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Factors Associated with Medication Error Underreporting Among Health Care Professionals in Nigerian Air Force Hospital, Ikeja, Lagos, Nigeria

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ABSTRACT: *Medication errors are the commonest form of medical error whereby medications are wrongfully prescribed or used by the patients while in the care of a health professional. Assessing the factors associated with medication error underreporting is a crucial step in identifying and proffering solutions in order to avoid re-occurrence and minimize the unpleasant effect it has on the patient, healthcare professional, facility or the general public. A descriptive cross-sectional survey design was used to study the factors associated with medication error underreporting. It was carried out among 520 health care professionals comprising of Medical doctors, Pharmacists and Nurses who work in Nigerian Air Force Hospital Ikeja. A semi structured, pre tested questionnaire was randomly distributed to 249 respondents which formed the sample size as calculated using the Slovin's formular. Findings from this study shows 106 (51.4%) of the respondents which represents more than half strongly agreed that poor working condition was a major factor to under reporting of medication error from the managerial point. Also, 101(49%), 96(46.6%) and 94(45.6%) of the respondents strongly agreed that the other factors included; poor reward system to self-medication reporting, poor utilization of information system to detect and analyze error and unclear channel of communication respectively. Employee factors to medication underreporting recorded was fear of some variables including, litigation (61.2%), criticism (54.4%) and fear of being seen as incompetent (50.5%). It is therefore recommended that management should make it a point of duty to ensure a conducive working environment is created, that employees work under a stress-free environment and that their welfare carted for and importantly ensure that a clear reporting system is put in place which will aid voluntary error reporting.*

KEYWORDS: factors, health care professionals, medication error underreporting

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INTRODUCTION

Errors become fatal when one fails to correct them. According to Albukhodaah (2019), error can be seen as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. Errors occur in every aspect of human life and the various professions are not left out as they encounter one form of error or the other which is peculiar to them. In the medical profession, the interaction between the medical doctors, nurses, pharmacists, medical laboratory scientist and other health care professions who partake in the care of patients predisposes them to medical errors (Ogunleye et al,2018). In handling these errors, it becomes necessary that the safety of the patients who patronize the health care facility be considered top priority and that there should be a competent system put in place to ensure that either errors are minimized or errors eliminated as it is established that medical errors poses serious threat to patient safety (WHO, 2019).This is further expressed with the Hippocratic oath of 'first do no harm' which warns doctors about medication errors and other medical mistakes (Nwasor et al., 2018). It is worthy to note that different factors such as organizational, social, and individual issues which rely on physical and human resources all affect patient's safety to a larger extent as there is an inherent connection between them which include; physical, organizational components and interpersonal relationships (Garcia et al, 2019).

Medication errors were identified as the most prevalent and underreported kind of medical errors across all countries, including both developed and developing nations (McLeod et al, 2019). Caglar et al (2020) reported that they are responsible for up to one-third of all medical mistakes in hospitals and may result in unfavourable outcomes including extended hospital stays, expensive treatment costs, and higher death rates. They are common, have adverse clinical and financial impacts, and might potentially be avoided (Keers et al, 2017). Pharmacological treatments that are not safe and mistakes have been recognised as a leading source of injury and preventable damage in both developed and developing nations (Lawal et al, 2020).

Mahajan (2019) found that Medication Errors are the most prevalent kind of medical errors in hospitals and rank as the eighth largest cause of mortality in the USA, surpassing the combined fatalities from vehicle accidents, breast cancer, and AIDS. He proceeded to classify it as a worldwide problem that arises in both industrialised and developing nations. Most drug mistakes are often overlooked or not properly documented, a phenomenon referred to as the 'error iceberg' (Awodele et al., 2020). The World Health Organisation assessment found that there is no universally acknowledged definition of Medication Error due to the usage of several terminologies (Lisby et al, 2018). The United States National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) provided a modern and comprehensive description. The term was defined as any avoidable incident that might result in improper pharmaceutical usage or injury to the patient when the medicine is under the supervision of a healthcare provider, patient, or consumer (NCCMERP, 2018). They emphasised that this mistake might be linked to healthcare practices, the kind of product used, the technique

implemented, and the system established. They also admitted that it may happen throughout the prescription, dispensing, and administration processes.

The World Health Organisation said that medication errors cost around 42 billion US dollars worldwide each year (WHO, 2018). More than 2 million individuals in the United Kingdom have drug mistake issues annually, leading to about 100 thousand fatalities, as reported by Parekh et al. in 2018. In the United States, between 7000 to 9000 individuals die each year due to pharmaceutical errors (Tariq et al, 2019). Individuals residing in low-income nations suffer from double the amount of impairments caused by medication-related damage compared to those in high-income nations (WHO, 2018).

Medication errors can result from various factors such as inadequate communication, inaccurate documentation, illegible handwriting, spelling errors, inadequate nurse-to-patient ratios, and administering medications with similar names. Asgarian et al (2021) suggested that workers make mistakes and fail to disclose them due to their lack of attention to their tasks. In a research by Ghobadian et al (2019), it was shown that most professionals caring for patients do not realise when they have made errors.

Once an error is identified, reporting becomes challenging owing to the fear factor (Zaghloul et al, 2018). They admitted that workers are afraid of being seen as persons who make mistakes, and this fear is the primary reason for not reporting faults. Rutledge et al (2018) found that medication errors were linked to the consequences of workers' fear. Fear of litigation and losing patients' confidence were identified as reasons that hindered employees from reporting mistakes. Medical personnel, such as doctors, nurses, and chemists, ideally do not deliberately make pharmaceutical mistakes (Cohen, 2019). He emphasised that they are trained to provide flawless health care. When mistakes are found, there is a tendency to attribute responsibility to the professional(s) engaged in the occurrence (Hannawa et al, 2018). Professional discipline may include fines, suspension, or revocation of a licence as a form of formal punishment (Lisby et al, 2018). The individual's loss of respect from other health care providers may be more significant than a professional reprimand (Rutledge et al, 2018). They emphasised that in cases of pharmaceutical mistakes, the focus should be on understanding what, how, and why the system failed rather than on identifying the individuals implicated. The recommendation is to initiate an inquiry into pharmaceutical mistakes by examining the drug utilisation and distribution pathways in a healthcare system, rather than immediately resorting to punitive measures against the healthcare professional responsible for the error.

Medication Administration Error (MAE) was identified as the most frequent kind of error in the pharmaceutical process by Flynn et al (2018), despite the possibility of errors occurring at any point. They felt it happened most often when there was a mismatch between the medications given to the patient and the drug the physician meant to provide. Ojerinde et al (2017) said that nurses are accountable for enhancing patient safety by detecting pharmaceutical mistakes before they reach the patient or cause damage. They claimed that this might be achieved by following

the six rights of medicine administration and promptly reporting any drug delivery errors. The six essential aspects of pharmaceutical administration are the correct patient, correct medicine, correct timing, correct method, correct dosage, and correct documentation (Kozier, 2019). To alleviate the workload of the nursing staff, it is essential to provide frequent training sessions on the correct and safe drug administration practices. Additionally, fostering a supportive and welcoming atmosphere that promotes error reporting is crucial (Fathi, et al, 2018).

With the numerous instances of medication error that are heard, especially with the rising usage of pharmaceutical products, which was found to be the case, particularly in low- and middle-income nations, there is little or no documentation to support these statistics as it is assumed most healthcare professionals neglect to report such incidents (IMS Institute for Healthcare Informatics, 2018). Another evidence shows that error reporting is subpar in Nigeria due to a lack of knowledge about the mechanisms and determinants of error reporting, as well as nurses' and doctors' lack of common awareness of the obstacles to error reporting and inconsistent practice (Afolalu, et al, 2021). This inadvertently hinders the development of solutions, particularly in emerging nations like Nigeria. When errors are reported, it reduces the adverse effects of these errors and effectively helps to avoid future errors that can cause patient harm. Also, reporting these errors decreases future errors likely to occur as well as reduce patient suffering and financial implications (State of Oregon, 2018).

In the Nigerian Air Force Hospital Ikeja, cases of deaths or injuries caused as a result of medication errors as well as Adverse Drug Reactions are heard but there has not been any evidence or documents to ascertain the cause. The management ends up setting a board of inquiry to ascertain the causes of such incident with a view to making recommendations, but unfortunately the witnesses invited either lack sufficient knowledge of the causes or are unwilling to identify them which results in the problem not being fixed. Therefore, the purpose of this study is to assess the factors that influence the reporting of medication errors by healthcare professionals at NAF hospital Ikeja, Nigeria.

The specific objectives are to:

1. Assess managerial factors associated with medication error underreporting.
2. Assess employee's factors associated with medication error underreporting.
3. Determine employee's perception to medication error underreporting.

Hypotheses

The following hypotheses were tested in this study:

Ho1: There is no significant relationship between managerial factors and medication error underreporting.

Ho2: There is no significant relationship between employee's factors and medication error underreporting.

METHODS

A descriptive cross-sectional survey design was used in the investigation. The study adopted a stratified random sampling technique to select the sample size. There were 249 participants who were chosen for the study. These participants were grouped into clusters which included 65 medical doctors, 56 pharmacists and 128 nurses. These participants were randomly selected from these clusters. A semi-structured questionnaire was used as the data collection tool to assess the factors associated with medication error reporting. The use of questionnaires allowed for the collection of substantial volumes of data while maintaining the participants' high level of confidentiality. It was made up of 4 Sections which are sections A, B, C, and D. In Section A, there are 7 open-ended questions about demographics data, whereas in Section B and C, there were 20 questions with Likert scales, each with 10 characteristics to assess both the managerial and employee factors to medication error. Section D also has 10 characteristics used to evaluate employees' perception to factors associated with medication error reporting.

Before the collection of data, an introduction letter was received from Babcock University's postgraduate program and delivered to the Nigerian Air Force Hospital in Ikeja, Lagos, which is the chosen research venue. Data collection was given the go-ahead, and a time-based arrangement with the Commanding Officer Nursing was created. 2 research assistants assisted in the retrieval of 206 of the 249 questionnaires that were issued from April 28 through May 12, 2023. A developed, pretested, structured, and self-administered English-language questionnaire was used to collect data on the respondents' demographics and characteristics related to reporting medication errors. Errors in the data were reviewed to ensure that it was accurate and comprehensive.

Participants gave their informed consent and had the freedom to withdraw from the study at any moment without suffering consequences. Information obtained from the participants was kept confidential and participant's identity were not disclosed at any time during or after the study. Statistical Package for Social Sciences (SPSS) version 25 was used to evaluate the data. Demographic characteristics as well as managerial and employee factors were reported using descriptive statistics such as tables, percentages and frequencies. The variables were then tested using a Chi square for significant relationship.

RESULTS

Table 1 shows the socio-demographic characteristics of the participants. As seen, the result revealed that there were 60 (29.1%) male and 146(70.9%) female in the study, and that 85 (41.3%) were 31-40 years old, while another 73 (35.4%) were 21-30 years old. The result also revealed that 140(68.0%) were married, while 55(26.7%) were single. Similarly, the result showed that 153 (74.3%) had Christianity as their religious affiliation, and 41 (19.9%) were Muslim. On educational level, 114(55.3%) had first degree, while 54(26.2%) had post graduate

diploma. The result also revealed that 123 (59.7%) were Nurses, 32(15.5%) were Pharmacists and 51 (24.8%) were Doctors that participated in the study. It also can be seen that 78 (37.9%) have had 11-20 years of work experience, and 66 (32.0%) have worked for 1-10 years.

Table 1 Socio-demographic Characteristics of the Respondents

Characteristics	Classification	Frequency	Percentage
Gender	Male	60	29.1
	Female	146	70.9
Age	20 years and below	20	9.7
	21-30yrs	73	35.4
	31-40yrs	85	41.3
	41-50yrs	28	13.6
Marital status	Single	55	26.7
	Married	140	68.0
	Separated	6	2.9
	Widowed	5	2.4
Religion	Islam	41	19.9
	Christianity	153	74.3
	Traditionalist	12	5.8
Educational Level	Diploma	29	14.1
	First Degree	114	55.3
	Post Graduate Diploma	54	26.2
	Masters	7	3.4
	Others	2	1.0
Profession	Doctor	51	24.8
	Nurse	123	59.7
	Pharmacist	32	15.5
Years of experience	Less than 1 year	26	12.6
	1-10yrs	66	32.0
	11-20yrs	78	37.9
	21-30yrs	30	14.6
	31yrs and above	6	2.9

The results in Table 2 shows respondents' responses on managerial factors associated with medication error reporting. One half 103 (50.0%), and 35 (17.0%) of the respondents agreed and strongly agreed that inadequate training/workshop for the staff on medication usage affects medication error respectively, while 36 (17.5%), 27 (13.1%) and 5 (2.4%) were undecided, disagreed and strongly disagreed that inadequate training/workshop for the staff on medication usage affects medication error respectively. On the account of poor working condition in the facility affecting medication error, majority 106 (51.4%) strongly agreed it was a major factor

leaving 34 (16.5%), 25 (12.1%), 14(6.9%) of the respondents to agree, disagree and strongly disagree respectively while 27(13.1%) were undecided.

On whether poor orientation for the newly employed staff affects medication error reporting, majority 109 (52.9%) of the respondents agreed while 33(16.0), 14(6.9%) and 5(2.4%) of the respondents strongly agreed, disagreed and strongly disagreed respectively and 45(21.8%) of the respondents were undecided on this opinion. When asked if routine inspection and conducting of research in the hospital affects medication error reporting, 93(45.1%) agreed that it affects medication error reporting. 54(26.2%), 32(15.5%), and 9(4.5%) disagreed, strongly agreed and strongly disagreed respectively, while 18(8.7%) of the respondents were undecided. On whether poor rewarding system to self-medication reporting affects medication error reporting, 101(49%) being the majority of the respondents strongly agreed while 55(26.6%) agreed, 24(11.7%) disagreed and 16(7.8%) of the respondents strongly disagreed with 10(4.9%) of the respondents being undecided.

On utilization of information technology in detecting medication error affecting medication error reporting, the majority of the respondents 96(46.6%) strongly agreed to it affecting medication error reporting and 51(24.8%) of the respondents agreed, 11(5.3%) disagreed, 6(2.9%) strongly disagreed while 42(20.4%) of the respondents were undecided. When asked if unclear channel of reporting medication error affects medication error reporting, majority of the respondents 94(45.6%) strongly agreed, 54(26.2%) of the respondents agreed, 26(12.6%) disagreed, 14(6.9%) strongly disagreed while 18(8.7%) were undecided. On whether the mindset of the facility that medication error reporting projects the facility negatively affecting medication error reporting, majority of the respondents 98(47.6%) agreed, 73(35.4%) strongly agreed, 10(4.9%) of the respondents disagreed and strongly disagreed each while 15(7.2%) of the respondents were undecided. On the issue of commitment, majority of the respondents 86(41.7%) agreed that lack of commitment to act on reports of errors affects medication error reporting. 14(6.8%) of the respondents strongly agreed, 20(9.7%) strongly disagreed, 10(4.9%) disagreed while 76(36.9%) were undecided. Finally, on whether the unavailability of necessary drug materials such as drug index which acts as guide to health care workers affecting medication error reporting, majority of the respondents were 83(40.0%) were undecided. The remaining respondents 17(8.3%), 79(38.3%), 9(4.4%) and 18(8.7%) strongly agreed, agreed, disagreed and strongly disagreed respectively.

Table 2 . Managerial Factors Associated with Medication Error Reporting

Management Factors	SA (%)	A (%)	D (%)	SD (%)	UD (%)
Does inadequate training/workshop for the staff on medication usage lead to medication error underreporting	35(17.0)	103(50.0)	27(13.1)	5(2.4)	36(17.7)
Does poor working condition lead to medication error underreporting	106(51.4)	34(16.5)	25(12.1)	14(6.9)	27(13.1)
Does poor orientation for newly employed staff affects medication error underreporting	33(16.0)	109(52.9)	14(6.9)	5(2.4)	45(21.8)
Does routine inspection and conducting of research in the hospital lead to medication error underreporting	32(15.5)	93(45.1)	54(26.2)	9(4.5)	18(8.7)
Does poor rewarding system to self-medication reporting lead to underreporting of medication error	101(49)	55(26.6)	24(11.7)	16(7.8)	10(4.9)
Does utilization of information technology in detecting medication error affects error reporting	96(46.6)	51(24.8)	11(5.3)	6(2.9)	42(20.4)
Does unclear channel for reporting medication error lead to medication error underreporting	94(45.6)	54(26.2)	26(12.6)	14(6.9)	18(8.7)
Does mindset that medication error reporting projects the facility negatively lead to medication error underreporting	73(35.4)	98(47.6)	10(4.9)	10(4.9)	15(7.2)
Does lack of commitment to act on reports of error lead to medication error underreporting	14(6.9)	86(41.7)	10(4.9)	20(9.7)	76(36.9)
Does unavailability of necessary drug materials such as drug index which acts as guide for healthcare workers lead to medication error underreporting	17(8.3)	79(38.3)	9(4.4)	18(8.7)	83(40)

The results in Table 3 shows respondent's response to employee factors associated with medication error. The result indicates majority of the respondents 126(61.2%) strongly agreed that fear of litigation or having their practicing license withdrawn affects medication error. 39(18.9%), 8(3.9%), 13(6.3%) of the respondents either agreed, disagreed or strongly disagreed

respectively, while 20(9.7%) of the respondents were undecided. When asked if fear of having one's profession being looked down by other profession, majority of the respondents 112(54.4%) strongly agreed that it affects medication error reporting. 39(18.9%), 13(6.3%), 3(2.4%) of the respondents either agreed, disagreed, or strongly disagreed while 37(18%) were undecided. As to fear of being seen as incompetent by other colleagues, 104(50.5%) of the respondents being the majority strongly agreed that it affects medication error reporting. 45(21.8%), 11(5.3%), 4(2%) of the respondents either agreed, disagreed or strongly disagreed respectively while 42(20.4%) were undecided.

On whether inadequate knowledge affects medication error reporting, 109(51.9%) of the respondents strongly agreed that it affects medication error reporting. 44(21.4%), 10(4.9%), 4(1.9%) of the respondents either agreed, disagreed or strongly disagreed respectively while 39(18.9%) were undecided. When error is seen as less threat, majority of the respondents 107(51.9%) strongly agreed that it affects medication error reporting. 41(19.9%), 21(10.2%), 3(1.5%) of the respondents either agreed, disagreed or strongly disagreed respectively while 34(16.5%) of the respondents were undecided. With work pressure and interruptions affecting medication error reporting, 105(51.0%) of the respondents strongly agreed that it affects medication error reporting, 37(18.0%), 14(6.8%), 4(1.9%) of the respondents either agreed, disagreed or strongly disagreed while 46(22.3%) of the respondents were undecided. When asked if years of experience of staff on the job affects medication error reporting, majority of the respondents 101(49.0%) agreed that it affects medication error reporting, 34(16.5%), 21(10.2%), and 10(4.9%) of the respondents strongly agreed, disagreed and strongly disagreed respectively while 40(19.4%) of the respondents were undecided.

On the illegibility of the prescriber to affect medication error, 104(50.5%) of the respondents strongly agreed, 34(16.5%), 14(6.8%), and 6(2.9%)of the respondents agreed, disagreed and strongly disagreed respectively while 48(23.3%) of the respondents were undecided. With improper storage of drugs affecting medication error reporting, 102(49.5%) of the respondents strongly agreed it affects medication error. 39(18.9%), 19(9.2%), 2(1.0%) of the respondents agreed, disagreed and strongly disagreed respectively while 44(21.4%) of the respondents were undecided. Finally when asked if lack of cooperation and team work have any effect on medication error, majority of the respondents 101(49.0%) of the respondents were undecided leaving the rest of the respondents 32(15.5%), 51(24.8%), 17(8.3%) and 5(2.4%) to strongly agree, agree, disagree and strongly disagree respectively.

Table 3. Employee Factors to Medication Error Reporting

Employee Factors	SA (%)	A (%)	D (%)	SD (%)	UD (%)
Does fear of litigation or having the practicing license withdrawn lead to underreporting of medication error?	126(61.2)	39(18.9)	8(3.9)	13(6.3)	20(9.7)
Does fear of having ones' profession being looked down by other professions lead to underreporting of medication error?	112(54.4)	39(18.9)	13(6.3)	3(2.4)	37(18)
Does fear of being seen as incompetent by other colleagues lead to underreporting of medication error?	104(50.5)	45(21.8)	11(5.3)	4(2)	42(20.4)
Does inadequate knowledge lead to underreporting of medication error?	109(52.9)	44(21.4)	10(4.9)	4(1.9)	39(18.9)
When error is seen as less threat	107(51.9)	41(19.9)	21(10.2)	3(1.5)	34(16.5)
Does work pressure and interruptions at work lead to medication error underreporting	105(51.0)	37(18)	14(6.8)	4(1.9)	46(22.3)
Does years of experience of staff on the job lead to medication error underreporting	34(16.5)	101(49.0)	21(10.2)	10(4.9)	40(19.4)
Does ineligibility of the prescriber lead to underreporting of medication error	104(50.5)	34(16.5)	14(6.8)	6(2.9)	48(23.3)
Does improper drug storage lead to underreporting of medication error	102(49.5)	39(18.9)	19(9.2)	2(1.0)	44(21.4)
Doe lack of cooperation and teamwork lead to underreporting of medication error	32(15.5)	51(24.8)	17(8.3)	5(2.4)	101(49.0)

Table 4 reveals employee's perception to medication error reporting. As seen, the result revealed that all the respondents 206 (100%) had good knowledge of medication error. The result also reveals that all respondents were aware of the occurrence and underreporting of medication error. From the result, majority of the respondents 100(48.54%) attributed fear as the major reason why medication error is not reported. 40(19.42%) of the respondents believes forgetfulness was the reason, 36(17.48%) feels it was as a result of negligence while 30(14.56%) of the respondents believes that when error is reported to the management, no action is taken.

When asked the stage in the drug process where medication error occurs most, majority of the respondents 109(52.91%) believes it occurs at the administration phase while 66(32.04%) and

31(15.05%) of the respondents believed medication error occurs at the prescribing and dispensing phases respectively. With regards to who should be blamed once an error occurs, majority of the respondents 63(30.58%) believes the health care worker should be blamed, 42(20.39%) of the respondents believes it should be the management, 4(1.94%) of the respondents believes it should be the patient, 38(18.45%) of the respondents believe all should be blamed while 59(28.64%) of the respondents believes no one should be blamed for medication error occurrence. When asked who should discover and report error more, majority of the respondents 80(38.83%) believes it should be the nurses, 54(26.21%) believes it should be the pharmacists, 32(15.54%) of the respondents believes it should be the doctors while 40(19.42%) of the respondents believe everyone should discover and report medication error.

On who is affected most when medication error occurs, majority of the respondents 96(46.60%) believes it is the patient that suffers most while 60(29.13%) of the respondents believes it is the health care works that suffers most. 28(13.59%) of the respondents believes the management is most affected while 22(10.68%) of the respondents feels everyone is affected when medication error occurs. In assessing if they have committed any form of medication error at any point in their practice, 200(97.09%) of the respondents answered in the positive (yes), while 6(2.91%) of the respondents answered in the negative (no). In going further, respondents were asked what they did when they committed medication error. Majority of the respondents 80(38.83%) stated they reported to their colleagues, 45(21.84%) of the respondents reported to their superiors, 36(17.48%) reported to the patients and their relatives, 20(9.71%) reported to the management while 25(12.14%) of the respondents did not take any action. Infact, they ignored it. Finally, when asked how the experience was for them, majority of the respondents 104(50.49%) saw it as a teaching point, 50(24.27%) of the respondents saw it as regrettable, 37(17.96%) of the respondents did not want to talk about it while 15(7.28%) of the respondent saw it as normal event.

Table 4. Employee Perception to Medication Error Underreporting

Characteristics	Classification	Frequency	Percentage
Do you know about Medication error?	Yes	206	100
	No	0	0
Do you think medication error occurs and it is underreported?	Yes	206	100
	No	0	0
Why do you think medication error is not often reported?	Fear factor	100	48.54
	Negligence	36	17.48
	Forgetfulness	40	19.42
	No action when it is reported from management	30	14.56
At what stage in the drug process does medication error occur most?	Prescribing stage	66	32.04
	Dispensing stage	31	15.05

	Administration stage	109	52.91
Who do you think need to be blamed for the error?	The Organization	42	20.39
	Health care worker	63	30.58
	Patient	4	1.94
	All of the above	38	18.45
	None of the above	59	28.64
Among the healthcare professionals, who should discover and report error more?	Doctors	32	15.54
	Pharmacist	54	26.21
	Nurses	80	38.83
	All of the above	40	19.42
	None of the above	0	0
When medication error occurs, who is affected most?	The patient	96	46.60
	The management	28	13.59
	The health care worker	60	29.13
	All of the above	22	10.68
	None of the above	0	0
Have you committed any form of medication error at any point before?	Yes	200	97.09
	No	6	2.91
What did you do?	Reported to superior	45	21.84
	Reported to management	20	9.71
	Reported to colleagues	80	38.83
	Reported to patient and Relatives	36	17.48
	Ignored it	25	12.14
How was the experience generally?	Regrettable	50	24.27
	Teaching point	104	50.49
	Normal	15	7.28
	Don't want to talk about it	37	17.96

Test of Hypotheses

Ho1: There is no significant relationship between managerial factors and medication error underreporting.

Table 5 shows the relationship between management factors to medication error underreporting. A chi-square test of independence was performed to evaluate the relationship between management factor and medication error reporting. The result revealed that the relationship between these variables was significant, χ^2 (33, N = (206) = 49.4, p = .03**).** Hence, the null hypothesis is rejected.

Table 5. Relationship between Management Factors to Medication Error Underreporting

Variables	Df	$\chi 2$	R^2	p-value
Management factors/Medication error reporting	33	49.448	0.25	0.033

Ho2: There is no significant relationship between employee's factors and medication error underreporting

Table 6 shows the relationship between employee factors to medication error underreporting. The chi-square test of independence revealed that there was no statistically significant association between employee factors and medication error reporting, χ^2 (30, N = (206) = 41.5, p = .07). Therefore, the null hypothesis is not rejected.

Table 6. Relationship between Employee Factors to Medication Error Underreporting

Variables	Df	$\chi 2$	R^2	p-value
Employee factors/Medication error reporting	30	41.519	0.033	0.079

DISCUSSION OF FINDINGS

Managerial factors to medication error underreporting

In the current study, majority of the respondents strongly agreed that poor working condition 106 (51.4%) affects medication error. This study is similar to the study carried out by Hammoudi et al,(2018) which observed that health care workers who work in a good supportive environment were less likely to commit error as medication errors are influenced by the surrounding environment that can act as a distraction or interruption. In separate studies carried out by Asgarian et al. (2021), Mansouri et al. (2019) and Rutledge et al. (2018), it was observed that an environment which supports medical practitioners to express themselves was very essential for them to perform. Another study carried out by two separate teams Zarea et.al., (2018) and Farzi

et.al., (2017), also acknowledged the importance of conducive environment in medication error. They believe that poor environment could lead to medication error as health care workers could not function in a noisy environment. They also believe that poor lighting could increase the risk of error in medication. Also poor ventilation, overcrowding, no proper storage facility as well as messy working environment could lead to error occurring thus the error not being reported.

The study also observed that most respondents 94(45.6%) strongly agreed that unclear channel of reporting as well as poor utilization of information technology 96(46.6%) were other managerial factors that affect medication error reporting. This is similar to a study carried out by Hosseinzadeh et al (2012), which agreed that lack of clear definition of medication errors was the most factor that affected important medication errors from the nurses interviewed. Alves et al. (2019) also suggests that establishing an efficient recording reporting system to manage, analyze and report errors was very essential in any health care setting. Zaghloul et al. (2018) also agreed with the establishment and implementation of an anonymous system in the health care setting which will highlight and record various information as well as errors. In another study by Kouhestani and Baghcheghi (2010), they held a different view from unclear channel. They believed that most managers do not pay attention to the reporting of medication error thus leading to medication error not being reported.

Another major finding in the managerial factors to medication error reporting was poor reward system to self medication error affecting medication error as 101(49%) of the respondents strongly agreed that it was a factor. This was supported by a study carried out by Tol et. al., (2011) which observed that most managements instead of rewarding staff that reports error end up looking for culprits and blaming them for committing error as this makes staff withdrawn leading to underreporting of error. According to Asgarian et al. (2021), they believe that the attitude of managers determines how possible employees will commit and report their errors. Also Mansouri et al. (2019) and Samsiah et al. (2020) are of the view that when barriers such as blaming the employee and instituting punishments are removed using effective feedbacks as well as good corrective measures, medication error will be minimized and error reporting improved. Soydemir et al., (2010) in their submission on reward system feels that feedback plays a crucial role in medication error reporting. That positive feedback aids error reporting and vice versa.

Employee factors to medication error underreporting

From the study, It was revealed that majority of the respondents 126(61.2%) strongly agreed that fear of litigation or having one's practicing license withdrawn was a major factor affecting employee from reporting error. Also more respondents 112(54.4%) acknowledged that fear of having one's profession being looked down by other professions as well as fear of being seen as incompetent by other colleagues were also factors that affects employees from reporting error. This was supported by a study by Mahdaviazad et.al., (2020) where they observed that fear of consequences was the most reported factor for under reporting medication error. Another study by Kim & Kim, (2019), identified fear as a significant barrier to reporting of medication error as was seen in 19 out of the 30 studies carried out. This is not different from Ghobadian et al. (2021)

where it was highlighted that health workers' failure to report errors were due to the following; litigation fears in abuse and fears of losing patient's trust. As for Fathi, Hajizadeh, Moradi et al., (2017), they observed in their study that fear of being blamed for the error was far more reported than any other fear. Among the other fears identified were; fear of losing one's job, fear of being seen as incompetent, fear of litigation, fear of being punished as well as fear of being looked down by coworkers (Aboshaiqah, 2013).

Apart from fear, more respondents strongly agreed that inadequate knowledge of health care workers 109(52.9%) affects medication error. This was supported by a study conducted by Mostafaei, Barati et al., (2014) where they observed that many health care workers reported lack of clear definition of medication error as well as proper protocol to follow in reporting error as a significant factor to medication error underreporting. Also Soydemir et al. (2019) in supporting that inadequate knowledge affects medication error reporting believes that most health care workers who commit errors are not aware they committed error and thus it affects reporting rate. It was also observed from the study that more than half of the respondents 105(51.0%) strongly agreed that work pressures especially stress and burnout as well as interruptions affects medication error reporting. This was seen from a different study where burnout among medical professionals who write prescriptions for drugs commonly contributes to prescription errors (Hartnell et al., 2012).

Employee perception to medication error underreporting

In assessing employee's perception to medication error, it was discovered that all the health care workers had good knowledge of medication error as they equally agreed that medication error occurs and it is underreported. They went further to attribute fear factor (48.54%), Forgetfulness (19.42%), Negligence (17.48%) and no action from the management (14.56%) when error is reported as some of the major reasons for underreporting error. This was supported by a study carried out by Sufiyan et al., (2022) among health care workers in ABUTH were all the respondents were aware of medication error with their major source of information coming from workshops and seminars. Another study conducted in Zaria by Nwasor et al., (2014) were it was noted that 100% of the respondents were aware of medication error. A similar study carried out in Lagos by Awodele et al., (2011), were they observed that 82.9% of their respondents do not only have good knowledge to medication error but can define it correctly. Another study carried out in India by Sewal et al., (2014) also acknowledged that 72% of their respondents had between average to excellent knowledge on medication error with only 28% having poor knowledge.

In assessing where medication error occurs most in the drug process, majority of the respondents 109(52.91%) believed it was at the drug administration stage, 66(32.04) of the respondents believed it was at the prescribing/ordering stage while 31(15.05%) believed it was at the dispensing stage. They were equally asked who should be blamed for medication error, 63(30.58%) of the respondents believed the health care worker should be blamed most. 42(20.39%) believes it should be the organization, 4(1.94%) believes the blame should go to the patient receiving care while 38(18.45%) believes the blame should go to everyone. This study

was supported by a similar study carried out by Alma, Katja et al (2022) which showed that most medication errors occurred during administration stage (68%). This is followed by prescribing stage which is 24%. Also another study by Cousins et al (2012), Pham et al,(2011) where it was discovered the two-thirds of medication errors reported occurred at the administration phase as the majority of fetal and severe errors occurred there. Another study carried out in USA by Wahr et al, (2014), had a different view as the result of the study showed most of the errors occurred in the prescribing/ordering stage. As for who should discover and report medication error when they occur, majority of the respondents 80 (38.83%) believes it should be the nurses. 54 (26.21%) feels it should be the pharmacists, 32 (15.54%) believes the doctors should discover and report errors while 40 (19.42%) believes errors should be discovered and reported by all. When asked who is affected most when error occurs, 96(46.60%) of the respondents believes it is the patient receiving health care that is affected most. 60(29.13%) believes the health care worker is affected most, 28(13.59%) of the respondents believes the management is affected while 22(10.68%) of the respondents believes everyone is affected. As for the health care workers committing medication error at any point in their practice, 200(97.09%) answered in the affirmative while 6(2.91%) answered in the negative. They went further to state that they reported the incidence though not through a proper and formal channel as 80 (38.83%) of the respondents reported to their colleagues, 45(21.84%) of the respondents reported to their superiors, 36(17.48%) had the courage to report to the patient and their relatives, 25(12.14%) ignored the incidence while 20(9.71%) reported to the management.

Finally, when respondents were asked about their medication error experience, 104(50.49%) of the respondents saw it as a teaching point, 50(24.27%) saw it a regrettable, 37(17.96%) felt it shouldn't be talked about while 15(7.28%) saw it as normal. According to a research by Leufer et al. (2013), in a teaching hospital in Kermanshah, they observed that about 28.9% of the nurses who report medication error only report to their managers without t documenting, while another research by Zara et al. (2009) observed that majority of the respondents do not report at all they acknowledged its adverse effect.

CONCLUSION

The concept of medication issuance in any health care facility is a multi-disciplinary process which is equally complex. Error can occur at any stage of this medication process starting from prescription, storing, dispensing to administration. These errors must be reported so that either management or employee failures which caused the error would be identified and dealt with. Reporting of medication errors also help to prevent the recurrence of errors which will eventually reduce the rate the medication error occurs subsequently.

Findings from this study shows that 106 (51.4%) of the respondents which represents more than half strongly agreed that poor working condition was a major factor to under reporting of medication error from the managerial point. Also, 101(49%), 96(46.6%) and 94(45.6%) of the respondents strongly agreed that the other factors included; poor reward system to self-

medication reporting, poor utilization of information system to detect and analyze error and unclear channel of communication respectively. As for the employee factors, majority of the respondents strongly agreed that fear of different variables was the major factor to under reporting of errors. These fear factors range from fear of litigation (61.2%), to fear of criticism (54.4%) and fear of being seen as incompetent (50.5%). The employees' had good perception to medication error (100%), though overwhelming majority (97%) had committed error at one point or the other without formally reporting them.

It is expected that once these factors are addressed, the rate of reporting of errors will increase which will invariably lead to reduction in the occurrence of medication error. Nigeria can benefit from global efforts to reduce the frequency of medication errors, the adverse drug events they are associated with, and to promote the reporting of medication errors when they occur by establishing a central reporting system in all health care facility.

Recommendations

It is recommended that:

1. Management should make it a point of duty to ensure a conducive working environment is created and that employees work under a stress-free environment and their welfare carted for.
2. Management should ensure a clearcut channel of reporting error is established and the use of good and efficient information technology is installed. This should be brought to the knowledge of all staff irrespective of the status.
3. Management should implement a reward system which will motivate employees who accidentally administer the wrong prescription to quickly own up to their mistake and report it.
4. Employee should be constantly reminded that error is a human nature and should not be used as point of reference or comparison.
5. Spirit of comradeship and teamwork should be instilled at all times and all employee made to understand that.
6. Establish a task force to regularly assess the quantity and gravity of errors made.

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REFERENCES

Albukhodaah AA (2019). Barriers and perceptions to medication administration error reporting among nurses in Saudi Arabia

Alves, M., Carvalho, D., & Albuquerque, G. (2019). Barriers to patient safety incident reporting by Brazillian health professionals: An integrated review. Ciencia & Saude Coletiva, 24, 2895-2908. https://doi.org/10.1590/1413-81232018.23912017

Asgarian, A., Mahjour, P., Heidari, H., Khademi, N., Ghassami, K., & Mohammadbeigi, A. (2021). Barriers and facilities in reporting medical errors: A systematic review study. Advances in Human Biology, 11 (1), 17. https://doi.org/10.4103/AIHB.AIHB_80_20

Awodele O, Akinyede A, Adeyemi OA, Awodele DF. (2020). Pharmacovigilance amongst doctors in private hospitals in Lagos West Senatorial District, Nigeria. Int j Risk Saf Med 2011;23:217-26.

Caglar S, Henneman PL, Blank FS, Smithline HA, Henneman EA. (2020). Emergency department medication lists are not accurate. J Emerg Med 2011;40:613-6.

Cohen, B., Manion, C., and Morrison, A. (2019). Essentials of education and social science research methods. Canada: Masolp publishers, pp. 25-27

Fernandez R, TenHam-Baloyi W, Mathew E, Secginli S, Bahar Z et al, (2022). Predicting behavioural intentions towards medication safety among student and new graduate nurses across four countries, Journal of Clinical NursingVol32(5-6) pp789-798

Flynn L, Liang Y, Dickson G, Xie M & Suh D (2012). "Nurses' practice environments, error interception practices, and inpatient medication errors,"*Journal of Nursing Scholarship,* vol. 44.

Garcia, C.d.L.; Abreu, L.C.d.; Ramos, J.L.S.; Castro, C.F.D.d.; Smiderle, F.R.N.; Santos, J.A.d.; Bezerra, I.M.P. (2019). Influence of Burnout on Patient Safety: Systematic Review and Meta-Analysis. *Medicina***Vol***55*, 553.

Ghobadian, S., Zahiri, M., Dindamal, B., Dargahi, H., & Faraji-Khiavi, F. (2021). Barriers to reporting clinical errors in operating theatres and intensive care units of a university hospital: A qualitative study. BMC Nursing, 20(1), 1-11. https://doi.org/10.1186/s12912-021-00717-w

Keers RN, Williams SD, Cooke J, Ashcroft DM. (2017). Prevalence and nature of medication administration errors in health care setting: A systematic review of direct observational evidence. Ann Pharmacother 2013;47:237-56.

Lawal B.K, Alhaji A.A, Maiha B.B, and Mohammed S (2020).An assessment of medication safety practices in selected public health facilities in Kaduna State, Nigeria, Journal of Pharmacy &Bioresources Vol. 17 No. 1, DOI: 10.4314/jpb.v17i1.9

Li P, Nelson SD, Malin BA, Chen Y (2019). DMMS: A Decentralized Blockchain Ledger for the Management of Medication Histories. BlockchainHealthc Today. 2019;2:38. doi: 10.30953/bhty.v2.38.

Lisby M, Nielsen LP, Brock B, Mainz J, (2018). How are medication errors defined? A systematic literature review of definitions and characteristics.Int J Qual Health Care. 2010;22:507-18

Mansouri, S. F., Mohammadi, T.k., Adib, M., Lili, E.K., & Soodmand, M (2019). Barriers to nurses reporting errors and adverse events. British journal of Nursing, 28(11), 690-695. https://doi.org/10.12968/bjon.2019.28

McLeod MC, Barber N &Franklin BD. (2019). Methodological variations and their effects on Reported medication administration error rates. BMJ Qual Saf 2013;22:278-89.

Nwasor EO, Sule ST, Mshelia DB. (2018). Audit of medication errors by anesthetists in North Western Nigeria. Niger j Clin Pract 2014;17:226-31.

Ojerinde AC, Adejumo PO. (2017). Factors associated with medication errors among health workers in University College Hospital, Nigeria. IOSR j Nurs Health Sci 2014;3:22-33.

Parekh N, Ali K, Stevenson JM, Davies JG, Van der Cammen T, et al. (2018). Incidence and cost of medication harm in older adults following hospital discharge: a multicentre prospective study in the UK. *Br J Clin Pharmacl.* 84(8):1789-97

Rutledge DN, Retrosi T, Ostrowski G,(2018). Barriers to medication error reporting among hospital nurses. *J Clin Nurs*2018;27:1941-49:doi:10.1111/jocn.14335

Samsiah, A., & Hassali, M.A. (2020). Knowledge perceived barriers and facilitators of medication error reporting: A quantitative survey in Malaysian primary care clinics. *International journal of Clinical Pharmacy*, 42(4), 1118-1127.

State of Oregon (2018). Six Rights of Safe Medication Administration, *DHS/Safety, Health and Independence for All Oregonians,* State of Oregon six Rights of Safe Medication Administration, Oregon, USA.

Tariq RA & Scherbak Y (2019). *Medication Errors.* StatPearls[internet]: StatPearls Publishing, 2019

World Health Organization (WHO) (2018).*Reporting and learning systems for medication errors: The role of pharmacovigilence centers.* Retrieved from http://apps.who.int/medicinedocs/documents/s21625en.pdf

World Health Organization (WHO) (2018). Europe: Data and Statistics. Accessed on 30th Jan 2018, Available at: https://www.euro.who.int/en/health-topics

Zaghloul, A.A., Elsergany, M & Mosallam, R. (2018). A measure of barriers toward medical disclosure among health professionals in the United Arab Emirates. *Journal of Nursing Research,* 39(10), 1348-1363. https://doi.org/10.1177/019394591667