing of these substances, while NDLEA monitors their distribution to prevent illegal use and trafficking. PCN ensures that pharmacists follow ethical practices in dispensing controlled substances. Regular collaboration between these agencies ensures that there is no gap in monitoring and regulating the supply chain of narcotics and psychotropic drugs (Dambazau, 2017).

Inspections of pharmaceutical premises are another area where interagency collaboration is necessary. While PCN is responsible for inspecting pharmacies and ensuring that pharmacists comply with professional standards, NAFDAC focuses on the quality and safety of the drugs being sold. Joint inspections between NAFDAC and PCN allow for comprehensive checks on

both the pharmaceutical products and the professionals handling them. NDLEA also plays a role when controlled substances are involved, ensuring that these substances are stored and dispensed legally (Olaniyi & Fagbohun, 2021).

Despite the existence of regulatory frameworks and enforcement strategies, Nigeria faces significant challenges in the regulation of drugs. Corruption within law enforcement agencies and the judicial system has hindered the fight against drug trafficking. Reports have indicated instances where drug traffickers bribe law enforcement officials to escape prosecution (Olukoya, 2019). Similarly, institutional weaknesses, such as underfunding of enforcement agencies, limit the efficacy of the NDLEA and NAFDAC in carrying out their mandates.

In addition, lack of adequate resources, such as equipment and trained personnel, undermines the effectiveness of drug enforcement. For instance, the NDLEA has often complained about insufficient funding and personnel to carry out nationwide drug enforcement operations (Ibrahim & Iloh, 2018). Furthermore, there is a shortage of rehabilitation centers for individuals struggling with addiction, which hinders the country's ability to provide comprehensive care for drug users.

Another persistent issue in Nigeria's drug regulation is the prevalence of counterfeit drugs. Fake drugs pose a significant health risk, as they may contain harmful substances or lack the therapeutic components of genuine pharmaceuticals. In 2005, Director-General of NAFDAC, Dora Akunyili, reported that counterfeit drugs were responsible for the deaths of numerous patients, including children (Akunyili, 2005). Although NAFDAC has made strides in combating counterfeit drugs, such as introducing the Mobile Authentication Service (MAS) to help consumers verify the authenticity of medications, the problem persists due to porous borders and weak enforcement (Nwokike, 2018).

According to Ogundipe (2019) to address the challenges of drug distribution and regulation in Nigeria, there is a need for a significant overhaul of drug regulatory and enforcement systems. This includes training personnel, improving funding for the NDLEA and NAFDAC, and enhancing the operational capacity of these institutions. This study examined the challenges of drug distribution and regulation in public secondary health facilities in Lagos State and professed solutions to ensure sustainable supply of safe and quality drugs.

2.0 Literature Review

Nigeria's drug regulation system is shaped by a combination of national legislation and international conventions. The principal agency responsible for regulating pharmaceuticals is the National Agency for Food and Drug Administration and Control (NAFDAC). Established in 1993, NAFDAC regulates and controls the manufacture, distribution, advertisement, sale, and use of drugs (Nwokike, 2018). NAFDAC's mission is to ensure that available drugs are safe, effective, and of high quality. Moreover, the Pharmacists Council of Nigeria (PCN) plays a crucial role in regulating pharmacy practices in Nigeria. It ensures that pharmacies comply with the legal requirements for the distribution and sale of drugs (PCN, 2021). However, despite these regulations, the country has been struggling with counterfeit drugs, which are estimated to comprise 17% of the market (Akunyili, 2005). Another important institution is the National Drug Law Enforcement Agency (NDLEA), which enforces drug laws related to illicit trafficking and abuse. NDLEA operates under the National Drug Law Enforcement Agency Act of 1989, which aligns with international frameworks such as the United Nations Single Convention on Narcotic Drugs of 1961 (UNODC, 2018). This agency is responsible for coordinating efforts to suppress the supply and demand of illicit drugs in Nigeria.

In Nigeria, drug regulatory compliance is essential for preventing the proliferation of counterfeit, substandard, or illegally distributed drugs, which pose significant risks to public health. Compliance with drug regulations is enforced by key agencies such as the National Agency for Food and Drug Administration and Control (NAFDAC), the Pharmacists Council of Nigeria (PCN), and the National Drug Law Enforcement Agency (NDLEA).

National Agency for Food and Drug Administration and Control (NAFDAC) plays a pivotal role in regulating drug safety and quality. It enforces compliance with Good Manufacturing Practices (GMP), drug registration, labeling requirements, and distribution standards. NAFDAC ensures that pharmaceutical products manufactured or imported into Nigeria comply with regulatory standards through licensing, inspection, and post-market surveillance (Adeoye, 2019). Pharmaceutical companies must comply with NAFDAC's regulatory processes before introducing new drugs to the Nigerian market, including submitting drug dossiers for pre-market assessment and obtaining product registration.

Pharmacists Council of Nigeria (PCN) is responsible for regulating the practice of pharmacy in Nigeria. This includes ensuring that licensed pharmacists oversee the sale and distribution of

pharmaceuticals, especially controlled drugs. Regulatory compliance is enforced through the registration of pharmacists and pharmacy premises, periodic inspections, and disciplinary actions for breaches (Oluwabunwa, 2020). PCN promotes adherence to professional standards among pharmacists and ensures that they follow laws related to prescription, dispensing, and drug storage.

National Drug Law Enforcement Agency (NDLEA) focus is on enforcing regulations related to narcotic drugs and psychotropic substances. NDLEA monitors and ensures compliance with the Controlled Drugs and Substances Act, preventing the illegal production, trafficking, and misuse of controlled substances. It also works with NAFDAC and other law enforcement agencies to monitor the handling and sale of controlled pharmaceutical products to prevent their diversion into illegal channels (Alemika, 2018).

The frequency of routine inspections by regulatory agencies such as NAFDAC and the PCN is intended to ensure ongoing compliance with regulations. According to NAFDAC's 2020 annual report, the agency conducted approximately 7,500 inspections of pharmaceutical manufacturing sites, drug distribution centers, and retail pharmacies across Nigeria (NAFDAC, 2020). These inspections are often scheduled but can also include unscheduled visits to verify adherence to GMP and distribution practices. The PCN also conducts routine inspections of pharmacies and patent medicine stores. In 2019, PCN reported inspecting more than 2,000 pharmacy outlets across the country, focusing on ensuring that only registered pharmacists were in charge of drug dispensing and that the drugs being sold met legal standards (PCN, 2019). These inspections led to the closure of over 500 unlicensed or non-compliant pharmacies and patent medicine stores.

Despite these efforts, scholars argue that the frequency of routine inspections remains insufficient given the large number of unregulated and informal drug outlets in Nigeria. A 2021 study noted that informal drug markets still dominate in many parts of Nigeria, particularly in rural areas, where the frequency of inspections is lower (Olaniyi & Fagbohun, 2021).

Unscheduled inspections, often referred to as "surprise visits," are a key strategy for identifying non-compliance among drug manufacturers and distributors. NAFDAC has increased the frequency of such inspections over the past decade as part of its efforts to combat the sale of counterfeit drugs, which are prevalent in open drug markets. These surprise inspections allow NAFDAC to catch offenders who may be aware of scheduled inspections and adjust their practices accordingly (Akunyili, 2005).

In 2020, NAFDAC carried out over 1,500 unscheduled inspections across major cities in Nigeria, particularly in drug distribution hubs like Onitsha and Kano (NAFDAC, 2020). These inspections often result in seizures of substandard and counterfeit drugs. Similarly, the PCN conducted over 600 unscheduled inspections of pharmacies and drug shops in 2020, resulting in the closure of illegal or non-compliant outlets (PCN, 2020). The NDLEA also conducts unscheduled inspections of drug distribution centers, particularly focusing on outlets that handle controlled substances. These inspections are typically intelligence-driven and are part of broader law enforcement strategies to curb the diversion of pharmaceutical drugs into the illicit drug trade (Dambazau, 2017).

Post-marketing surveillance (PMS) is another form of inspection that involves sampling and testing drugs already in the market to ensure they continue to meet safety and quality standards. NAFDAC frequently conducts PMS activities to identify substandard or falsified drugs that may have entered the supply chain (Erhun, Babalola, & Erhun, 2011). According to NAFDAC's 2019 report, the agency collected over 10,000 drug samples for testing in various parts of the country, with approximately 12% failing to meet required standards (NAFDAC, 2019). PMS is typically conducted several times a year, but scholars argue that the frequency needs to be increased, particularly in areas with a high prevalence of counterfeit drugs. In some cases, the delays between PMS inspections allow counterfeiters to continue operating undetected for long periods (Nwokike, 2018).

In order to improve access of patient to safe and effective medications in Lagos State public secondary health facilities, the National Drug Distribution Guidelines (NDDG) of 2012 was formulated. The NDDG also underscores the need to control the influx of non-professional and quacks in the drug distribution chain in Nigeria. However, the effectiveness of NDDG of 2012 has not been sufficiently addressed by research in the public secondary health facilities in Lagos State. This study therefore addressed the challenges that affects the drug distribution system and regulatory framework in public secondary health facilities of Lagos State, Nigeria.

3.0 Methodology

This study employed a mixed-methods approach to examine the challenges of drug distribution and regulation in public secondary health facilities in Lagos State, Nigeria. This research design was chosen to provide a comprehensive analysis, integrating both quantitative data from official records and qualitative insights from direct fieldwork to create a robust and holistic understanding of the problem.

Data Collection

The study used primary and secondary data to carry out a thorough examination. Primary data was collected through fieldwork in selected 19 General Hospitals in Lagos State. Questionnaires developed by the author was used for the analysis in all the 19 selected General Hospitals in Lagos State. The respondents are the selected staff of Pharmacy Council of Nigeria (PCN) and National Agency for Food administration and control (NAFDAC in Lagos State. The responses provided data on the number of registered pharmacists in Nigeria and Lagos, the frequency of inspection of General Hospital pharmacy facilities, drug regulation enforcement methods, inter-agency collaboration levels, compliance rates, control of illicit/fake drugs, advocacy on rational drug use and regulatory challenges in Lagos State. In addition, Focus Group Discussion and Interview was conducted with the Zonal heads of PCN and NAFDAC in Lagos office based on scheduled appointment. During the FGD discussions, questions were asked on the implementation of National Drug Distribution Guidelines of 2012, Strategies of enforcement, the challenges of drug distribution and regulation in Lagos State among others. FGD was carried out in simple English Language they could understand.

Sampling and Analytical Techniques

This study used a carefully calculated sample size and a systematic sampling technique to ensure representativeness of the study population. The sample sizes for each of the study population was determined using population sample size formula for an infinite population shown in equation 1. This was then followed further calculation using equation 2 to factor in the finite population correction (pfc) where the population size is known to give an adjusted sample size. The later may be very useful when the population size is low (Cochran, 1977).

$$n = \frac{Z^2 \times P \times (1-P)}{E^2} \quad \text{-----(Equation 1)}$$

$$n_{adj} = \frac{n}{1 + \frac{(n-1)}{N}} \quad \text{-----(Equation 2)}$$

Where:

n = Required sample size

Z = Z-value (1.96 at 95% confidence level)

P = Estimated population proportion (50% or 0.5)

E = Margin of error (0.05)

n_{adj} = Population size after the finite population correction is applied

The total number of staff of the regulators of the pharmaceutical industry in Nigeria (i.e The Pharmacy Council of Nigeria (PCN) and National Agency for food and Drug Administration Control, Yaba (NAFDAC) was obtained from the Journal of Pharmaceutical Council of Nigeria (2018). There were 84 Pharmaceutical Council of Nigeria (PCN) staff and 73 NAFDAC laboratory staff in Yaba, Lagos State (PCN, 2018; NAFDAC, 2018) making a total of 157 regulators of pharmaceutical products in Lagos State. Using the sample size formulae, the sample size of the regulators was calculated as follows:

$$n=384.1 \text{ (Sample size of an infinite population)}$$

Then equation 2 was used to apply finite population correction thus:

$$n_{adj} = 384$$

$$1 + (384-1)/ 157$$

$$\text{Required sample size} = 112$$

Therefore, the sample size of the PCN and NAFDAC in Lagos State used for the study was 112. However, the number of questionnaires was increased to 140 to give room for any incorrectly filled and non-returned questionnaires. After the field survey a total number of 122 questionnaires which represent 87.1% was completely filled and returned. The retrieval rate was highly successful thus data presentation and analysis were done based on the retrieved copy. Descriptive statistical method was employed for data analysis using statistical package for Social

Science (SPSS) version 2.0. Spearman rank was also used to test the strength of relationships between the challenges of drug distribution and regulation in Lagos State. Frequency counts and percentages were also used for the study's result analysis and discussion.

Ethical approval required for any research involving human and or animal participants was obtained from Health Research Ethics Committee of the College of Medicine University of Lagos (HREC-CMUL), Idi-Araba. Other necessary approval was also obtained from the Lagos State Health Service Commission (LSHSC) before embarking on this research. These approvals enabled the researcher to get the required data and cooperation of pharmacists and store keepers which constituted the study population. The researcher ensured informed consent, confidentiality, anonymity, privacy and the rights of withdrawal of the respondents from the study.

4.0 Results and Discussion

This section presents a detailed analysis of the challenges of drug distribution and regulation in Lagos State and discusses these findings in the context of broader national and international research.

The Challenges of Drug Distribution and Regulation in Lagos State

The Pharmacy sector is regulated by the Pharmacists Council of Nigeria. (PCN) and National Agency for Food and Drug Administration and Control (NAFDAC). In this section, data obtained from the staff members of PCN and NAFDAC through administration of questionnaire and structured interview was cleaned, crosschecked and analyzed. This data provided information on the frequency of inspection of hospital pharmacy, enforcement of drug distribution guidelines, control of illicit and substandard drugs, public awareness campaign, drug distribution regulation compliance and penalty for non-compliance among others.

Average Number of Inspection in Lagos State

Table 1: Average Number of Inspection in a Year

Average number of Inspection of Public SHF	Response	Percentage
1	6	5
2	27	22
3	65	53
More than 4	24	20
Total	122	100

Source: Author's Analysis (2024)

As indicated in Table 1, out of 122 respondents 6 (5%) said that the inspection of pharmacy drug store in public secondary health facilities in Lagos State is carried out once in a year; 27 (22%) were of the opinion that inspection is carried out two times in a year; 65 (53%) were of the view that average of three inspections are done in a year while the remaining 24 (20%) were of the perception that inspection of pharmacy facilities in Lagos State were carried out more than four times in a year. Studies showed that regular inspections have helped to identify non-compliance and promote good pharmacy practice. For example, Auta et al. (2016) highlighted that, regulatory inspections in Nigeria’s hospital pharmacies are often hindered by inadequate manpower and logistics. Effective inspection frameworks have been found to improve the storage, dispensing, and procurement practices in hospitals (Fadare et al., 2019).

Average % of Compliance of Public Secondary Health Facilities to Drug Distribution Guidelines

Table 2: Average % of Public SHF Compliance

Average	Response	Percentage
25%	0	0
50%	43	35
75%	67	55
100%	12	15
Total	122	100

Source: Author’s Analysis (2024)

Compliance with drug distribution guidelines ensures the integrity of medicines throughout the supply chain. Analysis of public hospital compliance to the drug distribution guidelines was carried out in the study area. As indicated in Table 2, out of 122 respondents, 43 rated the compliance rate as 50%; 67 rated the compliance rate as 75% while the remaining 12 respondents viewed the compliance rate as 100%. A study by Erhun et al. (2001) noted that hospitals often face challenges related to storage, documentation, and distribution, mainly due to poor regulatory oversight and weak enforcement. Uzochukwu et al. (2015) found that compliance levels vary significantly between urban and rural hospitals in Nigeria, often linked to the presence of trained personnel and frequency of regulatory visits.

Drug Regulation Enforcement

Table 3: Method of Drug Regulation Enforcement

Method of Drug Regulation Enforcement	Response	Percentage
Seizure/fine	52	43
Prosecution	23	19
Sealing of Premises	38	31
Warning	9	7
Total	122	100

Source: Author's Analysis (2024)

Effective drug regulation enforcement is crucial to safeguard public health. Table 3 showed the analysis of various methods used for drug distribution and regulation enforcement in the study area. Out of 122 respondents 9 were of the view that warning is 7% effective; 23 were of the view that prosecution is 19% effective; 38 respondents rated that sealing of premises as 31% effective while the remaining 52 respondents were of the opinion that seizure/fine is 43% effective. The National Agency for Food and Drug Administration and Control (NAFDAC) has been instrumental in combating counterfeit drugs and enforcing quality standards (Akunyili, 2004). However, gaps remain due to corruption, limited funding, and inadequate legal frameworks (Ogbonna et al., 2020).

Public Awareness Campaign against Illicit Drug

Table 4: Number of Times for Awareness Campaign in a Year

Average Number of Time for Awareness Campaign	Response	Percentage
1	7	6
2	15	12
3	54	44
4	46	38
Total	122	100

Source: Author's Analysis (2024)

The result in Table 4 showed the average number of times that the regulators carry out awareness campaign against the use of illicit drugs in Lagos State. The result showed that out of 122 respondents 7 respondents (6%) said one time; 15 respondents (12%) said it is 2 times in a year; 54 (44%) respondents were of the view that public advocacy is done at least 3 times in a year while the remaining 46 (38%) opined that it is up to four times in a year. Public awareness campaigns are essential for demand reduction in illicit drug control. Evidence shows that community-level education, media campaigns, and school-based interventions can reduce illicit

drug use (UNODC, 2019). In Nigeria, NDLEA’s campaigns have focused on schools and communities, but low funding and poor coordination limit their impact (Adelekan & Lawal, 2006).

ICT Devices for Consumer Feedback

Table 5: Consumer Feedback

Use of ICT Devices for Customer’ Complaints	Response	Percentage
Dedicated hot lines	58	48
Social Media Handles	40	33
Official Website	18	14
Other informal means	6	5
Total	122	100

Source: Author’s Analysis (2024)

Information and communication technology (ICT) tools have improved the detection and reporting of adverse drug reactions (ADRs) globally. As shown in Table 5, out of 122 respondents, 58 (48%) respondents were of the view that the use of dedicated hotlines is the most effective. Another 40 (13%) said social media handles were more effective. 18 (14%) were of the opinion that official websites of the regulatory agencies were more effective means of getting feedback from consumers while the remaining 6 (5%) pointed to other informal means. In Nigeria, mobile applications and online reporting systems are being explored to enhance pharmacovigilance (Ogar et al., 2021). However, challenges such as poor internet access and low digital literacy hinder adoption (Osemene & Lamikanra, 2012).

Inter-agency Collaborations

Table 6: Assessment of Inter-agency Collaborations

Assessment of Inter-agency Collaboration	Response	Percentage
Weak	55	45
Good	24	20
Strong	15	12
Fair	28	23
Total	122	100

Source: Author’s Analysis (2024)

Effective drug regulation often requires collaboration among multiple agencies, including NAFDAC, NDLEA, the Pharmacists Council of Nigeria (PCN), and Customs. Based on the assessment of interagency collaboration in Table 6, 55 (45%) out 122 respondents were of the opinion that the level of collaboration is weak. Another 24 (20%) were of the opinion that inter-

agency collaboration is good; only 15 (12%) held the view that the collaboration was strong while the remaining 28 (23%) were of the view that the inter-agency collaboration between the regulators is fair. Studies emphasize that inter-agency coordination reduces duplication and strengthens enforcement (Okeke et al., 2018). However, lack of clear frameworks and turf battles often undermine these efforts (Ekeigwe, 2019).

Hypothesis Testing Result

Ho: There is no significant relationship between variables of the challenges of drug distribution system in public secondary health facilities in Lagos State.

The hypothesis tested in this study measures the strength of relationships between variables affecting drug distribution regulation and enforcement in Lagos State. The result from the spearman rho showed that the relationship between challenges of drug distribution is significant at 0.05 and 0.01 level. The findings did not support the null hypothesis and it is therefore rejected

In Table 7 the diagonal cells highlighted in green color showed the correlation of each variable with itself, which is always 1. The off-diagonal cells show the correlation of each variable with the other variables. The closer the value is to 1 or -1, the stronger the correlation. The closer the value is to 0, the weaker the correlation. The values that are in bold are significant at 0.05 or 0.01 level of significance and are therefore strongly correlated than the others.

TABLE 7: THE STRENGTH OF RELATIONSHIP BETWEEN CHALLENGES OF DRUG DISTRIBUTION

			Correlations					
			Inadequate infrastructure	Supply chain disruptions	Weak regulation and enforcement	Proliferation of non-professionals	Lack of inter-agency collaborations	Problem of corruption/drug mafia
Spearman's rho	Inadequate infrastructure	Correlation Coefficient	1.000	-.075	.298	-.193	.335	.091
		Sig. (2-tailed)	.	.752	.202	.414	.149	.703
		N	20	20	20	20	20	20
	Supply chain disruptions	Correlation Coefficient	-.075	1.000	.316	-.373	.359	.263
		Sig. (2-tailed)	.752	.	.174	.105	.120	.262

	N	20	20	20	20	20	20
Weak regulation and enforcement	Correlation Coefficient	.298	.316	1.000	-.512*	.653**	.584**
	Sig. (2-tailed)	.202	.174	.	.021	.002	.007
	N	20	20	20	20	20	20
Proliferation of non-professionals	Correlation Coefficient	-.193	-.373	-.512*	1.000	-.115	-.260
	Sig. (2-tailed)	.414	.105	.021	.	.628	.268
	N	20	20	20	20	20	20
Lack of inter-agency collaborations	Correlation Coefficient	.335	.359	.653**	-.115	1.000	.452*
	Sig. (2-tailed)	.149	.120	.002	.628	.	.045
	N	20	20	20	20	20	20
Problem of corruption/drug mafia	Correlation Coefficient	.091	.263	.584**	-.260	.452*	1.000
	Sig. (2-tailed)	.703	.262	.007	.268	.045	.
	N	20	20	20	20	20	20

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

According to Table 7, there was weak correlation between inadequate infrastructure and supply chain disruption (.075); proliferation of non-professionals (.193) and corruption/drug mafia (.091). There was also weak correlation between supply chain disruption and inadequate infrastructure (.075). While there was a strong correlation between weak regulation and enforcement with proliferation of non-professionals (.512), lack of inter-agency collaborations (.653) and problem of corruption (.584). There was also strong correlation between proliferation of non-professionals and weak regulation/enforcement (.512), lack of inter-agency collaborations (.628). There was strong correlation between lack of inter-agency collaborations and weak regulation/enforcement (.653), Problem of drug mafia (.452). Finally, there was a strong correlation between problem of corruption/drug mafia and weak regulation (.584) and lack of interagency collaborations (.452).

The result of the strength of relationship between the challenges of drug distribution challenges in Lagos State as shown in this study have significant implications for public health. This is in agreement with several studies that have documented systemic issues, including poor regulatory oversight, widespread circulation of counterfeit and substandard drugs, porous supply chains, and weak law enforcement. (Akunyili, 2004; Abdulkadir, et.al. 2025; Bate et al. 2008; Onwujekwe et al., 2009; Oyetunde & Aina, 2012). This calls for a comprehensive reform of Nigeria's drug distribution and regulatory systems.

Summary of findings

The findings of this study can be summarized as follows:

This study has shown that drug regulatory agencies carry out regular inspection of pharmacy outlets in public secondary health facilities in Lagos state. This has helped to identify non-compliance and promote good pharmacy practice.

Compliance with drug distribution guidelines in Lagos state public health facilities is rated over 55% on the average. This has reduced the incidence of adverse drug reaction and ensures the integrity of medicines dispensed at the general hospitals in the state.

Drug regulation enforcement in public secondary health facilities in Lagos State is very effective. The National Agency for Food and Drug Administration and Control (NAFDAC) and Pharmacy Council of Nigeria (PCN) have been instrumental in combating counterfeit drugs and enforcing quality standards

The regulatory agencies carry out drug advocacy at least three times in a year in Lagos State. Frequent public awareness campaigns through Community engagement, media campaigns, and school-based interventions are essential for reduction in illicit drug use.

The study also showed that patients are using information and communication technology (ICT) tools to report adverse drug reactions (ADRs) in public secondary health facilities in Lagos State. This has enhanced pharmacovigilance in general hospital pharmacy in the state. However, inter-agency collaboration among NAFDAC and PCN is often weak. This has led to duplication and weakens enforcement due to lack of clear frameworks which often undermine their efforts.

Finally, the hypothesis tested in this study measured the strength of relationships between variables affecting drug distribution regulation and enforcement in Lagos State. The result from the spearman rho showed that the relationship between challenges of drug distribution is significant at 0.05 and 0.01 level.

5.0 Conclusion

The study developed correlation co-efficient of the challenges of drug distribution and regulation in Lagos State. This shoes clearly that there is need for strong enforcement and interagency collaboration between NAFDAC and PCN to ensure strict compliance with National drug distribution guidelines (NDDG) of 2012. This could be achieved through strengthening of regulatory framework and improvement of institutional capacity.

6.0 Recommendations

Based on the study's findings it was recommended that the PCN and NAFDAC. Should strictly enforce the National Drug Distribution Guidelines (NDDG) of 2012. This will control the influx of non-professional and quacks in the drug distribution chain. This underscores the necessity for improved collaboration between PCN and NAFDAC to streamline regulatory processes and

enhance the effectiveness of pharmaceutical regulation in Nigeria. There is also a need for improved collaboration between NAFDAC, PCN, and NDLEA. This is crucial for the regulation of narcotic drugs and psychotropic substances.

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