



Perception and contributing factors to medication administration errors among nurses in Nigeria



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ABSTRACT

Purpose: The study assessed perception and contributing factors to medication administration errors among nurses.

Design: A quantitative descriptive design was adopted. Three hundred nurses participated in the study during the month of July 2015. A self-administered questionnaire was used to obtain information on registered nurses characteristics, knowledge and perceived causes of medication administration errors. Descriptive analysis and inferential statistics were done using Statistical Package for Social Sciences.

Results: The findings of the study revealed that Nurses have good knowledge and perception of medication administration errors. Confusion of drugs with different names and increase patient to nurse staffing ratio constitute the major contributing factors for the occurrence of medication administration error among them. Furthermore, majority of the nurses are aware of guidelines and methods to follow to prevent the occurrence of medication administration errors.

Conclusion: In this regards, identification of the main factors contributing to medication administration errors allows nurses and system to eliminate situations such as nurse staffing, medication transcribing issues, poor physician communication, problem with medication packaging and poor reporting system as well as incorporating changes that minimize them. Also, nursing supervisors should create an enabling environment which allows incidence of medication administration errors to be reported not on the basis of being punished but to initiate actions to prevent future occurrences. This will improve and enhance patient safety environment in the hospital.

1. Introduction

Globally, medication errors which include medication administration error continue to occur too frequently and it constitutes the most common threat to patient safety, as such accurate medication dispensing is a vital process in ensuring the best possible outcomes in patient care. It is considered to be one of the most common causes of morbidity and mortality cases occurring in the hospital setting Poornima, Reshma, Ramakrishnan, Rani, and Devi (2015), and also a major health care providers issue affecting the quality and continuity of the health care services (Aboshaiqah, 2014), jeopardizing the safety of patient which is considered to be an important indicator of healthcare quality. Hence, it is referred to as “a failure” in the treatment process that leads to or has the potential to harm the patient (Aronson, 2009). Despite the current climate of global economic chaos and increasing healthcare litigation, patient safety is still one of the major significant challenges facing

healthcare systems worldwide.

Some major incidents in patient care such as serious misdiagnoses, medication errors, the proliferation of superbugs and malpractice still persist, thus leading to injury or death of patients causing emotional trauma to their families and loved ones leading to a reduction in the public's confidence in the health care system not to mention the financial implication it accrues (Leufer & Cleary-Holdforth, 2013). The World Health Organization (WHO, 2009), also reported that for patient's safety, health care professionals need to focus more on reducing the risk of unnecessary harm. Providing drug treatment in the hospital setting had been attributed to be one of such actions that should be given adequate attention in order to reduce the risk associated with mortality and morbidity. It is even the last step in the medication process as such minimal errors should be achieved by identifying and adopting safety measures where necessary.

Medication errors as defined by National Coordinating Council for

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Medication Error Reporting and Prevention (NCCMERP, 2015), are any form of preventable error that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer. It can occur during ordering, transcription and dispensing, (Stratton, Blegen, Pepper, & Vaughn, 2004) and can also be related to professional practice, healthcare products, procedures, and systems (NCCMERP, 2015). All these separate activities have many components that could be subjected to errors and are often generally interrelated as errors in one aspect can lead to errors in others (Ogunleye et al., 2016). Medication administration error is one of the most common errors in the medication error process and occurs when a discrepancy occurs between the drugs received by the patient and the drug intended by the prescriber (Flynn, Laing, Dickson, Xie, & Such, 2012). A lot of factors had been deduced to trigger the occurrence of medication administration errors, as seen in a systematic review using quantitative and qualitative evidence to find causes of medication administration errors by Keers, Williams, Cooke, & Ashcroft, 2013). Findings from the study showed that slips and lapses are the most commonly reported unsafe acts, followed by knowledge deficiencies with the least being a deliberate act. Other identified causes of medication administration errors are error provoked conditions like inadequate written communications (prescriptions, documentation and transcriptions), medication supply and storage problems (pharmacy dispensing errors and ward stock management), high perceived workload, problems with ward based equipment (access, functionality), patient factors (availability, acuity) staff health status (fatigue, stress), interruptions and distractions that occurs when administering drugs (Keers et al., 2013). However, most errors affecting hospitalized patients occurs at the bedside, and it happens when a dose of medication is incorrectly administered (Rodriguez-Gonzalez et al., 2012).

There has been reported evidence of medication error in the developed world. Studies on medication administration errors rates and safety mostly carried out in developed countries has varying reported incidences of 3.3%, 10%, 19.5% and 22.2% (Bates, 2010; Cottney & Innes, 2015; Härkänen, Ahonen, Kervinen, Turunen, & Vehviläinen-Julkunen, 2015; Yung, Yu, Chu, Hour, & Tang, 2016), while studies carried out in developing countries have found very high medication administration rates of 56.4% (Feleke, Mulatu, & Yesmaw, 2015) and 94% (Blignaut, Coetzee, Klopper, & Ellis, 2017). Again, this could be much more devastating in developing countries if appropriate measures are not put in place. Medication administration is defined as preparing, giving, evaluating the effectiveness of prescription and nonprescription medications. It is also one of the most important, complexes, yet most vital processes of nursing care which requires the right knowledge and function of a competent nurse (Gorgich, Barfroshan, Ghoreishi, & Yaghoobi, 2016). Nursing as a unique, practice focused and evidenced-based profession encompasses numerous activities geared towards delivering quality nursing care to the patients (both sick and healthy), among which is medication administration, thus making the administration of medication by nurses' form an integral part of their clinical nursing role.

Generally, the essential part of every nurse's training is committing to memory and practice the "Five rights" checklist: (1) the right drug, (2) the right dose, (3) the right route, (4) the right time, and (5) the right patient Benjamin (2003) which is also an important quick checks that every nurse must know. Despite this, medication administration errors still persist making its effect to have direct consequences on the patients as well as indirect consequences on the nurses. The direct consequences on the patient include patient harm, as well as increased healthcare costs while the indirect consequences on the nurses include harm to nurses in terms of professional and individual status, self-assurance, and practice (Mayo & Duncan, 2004). According to the Nursing Intervention Classification (NIC) (Bulechek, Butcher, & Dochterman, 2008), It is a daily component of nursing practice, viewed as a routine and basic nursing task that account for around 40% of their

work time. Therefore, their competencies and following guidelines on medication administration are crucial and necessary for patients' safety and for provision of quality nursing care (Mrayyan, 2012). They must also acknowledge the serious impact of medication administration errors, whether they are the source of an error, a contributor, or an observer as any form of error can contribute to low safety in health care settings and medication administration, which is one of core nursing action, if not performed in accordance to standards of care and practice may increase unnecessary risks among patients (Ahmad, 2014), often leading to serious adverse drug effects, rehospitalisation, and an increased in length of hospital stay (Aboshaiqah, 2014; Armitage & Knapman, 2003; Feleke et al., 2015). Furthermore, medication administration is a very crucial therapeutic component of care in hospitalized patients and nurses as a healthcare personnel play an essential part in this process. As this is mostly done by nurses, it, therefore, makes the responsibility for correct drug administration rests on the nurse.

Nurses as direct providers of care have an important function when it comes to patient safety. Hence, their important role cannot be over-emphasized in medication administration as it is a vital core work of nurses on daily basis. It is, therefore, necessary to find out their perception, and identify contributing factors to medication administration errors in other to institute safer practices in hospitals for quality patient care.

1.1. Theoretical framework to medication administration error

Medical Error Theory by Paul Gluck (2007) of the Obstetrics and Gynecology Clinics of North America, University of Miami Miller School of Medicine was utilize for this study, he propounded the Medical error theory. In attempting to increase safety and quality in health care, it is vital to reduce patient harm and death from preventable adverse events. However, in order to achieve this goal, understanding of why the errors happened and how they lead to patient harm is inevitable. Only then, can we formulate solutions that will address the root cause of errors and improve patient safety which is first by minimizing mistakes and secondly preventing those mistakes from causing harm to the patients.

1.2. Application of the theory

This theory focuses on human fallibility and system complexity as the sources of medical error. The first is a "person approach," which had traditionally been used in analyzing medication errors. Since the human and system factors are considered relevant to medication errors therefore they should be addressed to tackle the issue of preventing medication errors.

The person approach view the nurses as an individual who is pivotal in preventing medication administration errors. Therefore nurses should always bear in mind that prevention of medication administration errors is not a matter of choice or convenience but a "must" in order to ensure patients safety and successfully take the patient from a state of dependency to a state of independency. As a profession that is guided by principles, one of which every nurse is expected to imbibe. Of such principles is the principle of non-maleficence which is basically the principle of not doing harm. This therefore means any nurse who does not prevent the occurrence a medication error is not abiding by the principle.

Also, the nurses clarification of this basic elements and noting that the effects of not making stringent steps to prevent the occurrence of medication error goes beyond the nurse but to the patient, the profession, the health institution and the society at large. The system as well should also address issues in the system that are standing as barriers in preventing medication administration errors. This includes strictly discouraging the use of abbreviations because when these errors are committed, the focus is on the individual who committed the error

while neglecting the cause of the error. When health care professionals bear the whole brunt of an error alone, they are more likely not to report errors next time when they commit one. Other factors to critically looked into includes understaffing, complex reporting mechanism/procedures, stigmatization of the health professional who committed the error, inadequate in-service training etc.

Thus, the mechanism/procedure for the prevention of medication error should be made known to every staff. The prevention procedure should not be complex but simple and easy, to encourage prevention of errors.

Therefore, if these two variables; person and system are taken into consideration and tackled adequately, prevention of medication administration errors will hopefully be improved.

2. Research methodology

2.1. Research design and setting

A descriptive cross-sectional research study design was utilized for this study. The study was conducted in University College Hospital Ibadan. It is the first Teaching Hospital in West Africa and it is owned and funded by the Federal Government of Nigeria. The hospital is considered a referral, tertiary, educational and multi-specialty hospitals and therefore susceptible to medication errors. The hospital has 970-bed spaces and about 1000 nurses.

2.2. Target population

A sample size of 300 nurses was determined using Taro Yamane formula (1967). Simple random sampling method using ballot system was used to recruit participants for the study. To be eligible for inclusion, participants had to work for a period of 6 months in the hospital, involved in direct patient care and a minimum of diploma qualification in nursing. However, newly recruited nurses and nurses without direct contact with patients were excluded.

2.3. Research instrument

The Instrument for data collection was a structured pre-tested questionnaire divided into three sections which was developed after a thorough literature review. Section A consisted of questions on socio-demographic data of respondents. Section B gathered data concerning perceived reasons for the occurrence of medication administration errors, Section C gathered data regarding methods of prevention of medication administration errors.

2.4. Reliability and validity of research instrument

The face and content validity of the instrument was ensured by an expert in nursing and a medical statistician and necessary amendment and corrections were made. Reliability was pretested among thirty (30) nurses in another health facility not selected for this study but shared similar characteristics as the subjects under study. The result shows that the values of Cronbach's coefficient alpha were satisfactory at 0.845, indicating questions in each construct are measuring similar concepts.

2.5. Ethical consideration

Approval for the study was obtained from the ethical review committee board of the Institute of Medical Research and Training of University of Ibadan/University College Hospital Ibadan, Nigeria. The nurses were provided with information about the study, verbal and written consents were obtained before the administration of the questionnaire. Confidentiality of person and information were assured and there was no harm done to individuals or organization.

2.6. Procedure for data collection

Data were collected in July 2015. A formal permission to conduct the study was obtained from the Head of Nurses of the units involved in the study. The nurses were informed about the purpose, contents, and significance of the study. Only after obtaining the participants' consent did we start to collect data. Questionnaire was administered in-person by four research assistants trained for the purpose of the study. Completeness of the data was ensured before each respondent submitted their questionnaire and this was confirmed by the research assistants. Data collection spanned a period of four weeks. In all 320 questionnaire were administered, 309 retrieved but only 300 were satisfactory filled with return rate of 93.75%. The collected information from the respondents was coded and entered into a Statistical Package for Social Sciences (SPSS).

2.7. Method of data analysis

Method of data analysis Data collected were analyzed with the use of Statistical Package for Social Sciences (SPSS) (v.18) using descriptive and inferential statistics. Statistical methods employed include frequency count, percentage and chi square. Chi square was used in testing associations.

3. Results

3.1. Sociodemographic characteristics of the respondents

Most of the nurses (84%) that participated in the study were females. 39.7% having the registered nurse diploma as the highest educational qualification. One hundred and forty-three (47.7%) were nursing officers (NOs), who formed the majority of the population. The mean length of working experience of the correspondence was 9.76 ± 9.25 years, Figs. 1–4 respectively.

Table 1, highlights the factors that were perceived by nurses as primarily contributing to medication administration errors in the study setting. In all, 52.7% of respondents identified confusion about drugs with similar names as the leading factor, while 47.3% believed increase patients to nurse staffing ratio could lead to error. 42.3% and 39.3% of respondents would attribute administration errors to use of abbreviation and difficulty in reading handwritten orders respectively. Other factors cited are: hectic and stressful environment (38.0%), slips and memory lapses (31.7%) while (36.7%) of the participants strongly disagrees that patients with similar names could contribute to medication administration errors.

Results on actions taken after a recognition of medication administration error. Here, most nurses indicated that they knew what medication administration error entails (84.0%) and factors contributing to its occurrence (79.0%). However, their reactions to medication error occurrence include reporting to most superior nurses (33.3%), confiding in their colleagues (23.7%) while (20.2%) said they feel bad because they know its adverse effect on the patient. On the contrary, (19.4%) claim they cover it up with (3.4%) reported not to had witnessed one. Findings of the studies also revealed that most nurses (49.8%) believed that medication administration error occurred most frequently during the morning shift with (11.4%) nurses saying it occurs at noon (Table 2).

Furthermore, on awareness/methods of prevention of medication errors. Eighty-seven percent of the nurses who participated in this study were aware that there are certain guidelines that should be followed so as to prevent the occurrence of medication error and have never failed to follow these guidelines because they are necessary. They agreed that working in a conducive environment (79.0%), effective communication between the medication provider and the patient (42.0%) and cessation of the use of abbreviations (31.7%) are effective methods for the prevention of medication error (table 3).

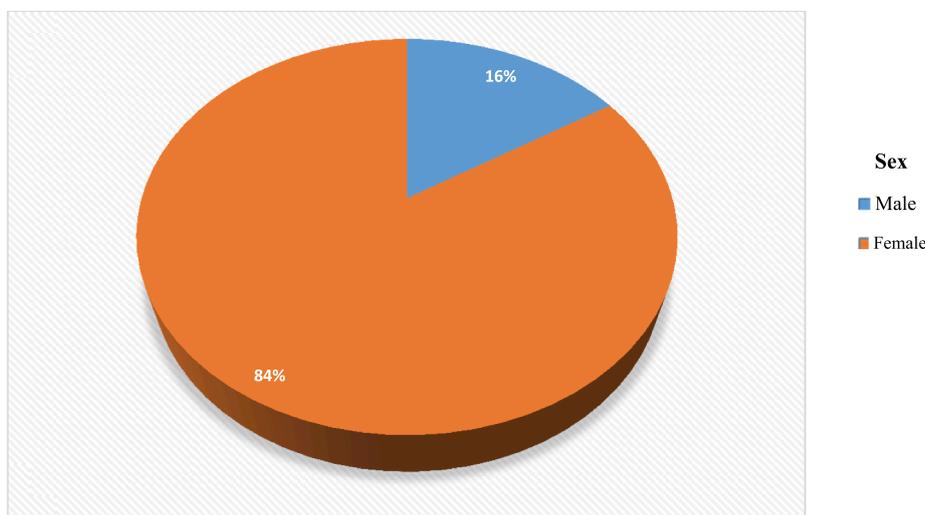


Fig. 1. Sex distribution of the respondents.

The study revealed a significant association exists between most perceived reasons for the occurrence of medication administration errors and nurses cadres (Table 4). With all the PNO cadres knowing the reasons for medication administration error occurrence (100%), yielding a p-value of 0.0001.

4. Discussion

The aim of the study was to determine the perception, contributing factors, and methods of preventing medication administration errors among nurses.

According to the findings of this study, confusion about drugs with similar names was the most frequent medication administration errors reported by the nurses. This is in accordance to a study conducted by Mayo and Duncan (2004); Ulanimo, Leary-Kelley, and Connolly (2007) in which nurses discovered that medication errors could occur when there is confusion between two drugs with similar names. The findings are also similar to the study of Tang, Sheu, Yu, Wei, and Chen (2007); Jones & Treiber, 2010; & Treiber and Jones (2010), where nurses identified unfamiliarity with medications (e.g. new drug name, perceived look-alike or sound-alike drugs, seldom-used drug, unclear labeling) as causes or conditions that can result in frequent medication

errors. This further suggest that using of colour codes to differentiate drugs among nurses contribute significantly to medication error. Drugs should therefore, be adequately labelled and nurse should not depend on their familiarity with certain drugs in identifying them. Further relativity and consistency were also found in studies conducted by Feleke et al., 2015; Berdot et al. (2012), where it was reported that a high volume of similar drugs to be administered to patients tend to increases nurses' task in the medication administration process ranging from finding, identifying and verifying medicines. All these could predispose to a medication administration error. Therefore avoidance of confusing drugs with similar names is very crucial in preventing medication administration errors.

Increase in patient's to nurse staffing ratio was another main factor believed by our respondents to contribute to medication administration error. This agrees with the findings of Gorgich et al. (2016) and Mahmood, Chaudhury, and Valente (2011), that errors initiated during medication dispensing and administration are mostly associated with performance deficits as a result of increased patient to nurse staffing ratio leading to accidental slips and memory lapses due to excess workload. A similar study by Simiyu, El-Banna, Fattah, and Omondi (2018), opined that patient to nurse ratio in unit situations' is likely to cause medication administration errors in the clinical area. Others

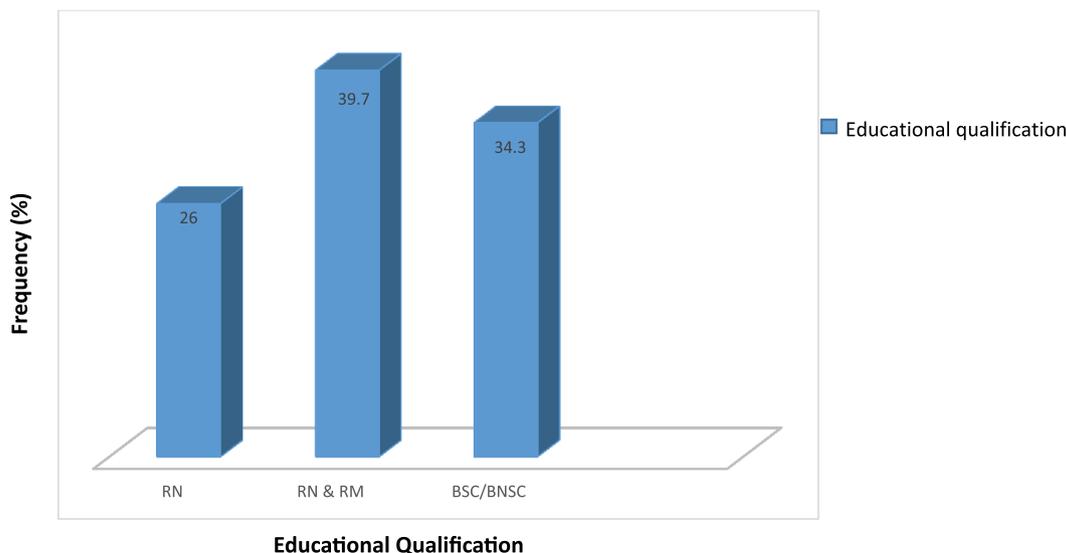


Fig. 2. Educational qualification of respondents. RN: Registered Nurse; RM: Registered Midwife; BSc/BNSc: Bachelor of Science, Bachelor of Science in Nursing.

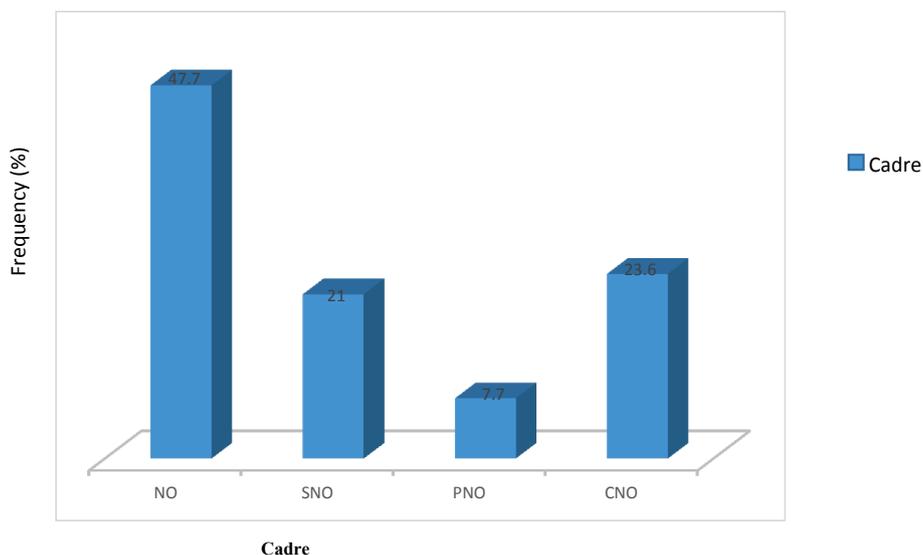


Fig. 3. Showing distribution of respondents according to cadre. NO: Nursing Officers; SNO: Senior nursing officer; PNO: Principal nursing officer and CNO: Chief Nursing Officer.

factors to medication administration errors identified by our respondents include abbreviation used by doctors, in which findings are synonymous to the results obtained by Seyyedeh et al. (2013), where it was indicated that using abbreviated drug names was the most significant cause of medication error (48.93%). Another factor our studies revealed is difficulty in reading doctor's orders, this is related to findings by Mayo & Duncan, 2004; Ulanimo et al., 2007; Jones & Treiber, 2010; Treiber and Jones (2010) where illegible handwriting of physicians and complex orders were found to be among the conditions causing medication errors. On the contrast, our correspondent (36.7%) strongly disagree that patient with similar names could contribute to medication administration errors.

In order to decrease medication administration errors, the system needs to actively drive strategies that bring about positive changes in preventing medication administration errors. More focus should be given to updating the knowledge of nurses on pharmacology through continuous educational training, understaffing as it creates potential hazards that increase the risk of complications often leading to death and adequate attention should also be given to other factors that could predispose nurses to medication errors. Importantly, reporting medication administration errors should be seen by nurses useful in gathering information, conduct research that can prevent incidents or cause an adverse effect on patient safety and reduces or minimizes future incidents. Since nurses are directly involved with Patient's,

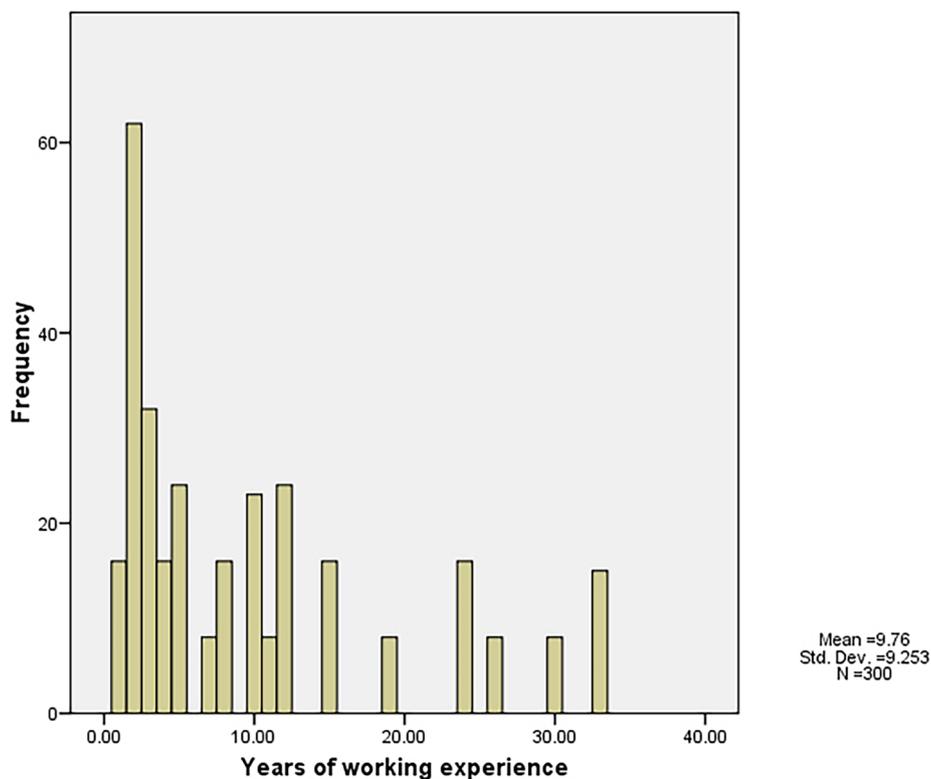


Fig. 4. Frequency of respondents years of working experience.

Table 1
Nurses perception of factors related to medication administration errors.

Variable	Frequency			Percentage	
	SA (%)	AG (%)	UD (%)	DA (%)	SD (%)
Difficulty in reading handwritten orders	48(16.0)	118(39.3)	31(10.3)	48(16.0)	55(18.3)
Use of abbreviations	32(10.7)	127(42.3)	47(15.7)	39(13.0)	55(18.3)
Confusion about different drugs with similar names	24(8.0)	158(52.7)	16(5.3)	71(23.7)	31(10.3)
Hectic and stressful environment	86(29.5)	111(38.0)	24(8.2)	48(16.4)	23(7.9)
Poor communication between the medication provider and the patient	8(2.7)	71(23.7)	56(19.2)	87(29.8)	70(24.0)
Confusion about different patients with similar names	39(13.0)	71(23.7)	24(8.0)	56(18.7)	110(36.7)
Diverse patients, unfamiliar settings, time pressures	62(20.7)	72(24.0)	32(10.7)	72(24.0)	62(20.7)
Increase patient to nurse staffing ratio	110(36.7)	142(47.3)	24(8.0)	16(5.3)	8(2.7)
Slips and memory lapses	8(2.7)	95(31.7)	40(13.3)	111(37.0)	7(2.3)
Faulty dose checking	48(16.0)	80(26.7)	63(21.0)	86(28.7)	23(7.7)

SA: Strongly Agree; AG: Agree; UD: Undecided; DA: Disagree; SD: Strongly Disagree.

Table 2
Knowledge of medication administration errors and actions taken when it occurs.

Variable	Frequency	Percentage
I am aware of what constitutes a medication administration error		
Yes	252	84
No	48	16
I am ordinarily aware of the factors that contribute to the occurrence of a medication error		
Yes	237	79
No	33	21
How do nurses react to medication administration errors?		
By confiding in their colleagues	56	23.7
By reporting to most superior nurses	79	33.3
They cover it up	46	19.4
They feel bad because they know its adverse effect on patient	48	20.2
Never witnessed one	8	3.4
On what shift is medication administration error prone to occur most frequently?		
Any	28	11.8
Morning	118	49.8
Noon	27	11.4
Night	64	27

administering medication to patients is an important aspect of their daily routine work which must be performed professionally thereby making reporting of medication administration errors a fundamental nursing responsibility.

Results showed that nurses report to most superior nurses, confide in their colleagues while some revealed they feel bad because they know its adverse effect on the patient. In a related study by [Leufer and Cleary-Holdforth \(2013\)](#) on nurses working in teaching hospitals in Kermanshah, it was shown that only 28.9% of them reported their medication errors to their nurse manager. This is in contrast to a study

Table 3
Methods of preventing medication administration errors.

Variable	Yes (%)			No (%)		
I am aware that there are certain guidelines that should be followed so as to prevent the occurrence of medication administration error	260(86.7)			40(13.3)		
Have you ever failed to follow these guidelines because you think they are not necessary?	39(13.0)			261(87.0)		
Items	SA(%)	AG(%)	UD(%)	DA (%)	SD (%)	
Discontinuation of the use of handwritten orders	32(10.7)	79(26.3)	62(20.7)	95(31.7)	32(10.7)	
Cessation of the use of abbreviations	95(31.7)	118(39.3)	39(13.0)	16(5.3)	32(10.7)	
Effective communication between the medication provider and the patient	126(42.0)	143(47.7)	15(5.0)	8(2.7)	8(2.7)	
Conducive work environment	237(79.0)	40(13.3)	15(5.0)	0(0.0)	8(2.7)	

SA: Strongly Agree; AG: Agree; UD: Undecided; DA: Disagree; SD: Strongly Disagree.

Table 4
Relationship between most perceived reason for the occurrence of medication administration errors and nursing cadres.

Cadre	Agree (%)	Undecided (%)	Disagree (%)	X ₂	p-value
NO	121(83.5)	16(11.0)	8(5.5)	21.52	0.0001
SNO	55(87.3)	8(12.7)	0(0.0)		
PNO	23(100.0)	0(0.0)	0(0.0)		
CNO	55(77.5)	0(0.0)	16(12.5)		

NO: Nursing Officer; SNO: Senior Nursing Officer; PNO: Principal Nursing Officer; CNO: Chief Nursing Officer.

conducted in Iran by [Zara, Negarandeh, Dehghan-Nayeri, and Rezaei-Adaryani \(2009\)](#) where 45% of nurses did not report their medication errors to their nurse managers. Though (20.2%) said they feel bad because they know its adverse effect on the patient. On the contrary, (19.4%) claim they cover it up with (3.4%) reported not to have witnessed one. Not reporting of medication administration errors could be as a result of reactions from nurse managers and coworkers, fear of being blamed, and fear of the negative consequence of medication errors on patients ([Anoosheh, Ahmad, Faghihzadeh, & Vaismoradi, 2007](#); [Osborne, Blahs, & Hayes, 1999](#); [Wakefield et al., 1999](#)). It should be noted that if medication administration reporting is seen as a professional responsibility and health care professionals (especially nurses and their supervisors) considers safety firsts, and not taking it as a means of punishing the individual involved, but rather seeing it as a way to improve patient safety, it will go a long way in preventing many adverse effects that can occur as a result of mortality and morbidity which can pose a great threats on the quality of our healthcare system.

However, the study also reveals that morning shift nurses experience more medication errors than those working in other shifts ([Table 2](#)) These findings are similar to [Kim, Kwon, Kim, and Cho \(2011\)](#) who studied on Nurses' perceptions of medication errors and their contributing factors in South Korea reported that most medication errors occurred by nurses at day shift. This is in contrast to the study of

Zahra et al. (2014) and Soozani, Bagheri, and Poorhydari (2007), where nurses reported that risk of Medication errors development is more increased at night shifts. Though, compared with day workers working on regular hours, those working shifts, especially at night, have a significantly higher risk of experiencing accidents and near-miss events. Reason for which had been shown to occur as a result of lower alertness and a greater tendency to experience drowsiness, both of which affect their cognitive function (Barger, Lockley, Rajaratnam, & Landrigan, 2009). Barger et al., 2009; Rajaratnam, Howard, and Grinstein (2013) suggest that before starting a night shift, staff can increase their wakefulness by exposing themselves to bright light and also make use of short occasional nap periods when on breaks. Generally, the finding of this study supported the affirmative statement of (Reason, 2000) that human beings are bound to commit errors.

In addition, the study also revealed a significant association between most perceived reasons for the occurrence of medication administration errors and nurses cadres (Table 4). With all the Principal Nursing officers (PNO) cadres knowing the reasons for medication administration error occurrence (100%). This could be as a result of experience gathered from years of clinical practice and adequate knowledge of what causes medication administration errors. It has been gathered from studies that the age of the nurse and working experience are significantly associated with medication administration errors (Fasolino and Snyder (2012); Feleke et al., 2015; Westbrook, Rob, Woods, & Parry, 2011). Nevertheless, their roles as wards managers and working experience can be utilized as trainers to teach their subordinates on what constitutes medication administration errors and how to prevent it.

Eighty-seven percent of the nurses chosen for this study were aware that there are certain guidelines that should be followed so as to prevent the occurrence of medication error and have never failed to follow these guidelines because they are necessary. They agreed that working in a conducive environment (79.0%), effective communication between the medication provider and the patient (42.0%) and cessation of the use of abbreviations (31.7%) are effective methods for the prevention of medication errors. This is in contrast with the study of Sabah and Mona (2016) on psychiatry nurses, where the majority of the nurses have poor knowledge about medication errors and safety measures to prevent medication errors before a nursing interventional educational package was done. Our studies agree with the findings of Johari, Shamsuddin, Idris, and Hussin (2013) on "Medication Errors Among Nurses in a Government Hospital", it was found out that the level of knowledge of nurses regarding administering medication was more. More than half of the nurses (54%) had medium, 46% high, while none had low scores. Similar results were found in a study by Sewal, Singh, Prakash, Kumar, and Mehdi (2014), where 72% of respondents are having average or above average basic knowledge regarding medication errors whereas 94.43% respondents are having knowledge regarding the non-existence of reporting system for medication error in India.

4.1. Limitation of the study

One of the main limitation of study is related to the self-report nature of information provided through a self-administered questionnaire as an assessment tool for obtaining information on variables in the study which is different from what might have been obtained in an observational study. This self-report may be different from the real nurse to patient medication administration observation so it is therefore, possible for an individual to deliberately conceal his true nature when responding to a self-report measure. The number of participants in this study can also inhibit the generalizability of the findings and a further qualitative study may also provide data to strengthen the findings of this study.

5. Conclusion

Medication administration errors can threaten patient outcomes and are viewed as a component of measuring patient safety which has been directly linked to nursing care. The results of this study show that nurses are aware of the factors contributing to medication administration errors in the study settings. However, results further show that improvement is required by the nurses and other healthcare providers to bridge the quality chiasm so as to conduct safe drug administration and maintain patient's safety. This could be achieved through integrative, collaborative and inter-professional synergy in order to drastically resolved problems associated with medication administration errors. A notable emphasis was made on understaffing and confusion of drugs with similar names. Therefore the management needs to address understaffing by employing more nursing staffs, strengthen the training of nurses through in-service education programs on pharmacology and safe administration of drugs. Nurses supervisors should also create an enabling environment that supports medication administration supervision and error reporting in order to strategies and make appropriate measures to prevent further errors.

Ethical approval

Approval for the study was obtained from the ethical review committee board of the Institute of Medical Research and Training of University of Ibadan/University College Hospital Ibadan, Nigeria. The nurses were provided with information about the study and verbal and written consents were obtained before the administration of the questionnaire. Confidentiality of person and information were assured and there was no harm done to individuals or organization.

7. Authors' contributions

AMO conceived the idea for this study, participated in the design of methodology, data collection and analysis, interpretation of data and prepared the final manuscript for publication. API participated in the design of the methodology, interpretation of data and data analysis. All authors read and approved the final manuscript.

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Declaration of Competing Interest

We declare that there is no conflict of Interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijans.2019.100153>.

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