Medication error reporting practices among hospital pharmacists in Lagos State, Nigeria

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https://doi.org/10.60787/wajp.vol36no1.372

ABSTRACT

Background: Medication errors constitute a significant global health concern for patients and healthcare professionals, especially regarding patient safety and finance. This study examined the medication error reporting practices among hospital pharmacists in Lagos State to gather insights on the level of error reporting.

Objective: The aim of this study was to determine medication error reporting practices among hospital pharmacists in Lagos State.

Methods: A cross-sectional electronic survey using structured questionnaires was administered among 408 hospital pharmacists practicing in public and private hospitals in Lagos State. Data obtained was cleaned and analyzed using SPSS version 23. Descriptive statistical analysis was carried out and ethical approval obtained before data collection.

Results: The respondent rate was 60 %. Respondents have a good understanding of medication error reporting with 62 % strongly agreeing that reporting medication errors can be a quality improvement tool to safeguard patient health. About 45.7 % of the respondents sometimes encountered medication errors but only 29.8 % reported the errors. Prescribing errors accounted for the highest medication errors (53.4 %). Although 78 % of pharmacists currently have the manual reporting formats in place, however the study revealed that heavy workload (44.1 %), non-utilization of past reports (26.5 %), unclear reporting protocols (20.8 %), lengthy and complicated reporting methods (20.4 %) are the significant barriers to medication errors reporting. The study further identified that 64.9 % of pharmacists were willing to report medication errors if the hospital management would protect their identities.

Conclusion: Hospital pharmacists in Lagos state, Nigeria, have a good understanding of medication error reporting and its benefits as a quality improvement tool. However, the reporting rate needs to be improved.

Keywords: Hospital pharmacists, medication errors, medication error reporting, adverse effects.

Pratiques de déclaration des erreurs de médication chez les pharmaciens hospitaliers de l'État de Lagos, au Nigéria

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RÉSUMÉ

Contexte: Les erreurs de médication un problème de santé majeur à l'échelle mondiale, qui touche à la fois les patients et les professionnels de la santé, notamment en termes de sécurité des patients et d'implications financières. Cette étude a examiné les pratiques de déclaration des erreurs de médication des pharmaciens hospitaliers de l'État de Lagos, au Nigéria, afin de recueillir des informations sur le niveau de déclaration des erreurs.

Méthodes: Une enquête électronique transversale utilisant des questionnaires structurés a été menée auprès de 408 pharmaciens hospitaliers exerçant dans des hôpitaux publics et privés de l'État de Lagos. Les données obtenues ont été nettoyées et analysées à l'aide de la version 23.0 de SPSS. Une analyse statistique descriptive a été réalisée et une approbation éthique a été obtenue avant la collecte des données.

Résultats: Le taux de réponse était de 60%. Les répondants ont une bonne compréhension de la déclaration des erreurs de médication, 62% étant tout à fait d'accord pour dire que la déclaration des erreurs de médication peut être un outil d'amélioration de la qualité pour protéger la santé des patients. Environ 45,7% des répondants ont parfois rencontré des erreurs de médication, mais seulement 29,8% ont déclaré ces erreurs. Les erreurs de prescription représentent le plus grand nombre d'erreurs de médication (53,4%). Bien que 78% des pharmaciens disposent actuellement de formats de déclaration manuels, l'étude a révélé qu'une lourde charge de travail (44,1%), la non-utilisation des rapports antérieurs (26,5%), le manque de clarté des protocoles de déclaration (20,8%), la longueur et la complexité des méthodes de déclaration (20,4%) sont les principaux obstacles à la déclaration des erreurs de médication. L'étude a en outre révélé que 64,9% des pharmaciens seraient prêts à déclarer les erreurs de médication si la direction de l'hôpital protégeait leur identité.

Conclusion: Les pharmaciens hospitaliers de l'État de Lagos, au Nigéria, ont une bonne compréhension de la déclaration des erreurs de médication et de ses avantages en tant qu'outil d'amélioration de la qualité. Cependant , le taux de déclaration doit être amélioré.

Mots clés: Pharmaciens hospitaliers, erreurs de médication, déclaration des erreurs de médication, effets indésirables, sécurité des patients.

INTRODUCTION

Medications are the most common intervention in the hospital setting and the medication use process is complex and is fraught with many problems among which is medication error. Medication errors lead to increased hospital mortality and morbidity rates, posing a growing challenge for healthcare systems. For hospitalized patients, these errors can worsen existing conditions and undermine public trust in medical services. Medication errors also worsen clinical outcomes, such as hospital stay length.[1] Pharmaceutical errors could lead to fatalities or unanticipated side effects.[2] Prescription errors fall into two main categories: errors related to prescription dispensing, which make up 4 % of errors, and errors related to prescription prescribing, which make up 70 % of errors.[2] Medication errors have been a significant source of worry for international healthcare systems.[2] Due to extended hospital stay and decreased patient well-being caused by medication errors, the relatives of the patients, as well as the healthcare systems, were placed under a great deal of financial and psychological strain.[3] According to a previous study, over 20 % of discharged hospitalized patients are readmitted within 30 days and 16 % of the readmission are medication related of which 40 % are potentially preventable.[4] Prescription drugs, especially polypharmacy, seem to play a part in these readmissions. Of these preventable readmissions, 35 % were due to prescriber errors, 35 % to non adherence and 30 % to transition errors.[4] In the hospital setting, there is usually a multidisciplinary collaboration involved in the medicine use process which spans prescribing, dispensing, administration, and finally, monitoring the clinical outcome of patients.[5,6,7] Medication errors are any avoidable event that could result in incorrect drug delivery or patient injury while the medication is under the healthcare practitioner, or consumer's control.[15] Medication error (ME) reporting control when used appropriately is important for improving and preserving clinical practice's comprehension of ME risk. Error reporting can be used to identify the underlying risks and reasons for near-miss or error occurrences in the healthcare system.[3]

Inadequate distribution procedures can cause errors in the dispensing of medication. Dispensing errors refer to discrepancies between a prescription and the medication(s) provided and they fall under the broader category of medication errors. While these mistakes can happen at any point in the drug preparation or delivery process, they predominantly occur in pharmacies.[8] Medication errors can arise during the medicine use process and if these errors are not promptly detected and reported so that timely interventions can be effected. the errors can lead to Adverse Drug Events (ADEs).[9,10] Although many detected errors appear minor and do not result in harmful outcomes for patients, it is difficult to predict when a mistake might lead to serious or even life-threatening consequences. This highlights that medication errors pose a significant risk to patient safety and require serious attention.[11-14] Medication errors can significantly affect patient safety; hence, error detection through an active reporting system will not only detect medication errors, avert drug therapy problems (DTPs) and adverse drug events (ADEs) but also improves hospital pharmacy practices.[15] Pharmacists play crucial roles in reducing prescription errors[16] and lately, various solutions have been put in place for pharmacists effectiveness in reducing prescription errors. Inpatient clinical pharmacists help physicians prevent medication errors by providing real-time advice instead of making adjustments after a prescription has been written. By implementing medication safety techniques, pharmacists play a critical role in minimizing errors and improving the drug utilization process in their practices.[16]

While the systematic reporting of pharmaceutical errors is often seen as inadequate, it offers essential information for identifying areas to improve in order to enhance patient safety. Pharmacists need to update their error reporting skills and reporting systems so as to help minimize preventable errors and their potential serious outcomes. Understanding the obstacles to reporting may lead to improved patient care.[1] Medication delivery errors are prevalent, frequently overlooked or ignored, and can have serious consequences for patient, however, factors such as health workers' attitudes, perceived importance, insufficient information, a culture of blame, communication gap and fear of punishment contribute to under-reporting of medication errors and mistakes.[17]

A few studies have been conducted on medication errors in Lagos State's institutions, but none covered the entire state. This study will evaluate how hospital pharmacists in Lagos State ensure patient safety through established medication error reporting and documentation practices. The findings will assist health institutions in creating action plans to enhance hospital practices related to patient safety. Therefore, this study aims to investigate the medication error reporting practices of hospital pharmacists in Lagos State.

METHODS

Study design and setting

This is a cross-sectional study that examined the medication error reporting practices of hospital pharmacists in Lagos State, Nigeria through an electronic survey. Lagos State is located in southwestern Nigeria, being the smallest area of Nigeria's 36 states but the most economically significant state of the country. It has a population of about 17.5 million, with a growth rate of 3.2%. Health facilities in the state include five tertiary hospitals (two teaching hospitals, one federal medical center and two specialist hospitals), 26 registered secondary healthcare facilities (commonly referred to as General Hospitals), 256 primary healthcare centers with about 57 flagship centers, 2 886 private hospitals or specialist clinics and laboratories or diagnostic centers.18

Study population

The study population includes hospital pharmacists in public and private hospitals in Lagos State at the three facility levels: primary, secondary, and tertiary hospitals. The Leslie-Kish formula 19 was used to calculate the sample size to determine the medication error reporting behaviors of the population under investigation. The calculated sample size was distributed within the three health facility levels using a non-probability convenience sampling technique.

The sample size was calculated to be 392 but increased to 408 to accommodate for loss to attrition; The electronic questionnaire was developed based on literature review of a similar study on medication error reporting5 and designed to collect the following information:

- Demographics (age, gender, ethnicity-optional, work experiences, and work settings).
- Awareness of medication errors
- Medication error detection and reporting practices.
- Willingness to adopt medication error reporting and documentation, including the best means of collection/accessibility.
- Barriers to detecting and reporting medication errors
- Incentives for detecting and reporting medication errors

Pretesting was done to validate the electronic form (a Google Form). Reliability of the questionnaire was calculated using Cronbach's Alpha. The face and content validity of the questionnaire were assessed by the supervisors. A link to the survey was made, and it was created using Google Forms. The selected 408 Hospital Pharmacists received the link via WhatsApp.

Statistical analysis

The collected data was extracted from the Google form, cleaned, and analyzed using SPSS statistics tools version 23. Descriptive statistics were employed to summarize the data with frequency distributions and percentages calculated for the relevant variables.

Ethical approval

Ethical approval was obtained from the Lagos University Teaching Hospital (LUTH) Health Review and Ethics Committee.

RESULTS

Demographic characteristics of participants

A total of 245 out of 408 representing 60 % of hospital pharmacists in Lagos State responded. Majority of responders (68.2 %) were female. 38.0 % had one to five years of work experience in hospital pharmacy. 52.7 % had a Bachelor of Pharmacy as their highest educational degree. Majority of the respondents practice at the secondary or tertiary level with only 8.2 % at the primary healthcare level (Table 1).

Table 1: Demographic characteristics of participants

Variables	Respondents in this study, N=245	
	Frequency (f)	Percentage (%)
Gender		
Male	78	31.8
Female	167	68.2
Designation		
Director	16	6.5
Deputy Director	25	10.2
Assistant Director	34	13.9
Chief Pharmacist	33	13.5
Principal Pharmacist	26	10.6
Senior Pharmacist	30	12.2
Pharmacist grade 1	81	33.1
Years of Expertise		
1-5	93	38.0
6-10	39	15.9
11-15	65	26.5
16-20	15	6.1
21-25	21	8.6
26-30	8	3.3
31-35	4	1.6
Highest Education Qualification		
B.Pharm	129	52.7
FPCPharm	65	26.5
M.Pharm/MSc	40	16.3
MPH	8	3.3
Pharm D	3	1.2
Level of Healthcare		
Primary	20	8.2
Secondary	111	45.3
Tertiary	114	46.5
Bed Capacity of Health Care Facilities		
10-50	58	23.7
51-100	19	7.8
101-150	15	6.1
151-200	18	7.3
201-250	17	6.9
251-300	21	8.6
301-350	2	0.8
351-400	2	0.8
401-450	10	4.1
451-500	12	4.9
501-550	6	2.4
551-600	2	0.8
661-700	5	2.0
700-750	45	18.4
751-800	4	1.6
901-950	1	0.4
951-1000	4	1.6
>1000	5	2.0

Awareness of medication error reporting

The result shows that most respondents are aware of medication error reporting (See Table 2 for details)

Table 2: Awareness of medication error reporting

Variables	Respondents in this study, N=245				
	Strongly Disagree F (%)	**Disagree F (%)**	**Not Sure F (%)**	**Agree F (%)**	**Strongly Agree F (%)**
The complexity of modern pharmacotherapy does not have any role to play in medication error	90 (36.7)	109 (44.5)	12 (4.9)	27 (11.0)	7 (2.9)
Medication errors could cause potential Adverse Drug Events (ADEs)	19 (7.8)	5 (2.0)	2 (0.8)	74 (30.2)	145 (59.2)
Effective prevention of medication errors depends on the presence of a well organized reporting system	14 (5.7)	13 (5.3)	4 (1.6)	109 (44.5)	105 (42.9)
Medication error reporting can serve as a quality improvement tool to safeguard patient health	13 (5.3)	4 (1.6)	4 (1.6)	62 (25.3)	162 (66.1)
Medication error reporting can guide against future medication errors	14 (5.7)	6 (2.4)	4 (1.6)	65 (26.5)	156 (63.7)
Under reporting of medication errors can compromise patient's safety, thereby bringing about negative health outcomes	21 (8.6)	11 (4.5)	4 (1.6)	100 (40.8)	109 (44.5)
There is no need to report Medication error when there is no harm to patient	145 (59.2)	79 (32.2)	10 (4.1)	3 (1.2)	8 (3.3)
There is no need to report near miss medication errors (Errors detected and resolved before reaching the patient)	113 (46.1)	101 (41.2)	11 (4.5)	11 (4.5)	9 (3.7)

Medication error reporting practice

The result shows that 45.7 % of the respondents reported that they sometimes encounter medication errors, and 32.7 % reported medication errors in their institutions.

The category of medication errors mostly reported were prescribing errors (53.4 %), drug administration errors (25.7 %), patient error (15.9 %) and dispensing errors (4.5 %). 78% of the errors were mainly reported manually (Table 3)

Table 3: Medication error reporting practice

	Respondents in this study, N=245 Variables	
	Frequency	**Percentage (%)**
I come across medication errors in my practice		
Always	30	12.2
Often	92	37.6
Sometimes	112	45.7
Rarely	9	3.7
Never	2	.8
I report medication errors in my institution		
Always	73	29.8
Often	62	25.3
Sometimes	80	32.7
Rarely	26	10.6
Never	4	1.6
Have you reported any medication error(s) in the last six months?		
Yes	192	78.4
No	53	21.6
How many have you reported in the last six months?		
0	55	22.4
1-10	126	51.4
11-20	33	13.5
21-30	23	9.5
31-40	4	1.6
41-50	1	0.4
51-60	2	
61-70	1	0.8
		0.4
What category of medication errors do you report?		
Dispensing errors	11	4.5
Prescribing errors	132	53.4
Patient errors	39	15.9
Drug administration errors	63	25.7
Method you currently adopt in reporting		
Electronic	69	28.2
Manual (Paper Forms)	191	78.0
Verbal	88	35.9
None	4	1.6

Barriers to medication error reporting

Patient workload (44.1 %) was the primary factor identified by respondents as a barrier to medication error reporting, followed by unclear protocols and methods for reporting medication errors (20.8 %), then complicated and lengthy protocols in reporting medication errors (20.4 %). This is illustrated in Table 4.

Table 4: Barriers to medication error reporting

Variables	Respondents in this study, N=245	
	Frequency (f)	**Percentage (%)**
I do not see the need to report medication errors	7	2.9
I have not been reporting because no one has ever told me to report and I have not seen anyone reporting	4	1.6
Protocols and method for reporting medication errors are unclear	51	20.8
Protocols and method for reporting medication errors are complicated and too lengthy	50	20.4
There is no medication error reporting system in my hospital	25	10.2
I do not have any formal training in medication error reporting	25	10.2
I do not think I have adequate training in medication error reporting	27	11.0
I have reported in the past but no changes have been instituted to prevent future errors	65	26.5
The patient workload will not give me leverage to report medication errors	108	44.1
I do not report because I may be punished	4	1.6
I do not report because I fear litigation	8	3.3
I do not find medication error reporting attractive	10	4.1
I have reported in the past but my colleagues feel it is a waste of time	12	4.9
I do not report because I do not want to be blamed	6	2.4
I do not report because I often do not recognize what others see as error	2	0.8
I do not want to be seen as incompetent	5	2.0
None	23	9.4
Others	9	3.7

Motivation for reporting of /willingness to report medication errors

Most respondents (64.9 %) would be willing to report medication errors if their identity is protected and 44.1 % are willing to adopt medication error reporting in their institutions. Most respondents (65.3 %) will likely embrace the electronic reporting method. This is shown in Table 5.

Table 5: Motivation to Reporting of /Willingness to Report Medication Errors

Variable	Respondents in this study, N = 245	
	Frequency	Percentage
I would be willing to report if the following are put in place:		
Protection of reporter's identity	159	64.9
Recognition of reporter	75	30.6
Legal protection of reporter	109	44.5
Monetary incentives	65	26.5
None	20	8.2
Others	24	9.8
I am willing to adopt Medication Error Reporting practice in my institution (N= 245)		
Highly unwilling	23	9.4
Highly willing	108	44.1
Neutral	9	3.7
Unwilling	2	.8
Willing	103	42.0
What reporting method are you likely to embrace (N=245)		
Electronic	160	65.3
Electronic / Manual	67	27.4
Manual	18	7.3

Other suggestions made by respondents that can enhance their willingness to report are summarized as follows:

- When Physicians begin to see the well-being of patients as a shared responsibility among healthcare professionals
- Prompt follow-up and resolution of errors to prevent adverse patient outcomes and future occurrence of errors
- Establishment of a proper reporting process /system that is accessible, simplified, and effective
- Effective Electronic mode of reporting such that the data generated can be used and also able to provide feedback should be put in place
- More effective monitoring tools
- Availability of handbook/protocols/process conducive for medication error reporting and such protocol streamlined with the workflow and operations in the hospital
- If reporting is aimed at intervention for correcting the errors, not reporting to the authorities
  Regularly training and enlightenment on the process and importance of medication error and ADR reporting

DISCUSSION

A primary concern for patient safety in hospitals is the accurate medication use process. Medication errors are perceived to be the most common types of medical errors in hospitals and the leading cause of morbidity and mortality among patients. To prevent medication errors in hospitals, pharmacists must be well-informed about potential errors, have access to a user-friendly error reporting system and work to reduce or eliminate barriers to reporting medication errors in the hospital.[1]

The results of the respondents' demographic characteristics showed that majority of the pharmacists' cadre are the grade 1 pharmacists. This pharmacy workforce carries out most of the pharmaceutical care activities in the hospital.[5] These young professionals in the workforce will naturally be inclined to have the desire to make changes however, experience is also crucial to the inclination to make changes, especially in the medication use process. Findings from the study revealed that most of the respondents work in tertiary health facilities followed by secondary health facilities, this showed a reflection of the medication error reporting practice in these levels of healthcare and potentially overshadowing the level of practice at the primary healthcare level. This bias can affect the generalization of the study findings.[3] Tertiary and secondary health facilities also have higher financial resource allocation, a high number of personnel compared to primary facilities, so the overrepresentation of respondents from tertiary and secondary may lead to the inflated perception of their practice.[7]

This study showed that pharmacists in health facilities in Lagos have a good understanding of medication error reporting and agreed that reporting medication errors can be a quality improvement tool to safeguard patient health. This is consistent with the findings from a similar study that opined that reporting errors facilitates a culture of continuous improvement where lessons are learned from mistakes.[20]

Despite the high awareness level for medication errors reported by pharmacists, as revealed in the study, pharmacists' documentation of errors did not reflect the high awareness. This finding is similar to other studies that reported low documentation of errors.[21] Medication errors were also under-reported in a tertiary teaching hospital in Riyadh, Saudia Arabia.[22] The finding of low documentation of error is somehow expected going by the dominance of the workforce by pharmacists who have 1-5 years' work experience. This category of pharmacists might feel less confident in identifying and reporting errors, they may fear questioning or repercussions from their seniors or may not fully understand the importance of reporting medication errors. For this category to understand the importance of error reporting, there may be a greater need for training, supportive reporting environment and effective oversights from more senior Pharmacists. Low reporting of errors as identified in the study, may result in missed opportunities to identify system weaknesses and implement corrective actions to prevent similar future errors. Contrary to the low documentation of errors reported in this study, another study reported that pharmacists' reported medication errors significantly.[24,25] A study reported that medication errors were reported predominantly at the prescribing stage of the medication process, and the most common types of errors were prescribing errors,[23] and this aligned with the findings from our study where prescribing errors accounted for the highest number of errors reported, followed by drug administration errors, patient errors and the least being pharmacist's error. The high percentage of prescribing errors indicates a need for improved systems and protocols in medication order. Improved collaboration among the healthcare professionals can enhance oversight and reduce the likelihood of errors in all categories. Empowering patients with knowledge about medications during the pharmacist-patient counseling can help identify gap in patient knowledge, contributing to safer medication use.

Although a significant number of Pharmacists currently have manual reporting formats in place however respondents in this study opined that heavy workload, non-utilization of past reports, unclear reporting protocols and lengthy and complicated reporting methods are the significant barriers to medication errors reporting.

Pharmacists often have heavy workloads and limited time to complete their tasks; the heavy workload is made worse by the recent migration of pharmacists to developed countries in search of greener pastures. Reporting medication errors may be perceived as an additional burden that takes time away from other responsibilities. The findings align with the finding of another study where healthcare professionals reported heavy workloads as a barrier to reporting.[25] The study finding on the non-utilization of reports align with the findings of similar studies where pharmacists'

respondents reported a lack of receiving feedback about errors they had reported as barriers to reporting.[23,24] Ideally, every reported medication error should be investigated, and adequate measures be put in place to prevent future reoccurrences. Pharmacists may believe that reporting medication errors will not result in meaningful changes if previous reports were not utilized and may be less inclined to report future mistakes.

Despite adequate provision for manual reporting as reviewed by the study, some pharmacists' respondents believed that the lengthy and complex reporting format prevented them from reporting medication errors. This is comparable to another study's result, in which the respondents felt that a lengthy and complex reporting format was a barrier.[24] If the hospital pharmacy leadership does not provide clear protocols and less complex procedures for reporting, pharmacists may be less likely to report.[6] The study identified that a significant number of pharmacists are willing to report medication errors if their identities are protected and are willing to embrace the electronic reporting method. This high percentage of pharmacists willing to report is encouraging, demonstrating a culture of transparency, accountability, and prioritizing patient safety among this professional group. Electronic reporting would lead to the efficiency and effectiveness of the reporting system and encourage more reports.[4]

CONCLUSION

Hospital pharmacists in health facilities in Lagos State, Nigeria, have a good awareness about medication error reporting and its benefits as a quality improvement tool though levels of reporting need to be improved. This study has provided information that the government and other health stakeholders could use to develop interventions for improving patient safety.

ACKNOWLEDGMENT

We hereby appreciate all the authors for their contributions and the Association Hospital and Administrative Pharmacists of Nigeria for providing financial support for this project.

The Association of Hospital Pharmacists of Nigeria, Lagos State Branch provided funding sponsorship for this research

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