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MOTIVATIONS, CONSEQUENCES, AND PREVENTION OF DRUG DIVERSION: A STUDY OF HEALTHCARE PROFESSIONALS AT AHMADU BELLO UNIVERSITY TEACHING HOSPITAL, ZARIA

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Abstract

This study explores drug diversion motivations, consequences, and prevention among healthcare professionals at Ahmadu Bello University Teaching Hospital (ABUTH), Zaria. It comprehensively addresses healthcare's drug diversion issue, investigating drivers, outcomes, and preventive strategies. Primary research questions focus on motives behind drug diversion at ABUTH, Zaria, its consequences, and effective prevention. Employing cross-sectional design, self-administered questionnaires gather data from ABUTH, Zaria's healthcare professionals. The questionnaire captures sociodemographic, motivations, perceived impact, and preventive recommendations. It includes closed-ended, Likert scale, multiple-choice, and open-ended items. A convenience sample from diverse ABUTH, Zaria departments yields 398 respondents. A pilot study precedes data collection to enhance questionnaire clarity. Adherence to ethical guidelines ensures participant consent, confidentiality, and anonymity. Descriptive statistics analyse data, yielding frequency distributions, percentages for motivations, impact, and preventive strategies. Findings align with literature, identifying addiction as a key motive. Consequences include compromised

patient safety, supply chain disruption, legal ramifications, and reputational harm. Vulnerabilities in healthcare systems drive targeted interventions. Recommendations address ABUTH, Zaria's drug diversion. These include robust controlled substance reviews, transparent drug procurement policies, mandatory medical staff verification, waste area monitoring, and enhanced video surveillance. The study concludes that addressing addiction-driven diversion and prioritizing targeted prevention is productive in curbing drug diversion and that recommended strategies can enhance medication security, patient safety, and healthcare system integrity, fostering a safer, accountable environment.
Keywords: Drug diversion, Healthcare professionals, Motivations, Consequences, Prevention strategies

Introduction

Drug diversion is a serious problem that can have a significant impact on patient care, healthcare systems, and public health. It is intentional transfer of drugs from their legal and authorized use to an unauthorized or illegal one. This can involve theft, falsification, or misuse of prescription medications. Drug diversion, the unauthorized redirection of prescription medications for illicit purposes, poses a substantial challenge within healthcare settings worldwide (National Institute on Drug Abuse, NIDA, 2023). It encompasses a range of activities, from the misappropriation of controlled substances by healthcare professionals to the theft or misuse of medications intended for patients. The consequences of drug diversion are multifaceted, impacting patient care, healthcare providers, institutions, and the broader community. This study focuses on exploring the motivations behind drug diversion, its consequences, and potential preventive measures among healthcare professionals at Ahmadu Bello University Teaching Hospital (ABUTH) in Zaria.

Despite its initial appearance as a victimless crime, drug diversion has far-reaching consequences, affecting patients, healthcare workers (HCWs), and healthcare employers (Berge, Dillon, Sikkink, Taylor & Lanier, 2012). This problem has a wide range of implications, especially in light of the growing problem of prescription drug abuse, particularly in Nigeria (United Nations Office on Drugs and Crime, UNODC, 2018). Healthcare professionals, including anaesthesiologists and nurse anaesthetists, are especially susceptible to drug diversion, highlighting the urgency of addressing this challenge (Bryson & Silverstein, 2008). Motivations driving drug diversion among healthcare professionals often stem from various factors including personal addiction issues, financial pressures, perceived ease of access to medications, or even attempts to alleviate workplace stress (Cook, 2022). Pont et al. (2016) highlighted the complexity of motivations by emphasizing that healthcare professionals involved

in diversion often face significant personal and professional challenges that contribute to their actions.

The consequences of drug diversion reverberate throughout the healthcare system. Patients are at risk of inadequate pain management or compromised care due to the unavailability of prescribed medications (Cook, 2022). Additionally, healthcare providers involved in diversion risk tarnishing their professional reputation, facing legal consequences, and potentially endangering the well-being of their patients (Berge et al., 2012). These ramifications create a pressing need to identify effective prevention strategies to mitigate drug diversion's detrimental impact. Preventing drug diversion requires a multifaceted approach involving stringent regulatory measures, robust monitoring systems, comprehensive education, and support for healthcare professionals. Instituting stringent medication tracking protocols and implementing technological solutions, such as automated dispensing systems, can aid in controlling access to medications and detecting irregularities. Furthermore, educational programs focusing on addiction awareness, stress management, and ethical decision-making can empower healthcare professionals to recognize, address, and prevent drug diversion within their ranks. This study aims to examine the intricate dynamics of drug diversion among healthcare professionals at ABUTH, Zaria. By understanding the underlying motivations, exploring the consequences, and evaluating potential preventive measures, this research seeks to contribute valuable insights to the development of targeted interventions and policies aimed at curbing drug diversion and safeguarding patient care and the integrity of healthcare institutions.

Statement of the Problem

Drug diversion within healthcare settings presents a critical challenge, posing significant risks to patient safety, healthcare provider well-being, and institutional integrity. In Nigeria, where healthcare challenges intersect with social and economic complexities, drug diversion takes on a significant dimension. The motivations behind drug diversion among healthcare professionals are multifaceted, ranging from personal use to illegal distribution (Johnson, 2019). The absence of comprehensive monitoring and reporting mechanisms makes it challenging to quantify the extent of drug diversion. Additionally, a culture of silence and fear of reporting within the healthcare community exacerbates the problem. Ahmadu Bello University Teaching Hospital in Zaria is not immune to the potential ramifications of drug diversion among its healthcare professionals. Despite its potential adverse effects, the specific factors driving drug diversion, the consequential impacts, and the effectiveness of preventive measures remain inadequately understood within this specific healthcare setting. The lack of comprehensive insight into the motivations behind drug diversion among

healthcare professionals at ABUTH impedes the development of targeted interventions. Furthermore, the precise consequences of drug diversion within this context, including its implications for patient care, the integrity of healthcare services, and the professional standing of involved individuals, remain relatively unexplored.

Moreover, the absence of a thorough evaluation of potential preventive strategies tailored to the specific dynamics of this institution hinders the establishment of proactive measures to mitigate drug diversion effectively. A comprehensive understanding of these issues is essential to implement effective policies and interventions that safeguard patient safety, uphold professional ethics, and fortify the integrity of healthcare delivery at ABUTH and other healthcare institutions. Despite its widespread implications, the problem of drug diversion in Nigeria, especially within ABUTH, Zaria, remains inadequately explored. Limited research and discussions have hindered a comprehensive understanding of the issue. Therefore, this study aims to address this gap by investigating the prevalence, motivations, and consequences of drug diversion among healthcare professionals at ABUTH, Zaria. The study seeks to shed light on the unique challenges faced by healthcare workers in Nigeria and contribute insights into tailored strategies for prevention and intervention within this context.

Research Questions

i. What motivates healthcare professionals to engage in drug diversion at ABUTH, Zaria?
ii. What are the consequences of drug diversion at ABUTH, Zaria?
iii. What can be done to prevent and address drug diversion among healthcare professionals at ABUTH, Zaria?

Literature Review

The primary cause of controlled substance diversion among healthcare professionals is addiction (Abramowitz, 2014) and perhaps due to increased access and other job-related factors (Merlo and Gold, 2008; Kenna and Lewis, 2008). Professions granting easy access to controlled substances, like anaesthesiology and nursing, exhibit elevated addiction rates. Notably, the American Nurses Association estimates that around one in ten nurses grapple with drug or alcohol addiction (Copp, 2009). The complexity of healthcare supply chains, involving the movement of medications from manufacturers to distributors, pharmacies, specific units, and patients, underscores the numerous risk points. Hospitals are particularly susceptible due to their responsibility for storing and administering controlled substances. However, most drug diversions occur in outpatient settings where prescription drugs are more prevalent. Surprisingly, the driving force behind drug diversion within healthcare is

addiction rather than monetary gain (Shoenfeld, 2019). The American Nurses Association's estimation of one in ten nurses facing drug or alcohol addiction further underscores this point. Additionally, healthcare professionals with access to controlled substances, such as those in anaesthesiology, exhibit high addiction rates. A recent case exemplifies the reach of addiction-driven diversion, involving a radiology technician with access to unsecured operating rooms.

Nyhus (2021) identifies key factors contributing to drug diversion by healthcare staff, including the absence of specialized drug diversion prevention personnel, reliance on outdated manual data collection, incongruent policies and procedures, and insufficient audit trails for investigative purposes. The COVID-19 pandemic exacerbated drug diversion, driven by addiction and amplified access to drug cabinets by healthcare personnel. This phenomenon unfolded as healthcare operations shifted to accommodate increased drug needs and expanded ICUs during the pandemic. Consequently, certain facilities bypassed diversion prevention measures in favour of preparations for the pandemic surge, inadvertently fostering an environment conducive to drug diversion. Challenges related to proper waste disposal practices also play a significant role in drug diversion (Nyhus, 2021). Interruptions, efficiency concerns, lack of dedicated waste containers, time constraints, and difficulties finding witnesses for waste disposal contribute to diversion. The obstacles encountered in proper waste disposal may lead healthcare workers to resort to deviations from best practices, perpetuating undesirable behaviours. Failing to adhere to best practices, including those outlined by the Infusion Nurses Society (INS) for safe medication practices and disposal, contributes to drug diversion (Abramowitz, 2014).

Drug diversion among healthcare staff holds repercussions for individuals across all professional levels, ranging from top doctors to technicians. The act of diversion poses threats such as compromised patient safety due to impaired healthcare providers, supply chain disruptions resulting from opioid shortages, and patient exposure to infectious diseases due to mishandling of equipment and impaired judgment. Engaging in drug diversion constitutes a felony offense that can lead to criminal prosecution and the loss of nursing licenses. A nurse's involvement in diversion may culminate in permanent exclusion from healthcare work, legal ramifications, and potential lawsuits from patients who suffered inadequate pain relief or exposure to bloodborne pathogens due to tampering and substitution. Controlled substances diversion within health systems extends to profound patient safety issues, harm to the diverter, and significant liability risk for organizations (Berge et al., 2012). Diversions endanger patients directly or indirectly, resulting in inadequate pain relief, inaccurate medical record documentation, exposure to infectious diseases from contaminated needles and drugs, and impaired healthcare worker (HCW) performance. Alongside patient

harm, organizations face regulatory and legal risks, encompassing fraudulent billing and liability for consequential damages, as well as a reduction in community trust in the healthcare system.

The negative outcomes of drug diversion reverberate widely, significantly impacting patients. For instance, a Connecticut fertility clinic nurse tampered with approximately 75% of fentanyl doses given to patients, leading to painful surgical procedures for more than 20 women (Nyhus, 2021). Another instance saw a Washington State emergency department nurse's unsafe injection practices transmit the Hepatitis C virus to at least 12 patients. Since 1983, the Centres for Disease Control and Prevention (CDCP) have recorded numerous outbreaks of Hepatitis C and other bloodborne infections attributed to drug diversion (Nyhus, 2021). Healthcare workers engaging in drug diversion expose themselves to substantial personal and professional risks. These include addiction, overdose, disease exposure, and potential death. In the event of discovery, they may face job loss and revoked professional licenses, as well as state or federal criminal charges and civil malpractice suits. The repercussions extend beyond individuals to healthcare organizations and the medical profession's reputation, especially when patient safety is compromised. The occurrence of drug diversion can lead to substantial lawsuits, financial strain, and public relations challenges. Consequently, patient and staff safety diminishes when diversion prevention efforts fall short. Drug diversion's consequences impact patient safety, hospital costs, infectious disease outbreaks, and legal penalties. Medical facilities lacking adequate drug diversion controls face the risk of civil and criminal penalties (Shoenfeld, 2019). A case in point involves the University of Michigan Health System, which paid $4.3 million to settle allegations of violating specific provisions of the Controlled Substances Act due to lax controls that facilitated drug diversion (Shoenfeld, 2019).

Methodology

In this study, a cross-sectional research design was utilized. A self-administered questionnaire was employed to collect data from healthcare professionals at the ABUTH, ZARIA, Nigeria. The primary method of data collection involved administering a structured questionnaire to the targeted respondents. The questionnaire consisted of closed-ended questions that captured socio-demographic information, motivations for drug diversion, perceived impact of drug diversion, and suggestions for prevention strategies. A convenience sampling technique was employed to select the participants. Healthcare professionals from various departments of the ABUTH, ZARIA were invited to participate in the study. A total of 398 respondents were approached and gave their consent to participate in the study. The questionnaire was designed to address the research objectives. It consisted of sections that focused on socio-

demographic information, motivations for drug diversion, impact on patient care and healthcare systems, and strategies for prevention. The questionnaire included Likert scale items, multiple-choice questions, and open-ended questions to capture a wide range of responses.

Prior to the main data collection, a pilot study was conducted with a small sample of healthcare professionals. This aimed to assess the clarity and comprehensibility of the questionnaire. Necessary adjustments were made based on the feedback received. Permission was obtained from the appropriate authorities at the ABUTH, ZARIA to conduct the study. The questionnaires were administered to respondents along with a cover letter explaining the study's purpose and the voluntary nature of participation. Participants were given a specific timeframe to complete and return the questionnaires. Descriptive statistics were used to analyse the collected data. Frequency distributions and percentages were calculated for socio-demographic variables, motivations for drug diversion, perceived impact, and prevention strategies. The data were presented using tables to provide a clear overview of the findings.

Ethical guidelines were followed throughout the research process. Informed consent was obtained from all participants, ensuring their willingness to participate. Confidentiality and anonymity of respondents were maintained by excluding any identifying information from the questionnaire. The study's findings were potentially limited by the convenience sampling technique, which might not fully represent the entire population of healthcare professionals at the ABUTH, Zaria. Additionally, self-reported data could introduce response bias. However, efforts were made to minimize these limitations and ensure the validity and reliability of the study results.

Research Findings/Results

This section presents the analysis and interpretations of the data collected in the course of conducting the research. In other words, it presents explanation for the results obtained in the study. A total of three hundred and ninety-eight (398) questionnaires were administered to healthcare professionals across various departments of the ABUTH, ZARIA. Therefore, the analysis was based on the responses obtained from the completed questionnaire.

Table 1: Socio-demographic Data of Respondents

Variable	Responses/Options	Frequency (398)	Percent (%)
Gender	Male	180	45.2
	Female	218	54.8
Age Group	21 - 30 years	121	30.3
	31 - 40 years	154	38.6
	41 - 50 years	75	18.8
	51 and above	49	12.3
Education Level	High School	52	13.1
	Bachelor's Degree	184	46.2
	Master's Degree	103	25.9
	Doctorate Degree	59	14.8
Job Position	Staff Nurse	135	33.9
	Physician	102	25.6
	Pharmacist	85	21.4
	Medical Officer	51	12.8
	Others	25	6.3
Marital Status	Single	123	30.9
	Married	234	58.8
	Divorced/Separated	23	5.8
	Widowed	18	4.5
Years of Service	<5 years	103	25.9
	6 - 10 years	144	36.2
	11 - 15 years	82	20.6
	16 years and above	69	17.3

Table 1 provides a comprehensive overview of the socio-demographic characteristics of the respondents participating in the study on drug diversion at ABUTH, Zaria. The table presents frequency and percentage distributions for each variable, shedding light on the diverse profile of the participants and offering insights into potential associations with drug diversion trends. Gender distribution among the respondents reveals that 45.2% are male, while 54.8% are female. This gender distribution is noteworthy as it mirrors the gender diversity within the healthcare workforce, thereby enhancing the representativeness of the study's findings in relation to drug diversion. The age group distribution shows that respondents are spread across different age brackets. The largest group, accounting for 38.6%, falls within the 31 to 40 years range, followed by those aged 21 to 30 years at 30.3%. The inclusion of respondents from varying age groups ensures a comprehensive understanding of how different generations might be involved in or influenced by drug diversion activities. Regarding education level, the distribution reflects a range of qualifications. Bachelor's degree holders make up the majority at 46.2%, followed by master's degree

holders at 25.9%. This diversity in education levels brings in perspectives from various professional backgrounds, offering a more holistic view of the issue of drug diversion.

In terms of job positions, the distribution indicates that staff nurses represent the largest group at 33.9%, followed closely by physicians at 25.6%. The inclusion of various healthcare job positions is essential, as it allows for insights into how different roles within the healthcare system might be associated with drug diversion incidents. Marital status reveals that a significant portion, 58.8%, of the respondents is married, while 30.9% are single. This distribution can help to explore any potential links between marital status and the propensity for drug diversion. Lastly, the years of service distribution highlights that a substantial number of respondents have 6 to 10 years of service (36.2%), followed by those with less than 5 years (25.9%). This distribution could unveil whether there is any correlation between years of service and involvement in drug diversion activities.

Motivations for Drug Diversions by Health Staff in ABUTH, Zaria

Table 2: Primary categories and settings in drug diversion

Variables	**Options/Responses**	**Frequency (398)**	**Percentage (100.0)**
Primary drug diversion categories	Health workers Hospital management Patients	256 87 55	64.3 21.9 13.8
High-incidence drug diversion settings	Outpatient centres Inpatient centres	291 107	73.1 26.9

Source: Fieldwork, 2023

Table 2 explores drug diversion categories and prevalent settings, based on responses from 398 healthcare professionals at ABUTH, Zaria. This table systematically presents frequency and percentage distributions, unveiling crucial trends within the dataset. Notably, the primary diversion categories include health workers, hospital management, and patients, with health workers taking the lead at 64.3%, followed by management (21.9%), and patients (13.8%). The allocation of percentages among these categories highlights the significance of health worker involvement in drug diversion activities. The prominence of health workers as the foremost contributors to drug diversion is a critical insight arising from the analysis. This underscores the urgent need for robust prevention and detection mechanisms within healthcare institutions to curb the impact of drug diversion. The notably high percentage of health workers implicated highlights

the potential vulnerabilities of healthcare systems in the absence of vigilant monitoring and oversight protocols.

Additionally, the findings also shed light on the distribution of drug diversion incidents across different healthcare settings. Specifically, 73.1% of respondents identify outpatient centres as susceptible to drug diversion, while 26.9% point to inpatient centres. This distinction underscores the necessity of targeted preventive strategies, particularly tailored to outpatient settings, to effectively address the challenges posed by drug diversion. Moreover, the considerable variance in drug diversion occurrences between outpatient and inpatient centres draws attention to the specific risks inherent in outpatient care contexts. This difference can be attributed to the comparatively relaxed monitoring in outpatient settings, providing opportunities for unscrupulous health workers to exploit the situation for illicit purposes such as unauthorized prescription and diversion.

Table 3: Mean analysis on drug diversion methods facilitating increased drug diversion

Variables	**Mean Score**
Selling prescription drugs	0.5829
Doctor shopping	0.6985
Illegal Internet pharmacies	0.3794
Drug theft	0.3417
Prescription pad theft and forgery	0.4749
Illicit prescribing of drugs	0.4824
Altering a prescription	0.4196
Operating pain clinics	0.3593
Pretending to be wasting medications	0.4975

Source: Fieldwork, 2023

Table 3 provides a comprehensive overview of the prevalence of diverse drug diversion methods among 398 healthcare professionals surveyed at ABUTH, Zaria. The mean scores offer crucial insights into the varying degrees of recognition and acknowledgment of these methods within the realm of drug diversion. Doctor shopping, with a remarkably high mean score of 0.6985, emerges as a strikingly prevalent method. This underscores the substantial consensus among respondents regarding its prominence. The elevated mean score reflects the widespread recognition of this tactic, attributed to its effectiveness in exploiting the fragmented nature of healthcare systems. The ability to manipulate multiple prescriptions for controlled substances highlights the method's significant impact on diversion practices.

Illicit prescribing of drugs garners a mean score of 0.4824, indicating moderate prevalence. This reveals a noteworthy level of awareness among respondents regarding healthcare providers' involvement in unauthorized prescription practices. The relatively high mean score suggests that many have encountered instances where controlled substances are improperly prescribed, highlighting a concerning aspect of drug diversion. The practice of selling prescription drugs earns a mean score of 0.5829, indicating its prevalence among the surveyed healthcare professionals. The higher mean score underscores the familiarity of respondents with this tactic. The allure of financial gain is likely a driving factor, motivating individuals, including healthcare professionals, to partake in the unlawful distribution of prescription medications for personal financial benefits. Pretending to be wasting medications, with a mean score of 0.4975, emerges as moderately prevalent. The recognition of healthcare professionals simulating medication wastage while diverting them underscores the respondents' awareness of this covert strategy. The relatively high mean score may stem from an elevated understanding of the potential for diversion through this deceptive practice.

Among the nonprevalent methods, drug theft obtains a relatively lower mean score of 0.3417, indicating its limited prevalence. This lower score signifies that respondents are less familiar with this method, possibly due to the perceived challenges associated with stealing medications within healthcare settings where security measures are more pronounced. Operating pain clinics (mean: 0.3593) and illegal internet pharmacies (mean: 0.3794) are both identified as nonprevalent strategies. These methods garner lower mean scores, suggesting a reduced level of recognition and awareness among respondents. This could be attributed to a lower level of familiarity with these methods' involvement in drug diversion. Prescription pad theft and forgery exhibit a mean score of 0.4749, indicating relatively moderate nonprevalence. While acknowledged, this method is not as widely recognized as the prevalent ones. The moderate mean score implies that respondents have encountered instances of prescription pad theft and forgery, but these instances might not be as pervasive.

Table 4: Mena analysis on most likely factors to motivate drug diversion in the hospital

Variable	Mean
Non-use of tamper-resistant prescription pads	0.666
Omission of medication quantity and strength	0.505
Pre-signing blank prescriptions in advance	0.736
Misuse of prescription pads for non-prescription purposes	0.555
Insufficient security measures for controlled substances	0.538

Source: Fieldwork, 2023

Table 4 presents the views of respondents on the most likely factors to motivate drug diversion among healthcare providers in hospitals. Pre-signing blank prescriptions in advance has the highest mean score of 0.736. This practice creates an environment in which individuals can easily manipulate and misuse prescription forms for unauthorized purposes. By having access to pre-signed blank prescriptions, individuals can forge prescriptions without the immediate oversight of medical professionals. This reduces the accountability and traceability of prescriptions, making it easier for diverted drugs to enter the system. The relatively high mean score of 0.666 for the non-use of tamper-resistant prescription pads suggests that this factor significantly contributes to the issue of drug diversion. Tamper-resistant prescription pads play a crucial role in deterring unauthorized copying and replication of prescriptions. The absence of these security features allows for the creation of counterfeit prescriptions, making it difficult to distinguish between genuine and forged prescriptions.

The misuse of prescription pads for non-prescription purposes, with a mean score of 0.555, is an important factor in motivating drug diversion. When prescription pads are used for unauthorized purposes, such as obtaining controlled substances without legitimate medical need, it opens a channel for diverting drugs into the wrong hands. This misuse can lead to a higher quantity of controlled substances being dispensed than what is medically necessary. Inadequate security measures for controlled substances have a mean score of 0.538, highlighting the concern that weak security protocols can enable unauthorized access. Controlled substances are particularly susceptible to diversion due to their value and potential for misuse. Insufficient security measures, such as improper storage or lax monitoring, can lead to theft or unauthorized acquisition of these substances, contributing to drug diversion.

While having a slightly lower mean score of 0.505, the omission of medication quantity and strength remains relevant. When these details are missing or unclear on a prescription, it opens the door for intentional or accidental errors in dispensing. Such errors can result in an increased supply of controlled substances, potentially leading to drug diversion when these excess drugs are not used for their intended purpose. In summary, the factors with the highest mean scores align with key vulnerabilities in the prescription and dispensing process within hospitals. Pre-signing blank prescriptions, not employing tamper-resistant prescription pads, misusing prescription pads, inadequate security measures, and incomplete prescription information all contribute to the ease with which drugs can be diverted. Addressing these factors is essential for curbing drug diversion and ensuring the safe and proper use of medications within the healthcare environment.

Table 5: Mean analysis on motivations for drug diversion among healthcare professionals

Restructured Variables	Mean	Categorization
Drug addiction among healthcare workers	0.564	Accepted
Financial Motivation	0.580	Accepted
Ethical Commitment and Integrity	0.379	Rejected
Access to Drug Cabinets by Healthcare Staff	0.432	Rejected
Inadequate Prosecution upon Detection	0.514	Accepted
Insufficient Institutional Interventions	0.477	Rejected
Deficiencies in Hospital Management Control	0.412	Rejected

Source: Fieldwork, 2023

The variable "Drug addiction among healthcare workers" holds a mean score of 0.564, categorizing it as "Accepted." This suggests that drug addiction is likely a contributing factor to drug diversion among healthcare professionals. Individuals struggling with drug addiction may resort to diverting drugs to support their habits. The above-average mean score indicates a meaningful correlation. The "Financial Motivation" variable has a mean score of 0.580, indicating that financial incentives play a significant role in motivating drug diversion, suggesting that some healthcare workers might divert drugs to earn extra income, bolstering the "Accepted" categorization. The variable "Inadequate Prosecution upon Detection" has a mean score of 0.514, leading to its "Accepted" categorization. This indicates that insufficient legal consequences upon identifying drug diversion incidents might contribute to the continuation of such behaviour. The "Insufficient Institutional Interventions" variable has a mean score of 0.477, categorizing it as "Rejected." This implies that while institutional interventions might play a role, they are not a predominant cause of drug diversion.

With a mean score of 0.379, the "Ethical Commitment and Integrity" variable falls below the threshold, leading to its "Rejected" categorization. This implies that a lack of ethical commitment and integrity among healthcare workers is not strongly associated with drug diversion. The variable "Access to Drug Cabinets by Healthcare Staff" holds a mean score of 0.432, categorizing it as "Rejected." This suggests that while access to drug cabinets may contribute, it is not a dominant factor in drug diversion among healthcare professionals. The "Deficiencies in Hospital Management Control" variable holds a mean score of 0.412, leading to its "Rejected" categorization. This suggests that inadequacies in management control are not the primary driving force behind drug diversion. In summary, the mean scores, along with their categorizations, offer insights into the varying degrees of influence each factor has on drug diversion among healthcare professionals. The variables with mean scores above 0.5 (accepted) are

likely more impactful contributors, while those below 0.5 (rejected) have a relatively weaker association with drug diversion.

Consequences of Drug Diversions by Health Staff in ABUTH, Zaria

Table 6: Consequences of drug diversions by healthcare providers

Variables	Options/Responses	Frequency (398)	Percentage (100.0)
Drug diversion have consequences	Yes	376	94.5
	No	22	5.5
Most impacted categories in drug diversion	Health workers	241	60.6
	Hospital management	98	24.6
	Patients	59	14.8
Impact of health workers' drug diversion on patients	Unrelieved pain	75	18.8
	Inadequate care	105	26.4
	Infections from contaminated syringes	218	54.8
Risks faced by healthcare workers in drug diversion	Addiction	111	27.9
	Overdose	73	18.3
	Death	87	21.9
	Criminal prosecution	71	17.8
	Civil malpractice suits	56	14.1

Source: Fieldwork, 2023

The findings in Table 6 shed light on the perceptions and insights of participants concerning the consequences and implications of drug diversion by healthcare providers. The overwhelming consensus among respondents (94.5%) is that drug diversion has significant consequences. This high percentage reflects the collective awareness within the healthcare community that such actions bear serious implications. This recognition forms the foundation for acknowledging the need to address the issue effectively. When participants were asked to identify the categories most impacted by drug diversion, the majority (60.6%) pointed towards "Health workers." This outcome resonates with the widely held belief that drug diversion can detrimentally affect the health and functioning of healthcare professionals. It implies potential risks to patient care and institutional integrity when the well-being of healthcare workers is compromised.

Among the perceived consequences of health workers' drug diversion on patients, the most significant implications were attributed to "Infections from contaminated syringes" (54.8%). This finding underscores the potential dangers posed to patient safety by such practices. The recognition of "Inadequate care" (26.4%) and "Unrelieved pain" (18.8%) as substantial outcomes signifies the

broader impact on patient well-being and quality of care. Respondents' perceptions of risks associated with drug diversion point to multifaceted concerns. Notably, "Addiction" (27.9%), "Death" (21.9%), "Overdose" (18.3%), "Criminal prosecution" (17.8%), and "Civil malpractice suits" (14.1%) were identified as potential consequences for healthcare workers involved in drug diversion. This diverse range of recognized risks underscores the complexity of the issue. It highlights the potential personal, legal, and professional ramifications that healthcare professionals engaging in drug diversion might face.

The findings on open-ended responses to consequences of drug diversion by healthcare providers reveal that 241 participants (60.6%) expressed the view that drug diversion has the potential to compromise patient safety because of impaired healthcare providers. This substantial percentage underscores the consensus that drug diversion can lead to compromised care quality, thereby endangering patients' well-being. A significant portion of respondents, consisting of 210 participants (52.8%), perceived the risk of license revocation upon detection and prosecution due to drug diversion. This percentage highlights the serious professional consequences that healthcare providers might encounter, contributing to the discourse surrounding the legal ramifications of this issue.

With 183 respondents (46.0%), the recognition of inaccurate documentation of patient care in medical files as an outcome of drug diversion reflects the awareness of the potential for distorted healthcare records. This percentage underscores the concern over the integrity of patient records and the implications for care quality. A total of 162 participants (40.7%) acknowledged that drug diversion can lead to diminished public confidence in the healthcare system. This percentage indicates the realization of the broader societal impact, as mistrust in healthcare institutions could influence patients' perceptions of care quality and safety. The prevalence of responses underscores the collective understanding of the potential compromise to patient safety, the legal repercussions for healthcare providers, the impact on medical documentation accuracy, and the broader erosion of public trust in the healthcare system. These insights contribute to a more comprehensive understanding of the multifaceted consequences of drug diversion within the healthcare context.

Measures for Addressing Drug Diversion by Health Staff

Table 7: Measures for mitigating drug diversion by healthcare providers

Variables	**Mean Score**
Comprehensive controlled substance review and inventory process	0.683
Formulation of comprehensive drug procurement policies	0.503
Incorporation of waste area monitoring	0.387
Implementation of video surveillance	0.480
Mandatory medical staff verification	0.533

Source: Fieldwork, 2023

Through the analysis of responses from 398 participants, the mean scores assigned to the proposed variables illuminate the array of measures suggested by respondents to counteract drug diversion in their respective work settings and the broader healthcare arena. The variable "Comprehensive Controlled Substance Review and Inventory Process" commands a noteworthy mean score of 0.683. This score surpassing the 0.5 threshold reflects a prevailing viewpoint among participants that their organizations have instituted robust protocols for conducting exhaustive evaluations and maintaining accurate registries of controlled substances. This approach involves meticulous procedures, including regular audits, stringent record-keeping, and thorough oversight encompassing the entire lifecycle of controlled substances, from procurement to disposal. This endorsement underscores respondents' conviction that this measure stands as a potent and efficacious strategy in averting drug diversion. The process's efficacy in swiftly identifying any anomalies or incongruities in the quantities of controlled substances is perceived as a pivotal factor in mitigating the risk of diversion incidents.

In the sphere of "Formulation of Comprehensive Drug Procurement Policies," the mean score of 0.503 signifies a balanced response. This score marginally exceeds the 0.5 threshold, indicative of participants recognizing the presence of encompassing procurement policies, albeit with a tempered sentiment. The feedback reveals a range of perspectives, implying a possible need for refining or clarifying these policies. To augment the measure's efficacy against drug diversion, potential enhancements might encompass more rigorous criteria for vendor selection, transparent acquisition protocols, and meticulous mechanisms for tracking inventory. While not as overtly robust as other variables, this score suggests a measure with latent potential, necessitating dedicated attention to amplify its influence.

The variable pertaining to "Incorporation of Waste Area Monitoring" yields a mean score of 0.387, falling short of the 0.5 threshold. This outcome signals a relatively less robust perception regarding the implementation of waste area monitoring. While acknowledging a certain level of practice in this domain, the weaker score points to room for enhancement. Recognizing the significance of effective waste area monitoring in countering drug diversion, potential improvements encompass more frequent inspections of disposal areas, meticulous protocols for disposing of unused or expired medications, and strategies to preclude unauthorized access to discarded medications. The feedback underscores the necessity of fortifying this measure to align more cohesively with the objective of preventing drug diversion.

In the context of the "Implementation of Video Surveillance," the mean score of 0.480 implies that while video surveillance measures are in place, they might not entirely meet participants' expectations. Falling short of the 0.5 threshold designates this measure as weak in the respondents' estimation. Maximizing the potential of video surveillance to discourage drug diversion necessitates strategic camera placement, sustained monitoring, and prompt intervention in response to any suspicious activities. The feedback beckons an opportunity to bolster video surveillance strategies, enhancing their capability to more effectively thwart and identify potential incidents of diversion.

Lastly, the variable "Mandatory Medical Staff Verification" garners a robust mean score of 0.533, surpassing the 0.5 threshold. This finding indicates that a considerable segment of respondents perceives mandatory medical staff verification as a strong measure against drug diversion. This practice mandates medical staff to validate drug dispensation and receipt under hospital management supervision. This stipulation introduces an added layer of accountability and oversight, thereby curtailing the risk of unauthorized access or tampering with medications. The respondents' positive assessment of this practice underscores its efficacy in reinforcing medication handling security.

Discussion of Findings

The findings of this study align with and expand upon the existing literature on controlled drug diversion among healthcare professionals. The primary driver identified in the study, addiction, resonates with research conducted by Abramowitz (2014), which underscores how substance addiction fuels diversion. The link between professions granting easy access to controlled substances and elevated addiction rates, as highlighted in anaesthesiology and nursing, corresponds with Copp's (2009) assertion that nurses, due to their accessibility to medications, are particularly susceptible to addiction. This connection underscores the importance of addressing addiction as a core issue within

healthcare settings. The complexity of healthcare supply chains and the vulnerabilities associated with storage and administration of controlled substances within hospitals are consistent with the observations of Nyhus (2021). This suggests that healthcare institutions must focus on securing every stage of the medication journey to prevent diversion. The study's revelation that most drug diversions occur in outpatient settings echoes existing knowledge that outpatient contexts are particularly prone to such incidents due to the prevalence of prescription drugs.

The emphasis on addiction as the driving force behind drug diversion aligns with Shoenfeld's (2019) findings, suggesting that financial motivation might be a secondary factor. The prevalence of addiction-driven diversion among healthcare professionals, as illustrated by the American Nurses Association's estimation, underscores the need for targeted intervention programs to address addiction issues within the workforce. The study's emphasis on challenges related to waste disposal practices mirrors Nyhus's (2021) perspective on the role of waste disposal in drug diversion. Inadequate waste disposal practices and deviations from established protocols could be perpetuating drug diversion by providing opportunities for illicit acquisition of medications. The discussion of the negative outcomes of drug diversion on patient safety, compromised supply chains, and legal ramifications aligns with Berge et al.'s (2012) findings, highlighting the profound risks and repercussions associated with diversion incidents. The study's emphasis on the far-reaching consequences of drug diversion, including patient harm, legal consequences, and damage to healthcare organizations' reputations, underscores the imperative to address this issue holistically.

Conclusion

In the landscape of healthcare, the phenomenon of drug diversion among providers emerges as a multifaceted challenge with far-reaching consequences. Through an extensive analysis of various dimensions - from demographic profiles to prevalent methods and proposed countermeasures - this study offers profound insights into the intricacies of drug diversion within healthcare settings. The diversity observed in the socio-demographic characteristics of healthcare professionals underscores the need for nuanced interventions. Primary categories associated with drug diversion, namely health workers, hospital management, and patients, provide a focal point for targeted strategies. The prevalence of outpatient centres as settings for drug diversion adds granularity to understanding where vulnerabilities lie.

Exploring prevalent drug diversion methods reveals the intricate strategies employed by healthcare workers. The discernment between prevalent and non-prevalent methods guides the allocation of resources and attention, forming a

cornerstone for effective prevention efforts. The identification of factors motivating drug diversion illuminates the complex interplay of personal motivations, systemic gaps, and ethical considerations. Perceptions on the consequences of drug diversion underscore its multifaceted impact on patient safety, legal consequences, and institutional trust. This recognition underscores the urgency of implementing comprehensive measures that encompass legal frameworks, policy enhancements, and ethical considerations. The proposed measures to counteract drug diversion provide a diverse toolkit for intervention. While some measures enjoy robust support, others demand refinement. This diversity calls for tailored strategies that harness the collective intelligence of the healthcare workforce to address this challenge cohesively

Recommendations

The following recommendations informed by the study's findings are made to effectively address the multifaceted challenge of drug diversion:

i. Healthcare institutions should implement rigorous monitoring protocols that cover the entire spectrum of controlled substance management, from procurement to disposal. Regular audits, meticulous record-keeping, and real-time oversight mechanisms should be established to swiftly identify any irregularities and minimize the risk of drug diversion.
ii. Institutions should strengthen their drug procurement policies to include transparent acquisition procedures and stringent criteria for vendor selection. A meticulous tracking system should be in place to ensure a transparent and accountable supply chain, deterring unauthorized access and ensuring the legitimacy of acquired medications.
iii. Regular and thorough inspections of waste areas should be carried out to ensure proper disposal of unused or expired medications. Protocols should be established to prevent unauthorized access to discarded medications, effectively eliminating opportunities for drug diversion through improper disposal methods.
iv. Healthcare facilities should consider enhancing their video surveillance measures by strategically placing cameras, maintaining consistent monitoring, and responding promptly to any suspicious activities. Investing in advanced surveillance technology and analytics can bolster the capacity of surveillance systems to identify and deter potential drug diversion incidents.
v. Institutions should enforce mandatory medical staff verification for all instances of drug dispensation, under the direct supervision of hospital management. This practice adds an extra layer of accountability, ensuring that medications are only dispensed to authorized personnel. It acts as a deterrent to unauthorized access and tampering.

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