JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL SCIENCES

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J Pharm Biomed Sci 2014;04(09):728-737.

The online version of this article, along with updated information and services, is located on the World Wide Web at: www.jpbms.info

Journal of Pharmaceutical and Biomedical Sciences (***J Pharm Biomed Sci.***), **Member journal. Committee of Publication ethics (COPE) and Journal donation project (JDP).**

JPBMS
Journal of Pharmaceutical and Biomedical Sciences

ISSN NO- 2230 – 7885
CODEN JPBSCT
NLM Title: J Pharm Biomed Sci.

Original article

Medication Error Among Nurses In University Of Maiduguri Teaching Hospital, Nigeria

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Article citation:
Jibril UN, Garba SN, Afolayan Joel, Aliyu Umar, Maigari B. **Medication error among nurses in University of Maiduguri Teaching hospital,Nigeria.** *J Pharm Biomed Sci.* 2014; 04(09):728-737. Available at www.jpbms.info

ABSTRACT

Medication error is a significant factor affecting patient's safety in Nigerian hospitals and it poses dangerous consequences for the professional image of nurses in particular and the whole healthcare system in general. This descriptive research study was conducted to verify the occurrence of medication errors and to elicit the perception of nurses about the causes and effects of medication error on both the nurse and the client in University of Maiduguri Teaching Hospital. Samples of 200 nurses were randomly selected for the study. A self developed structured questionnaire was used to gather data from the respondents. Frequency distribution and percentages were used in the analysis of data which were then presented in tables. The findings shows that almost all the respondents are aware of the "Rights" of medication administration, 73% of the respondents agreed that medication error occurs in different wards, and some (54%) have made error in medication administration at one time or the other. Wrong timing was identified to be the most common type of medication error that occurs in various wards. We, however, recommended that health managers should create a conducive atmosphere for work to reduce incidence of medication error and nurses be encouraged to report any incident of medication error promptly to avoid complication on the patient.

KEYWORDS: Nurses; Medication administration; medication error.

Source of support: None

Competing interest / Conflict of interest
The author(s) have no competing interests for financial support, publication of this research, patents and royalties through this collaborative research. All authors were equally involved in discussed research work. There is no financial conflict with the subject matter discussed in the manuscript.

INTRODUCTION

Medication administration is a core nursing function in the hospital setting. A basic nursing tenet taught in nursing training schools includes the rights of medication administration; this is done to lessen the chances of nurses making errors in the process of

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ISSN NO- 2230 – 7885
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medication. It is mandatory on nurses either during the training or at service areas to ensure that the right medication is given in the right dose to the right patient through the right route and at the right time. The nurse saves the patients from the potentially damaging effects that may result from any error, saves her from litigation and the profession from a bad image. However, despite the knowledge gained both theoretically and practically at school and hospitals, medication administration error continues to occur in health care institution. These may be attributable to many factors which could be from either human and/or system problems. With better understanding of the relationship between the factors that causes, medication error and their implication on both the nurse and patient, it is believed that the health care system will improve and will be more efficient.

The shortage of nurses is a global phenomenon, although, nurse-patient ratio is a controversial topic however, recommended nurse- patient ratio for optimum care on normal wards is 1:4, this still varies from place to place and from one unit to the other depending on the availability of registered nurses on employment[1,2]. In Nigeria, it is a common knowledge that most health institutions have their wards filled to capacity with patients manned by only1 or 2 nurses on duty. This reflected the gross inadequate and the overlaboured nature of nurses in various employments, thus the incidence of medication errors in healthcare facilities cannot be ruled out. Medication errors can occur at any point in the care of the patient, but at the administration stage when the nurse actually administered the medication to the patient, by giving him/her a pill, liquid, injection or intravenous infusion, is the most vulnerable stage.

The Agency for Health Research and Quality Report (AHQR) has shown that the incidence of medication errors is on the increase in health care facilities. These errors are, however, due to a lot of numbers of factors, the occurrence of medication errors is not usually acknowledged and inadequately reported by the individuals involved and their colleagues. These harbors a lot of the potentially dangerous effects on the clients, the nurse and the profession[3]. The effect of medication error on the part of the nurse may not be much if the error does not precipitate much reaction on the client. The nurse may go unpunished, but where thorough investigations are carried out, there is always a severe punishment attached to it[4]. Administering medication at the wrong time was not only a medication error, every step in patient care by nurse professionals involves a potential for error and some degree of risk to the patient safety. Even though medication administration by a nurse is part of a process that also involves doctor and pharmacist, it is of greater significance that the responsibility of the final delivery of the drug to the patient hangs on the nurse[5]. In this case, the nurse is at the front line when it comes to drug administration accountability[6].

Medication errors occurred among many health care professionals, especially physicians and pharmacists, however, nurses are usually placed on the frontline when medication errors occur[7]. Although, medication errors can occur in different forms and at different stages, a study on incidence of medication error in a paediatric emergency department, revealed that out of 125 orders for medication, 21(17%) of the orders did not specify the exact dose, 9 dosing errors occurred during the ordering phase, 5 were intercepted before the drugs reached the patient, in error were identified in nine (16%) out of 58 syringes analysed. Measured drug on concentration showed a deviation of at least 20% from the ordered doses. A large deviation (50%) from expected dose was found in 4 (7%) cases[8]. This explains the fact that medication errors occur at various stages of administration, but go unnoticed except in cases of adverse reactions in the patient.

Other types of medication error identified in a study include omission, error, prescription error, unauthorized drug, wrong administration technique, wrong dosage form, wrong drug preparation, wrong patient, wrong route and wrong time[9]. A recent Canadian study reported that medication or fluid-related error was second only to surgical error as the most common type of such incidents. Most studies of medication error have been based on data gathered from clinical records, which are well known to yield incomplete information. Partly because of fear of reprisal, very few incidents probably only 5% or so are considered potentially life-threatening are noted in patients' charts[3-6]. The same study further summarised various causes of medication error as; Performance deficiency, not following procedure/protocol, knowledge deficiency, inaccurate or lack of documentation, confusing communication, inaccurate or omitted prescription, computer/manual entry error, drug distribution system, inadequate system safeguard, illegible or unclear handwriting[9]. However, beyond

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Journal of Pharmaceutical and Biomedical Sciences
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the immediate causes of medication errors, several factors are not immediately visible yet they are more sinister in contributing to the occurrence of medication errors. A proper understanding of the contributing factors that increase medication errors is the first step towards preventing them. There are many factors such as training deficiencies, nursing shortage, which may have contributed to medication errors and these are associated with higher incidence of violations in medication management[10]. Inadequate staffing levels and excess hours worked have been found to influence the nurses' ability to perform medication management[11,12]. Additionally, the intensity of work, hurried situations, and job stress appears to increase nurses' workload [13-16].

The human error component of medication errors may be affected by staffing pattern. It is often stated that nursing professionals typically represent the largest employee group in hospitals and have become a primary target for redesign measures[17]. This implies that, nursing staffing is large and a cost to hospitals; hence, these organizations is constantly trying to manage expenses by understaffing of the health man-power of nurses. The overlabouring that ensues culminates in occurrence of errors during the delivery of nursing care. Medication errors occur due to nurses' actions, but also because of many organizational factors. It was also identified that most errors arise from systematic organizational failures, and not as a result of individual nurse's negligence[18]. Studies have also revealed that both organizational and individual variables affect the occurrence of medication errors [15,10].

Subsequently, various measures such as managed health care and reduced reimbursement with insurance companies have combined with the nurse shortage thus leading hospital administrators to rely on voluntary and mandatory nursing overtime services to solve their nurse staffing problems, this has led to an increase in the number of nurses doing extra shifts either voluntarily or mandatorily[18]. A study on Correlates of medication error in hospitals in Canada, reported that among nurses who worked overtime, 22% reported medication error compared with 14% of those who did not work overtime. Working overtime can lead to dangerous levels of fatigue and affect nurses' effectiveness and precision on duty[20]. Furthermore, a report published in 2007 by the US Agency for Health Research and Quality (AHQR), identified that chronic fatigue and poor global sleep quality (i.e. A measure of sleep quality that includes indicator such as the time needed to fall asleep, sleep duration, waking up during the night, use of sleep medication, and difficulty staying awake during the day) are common among health care personnel. This, coupled with night shifts and call duties may affect their infallibility on the job[21]. In the fully adjusted multivariate model, medication error was positively associated with usually working overtime, role overload, perceived staffing or resource inadequacy, low co-worker support, and low job security. Usually working a 12-hour shift, compared with shorter shifts, was negatively associated with medication error[22].

A study on the communication problem in the nursing systems, found that the more the years of experience, the fewer nurses who attributed medication errors to no explanation and no confirmation between nurses. The findings suggested that, there is the possibility that some medication errors occur due to preoccupation that nurses feel it is less necessary to explain and confirm everything related to medication administration as their length of service increase. The working relation between nurses and physicians has also been discovered to be associated with medication error[23]. A survey reported that among registered nurses whose working relations with physician were least favourable, 27% reported medication error. The proportion was only 12% among those whose working relations with physicians were most favourable[24]. The study revealed that nearly one-fifth (19%) of hospital RNs reported that medication error involving patients in their care had occurred "occasionally" or "frequently" in the past year[25].

The deleterious effects of medication errors on the patients, the nurse and the entire hospital cannot be overemphasized. The Agency for Health Care Research and Quality (AHQR) in Atlanta, USA., a report revealed that there has been a 50% increase in the number of medication errors reported from around America. the report also shown that five years after the institute of medicine report warned that medication error contributed to a total of $3.5 billion in medical bills, lost wages and other related expenses every year; the number of medication error injuring people every year, has not dropped but has actually increased[26]. Medication errors have been observed to have serious direct and indirect effects on health system

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and are usually the consequences of breakdown in a system of care. It was further explained that, the direct effects include patient harm as well as increased health care cost while, the indirect effects include harm to nurses in terms of professional status, confidence and practice[26]. Because of the dangerous consequences it poses for patients, medication errors remain a significant issue affecting patients' safety in Nigerian hospitals. Some adverse effects of medication errors on client includes anaphylactic shock, increased or decreased blood pressure, tremor, increased anxiety, heart failure, kidney diseases, nephritis, paralysis and so on. All these will translate into greater financial burden on the client, longer stay in health care institution and will also make the client lose confidence in the nurses and the entire health care team[8].

The non-reporting of medication errors has been widely documented in a study on the differences in the perception of nurses about the cause and reporting of medication errors. Only 45.6% of 983 believed that all drug errors are reported and reasons for not reporting include fear of manager and peer reaction, and it was also reported that nurses may not report medication errors because of reprisal [22,23].

THEORETICAL MODEL RELATED TO MEDICATION ERROR

The Eindhoven model of error recovery demonstrates the relationship between human operator, technical and organisational failure and the development of incident that may or may not lead to adverse outcomes. The model also proposed that high risk situation, which can develop from human operator, technical and organisational failure may be prevented by adequate system defences in health care settings. If a high risk situation is not averted by adequate system defence, it will not be interrupted and will therefore threaten patient safety. Nurses, being at the "sharp end of care", are well positioned to convert such potentially dangerous situations into near-miss event by identifying, interrupting and correcting errors. Error recovery occurs when the developing incident is intercepted to prevent an adverse outcome for a patient[25].

The purpose of this study was to investigate the trends of medication error in the University of Maiduguri Teaching Hospital. Specifically, to verify the occurrences of medication errors and examine the perception of the nurses about the causes of medication errors, the factors that contributes to medication errors and the effects of medication error on the client and the nurse.

METHODS

RESEARCH DESIGN

The descriptive research design was used for this study to understand and predict some aspect of perception and behaviour of Nurses about medication errors in the University of Maiduguri Teaching Hospital (UMTH).

RESEARCH SETTING:

This study was carried out on the various wards of University of Maiduguri Teaching Hospital (UMTH), located along Bama road, Costain, Gwange area, Maiduguri. UMTH is a tertiary health institution that provides service for both in and out patient. It comprises of 13 wards with a total number of 200 nurses and at least 15 of them are attached to each ward.

TARGET POPULATION

The target population for this study consist of all nurses working in all the wards of University of Maiduguri Teaching Hospital. From which 200 nurses were selected using random sampling techniques.

INSTRUMENT: A self-developed semi-structured questionnaire with close ended questions was used to collect data. The questionnaire comprises of 5 sections. Section A enquired about demographic information of the respondent, section B about the occurrence of medication errors, Section C on the perception of nurses about the causes and effects of medication errors; Section D consists of questions on various factors contributing to medication errors; and Section E was on effects of medication errors on the nursing practice.

VALIDITY AND RELIABILITY OF INSTRUMENT: The questionnaire was pre-tested on 20 nurses in Nursing Home, Maiduguri and the content and construct validity of the questions were addressed.

DATA COLLECTION: The researchers drew samples randomly from the collective duty roster of all the wards. With the aid of 2 trained research assistants the questionnaires were distributed to the sampled respondents during their shifts. Questionnaires were left for those not immediately available to fill. All filled questionnaires were collected and checked for completeness.

DATA ANALYSIS: Descriptive statistics were used to analyze the data collected from the respondents. Data analysis was based on the subjects' responses and done using frequency distribution and

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ISSN NO- 2230 – 7885
CODEN JPBSCT
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percentages. Analysed data were presented in tables.

ETHICAL CONSIDERATION

Approval for the conduct this study was given by the Research and Ethical Committee of UMTH. Also the ward managers and individual nurses were duly informed of their role in the study and its purpose and their consents were obtained.

RESULTS

A total of two hundred (200) questionnaires were administered on nurses in all the wards in UMTH and the overall return rate was 100%.

Table 1.Demographic data

Variable	Item	Frequency	Percentage (%)
Age	21 – 30 31 – 40 41 – 50 51 and above	72 64 64 00	36 32 32 0.0
Total		**200**	**100**
Sex	Male Female	48 152	24 76
Total		**200**	**100**
Marital status	Married Single Divorce Separated	168 32 00 00	84 16 00 00
Total		**200**	**100**
Years of experience	1 – 5 6 – 10 11- 15 16 – 20 21 – 25	64 64 24 32 16	32 32 12 16 08
Total		**200**	**100**

Table (1) above shows that the respondents' age ranged between 20-50 years. Modal age group ranged between 20-30 years and mean age of respondents was 35.1 years. On the gender distribution, the majority of the respondents were female (76%) as against the males (24%). Majorities (84%) of the respondents were married and 16% single. Mean years of working experience of the nurses was 9.8 years.

Table 2. Knowledge about medication error.

Variable	Item	Frequency	Percentage
Are you aware of the rights of medication administration?	Yes No	184 16	92 08
Total		**200**	**100**
What do you understand by the term medication error?	• Error of prescription • Error of administration • Adverse reaction by the patient • All of the above • No comment	36 36 52 44 32	18 18 26 22 16
Total		**200**	**100**
Does medication error occur in your ward?	Yes No No comment	96 88 16	48 44 08
Total		**200**	**100**
If yes how often? *(N=48)*	Very often Often Rarely	08 00 88	8.3 00 91.7
Total		**96**	**100**

From table (2) above, majority (92%) of the respondents were aware of the rights of medication administration, while 48% of the respondents agreed that medication error occur in the ward. However, 91.7% of those who agreed opined that the occurrence was in rare occasions, with only few (8.3%) of them rating the occurrence as very often.

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Table 3. Occurrence of medication errors.

Variable	Item	Frequency	Percentage
Have you ever made a medication error before?	Yes No No comment	48 144 08	24 72 04
Total		**200**	**100**
If yes, which type?	• Wrong dose • Wrong administration • Wrong timing • Wrong route • Wrong patient • No comment	11 10 12 00 00 15	22.9 20.8 25.0 00.0 00.0 31.4
Total		**48**	**100**
What is the most common type of medication error in your ward?	• Wrong dose • Wrong medication • Wrong timing • Wrong route • Wrong patient • No comment	40 24 72 00 00 64	20 12 36 00 00 32
Total		**200**	**100**

Table (3) above, although, only 24% of the nurses agreed to make one form of medication error or the other, almost all of them are aware of one form of medication error or another. But the most common type of medication error occurring on the wards as perceived by the nurses is the error of wrong timing (36%).

Table 4. Nurses' Perception about Factors Associated with Medication Error.

Variables	Item	Frequency	Percentage
Are there factors that contribute to medication error?	Yes No No comment	184 00 16	92 00 08
Total		**200**	**100**
If yes, what are they? (N=92)	• Distraction • Lack of information • Wrongly interpreted Prescription • Neglect on the part of the nurses • Shift change • All of the above	00 00 24 16 08 136	00 00 13.04 8.7 4.35 73.91
Total		**184**	**100**
Can medication error be checkmated?	Yes No	200 00	100 00
Total		**200**	**100**
If yes, in what way?	By observation By chart review By incidence report	88 64 48	44 32 24
Total		**200**	**100**

Table (4) above, 92% of the respondents stated that there are factors which contribute to medication error. 68% stated that the factors include distraction, wrongly interpreted prescription, negligence on the part of the nurses and shift change while the majority (73.91) of the respondents suggested several factors as it affect the occurrence of medication error.

Table 5. Nurses' perception about the EFFECT of medication error on the patient.

Variable	Item	Frequency	Percentage
Have you ever witnessed the effect of medication error on a patient?	Yes No No comment	120 72 08	60 36 04
Total		**200**	**100**
What are the effects of medication error on a patient?	Anaphylactic Shock Paralysis Tremor Increased anxiety	96 24 24 32	48 12 12 16

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ISSN NO- 2230 – 7885
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	No comment	24	12
Total		**200**	**100**
Are the adverse effects of medication errors reversible	Reversible Not reversible No comment	104 64 32	52 32 16
Total		**200**	**100**

Table (5) above shows majority (60%) of the respondents have witnessed the effects of medication error on a patient at one time or the other. The effect of medication error, mostly known by the respondents is anaphylactic shock (48%) followed by increased anxiety (16%). Most (52%) of them believed that the effects of medication error are reversible.

Table 6.Nurses' Perception about Report and Effect of Medication Error on Nurses

Variable	Item	Frequency	Percentage
How often do nurses report cases of medication error?	Always Often Sometimes Never	40 16 120 24	20 08 60 12
Total		**200**	**100**
What are the effects of medication error on the nurse?	Lack of confidence of the nurse Lowering of the nurses' self esteem Confusion among nurses No comment	80 56 56 08	40 28 28 04
Total		**200**	**100**
What are the effects of medication error on nursing practice	Punishment by higher authority Loss of job Loss of license of practice All of the above No comment	112 00 08 72 16	56 00 4 36 08
Total		**200**	**100**

Table (6) above reveals that, few numbers (20%) of nurses always and often report cases of medication error compare to a large proportion of nurses (72%) who sometimes or never reported medication error. However, 76% agreed that medication error has an effect on the nurse, such effect includes punishment from higher authority (56%).

DISCUSSION

The respondents whose mean age were 35 years were predominantly females (76%) and majority (84%) were married. This is a true reflection of the nature of nursing which has been a female dominated profession. Mean years of working experience of the nurses were 9.8 years, which explained that majority of nurses in UMTH has putting in several years of service and had at one time or the other encountered medication error during the course of their practice. The relationship between the years of working experience and the nurses' awareness level on the occurrence of medication error does not reflect in the study, as many nurses who had 5years as mean years of working experience have more awareness on the occurrence of medication error compared to those who had lengthy years of service. This probably explains the level of curiosity among young nurses in the quest for more knowledge on issues that affect the profession. Although, Tamayo (2011)[22] opined that the more the year of experience, the fewer the nurses who attributed medication error to no explanation and confirmation between nurses. This suggests the possibility that medication errors occur due to preoccupation that nurses feel it is less necessary to confirm and report appropriately the occurrence of medication error.

RESEARCH QUESTION 1: WHAT IS THE NURSE'S PERCEPTION ON THE OCCURRENCE OF MEDICATION ERROR IN UMTH?

Almost half (48%) of the respondent agree that medication error occurs in the hospital wards. It is obvious that the majority of the respondent did not agree that medication error occurs for fear of punishment from higher authority. This finding supports Mayo and Duncan (2004)[23] study which revealed that there are differences in the perception of occurrence of medication error among nurses. It is a known fact that occurrence of medication error was not a new concept among

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nurses in the University of Maiduguri Teaching Hospital (UMTH) as almost all the nurses in the hospital are aware of the occurrence of medication errors in UMTH wards even although, the occurrence was rare in terms of frequency. Almost half the number (44%) of nurses who participated in the study disagreed that medication errors do occur while few were silent despite the wide level of awareness on the occurrence of medication errors. The study revealed that majority of the respondents did disagreed that medication errors do occur in various wards/units but refused to admit probably due to the fear of reprimand or punishment that may accompanies the testimony on the error so committed from higher authority. This is an indication that medication error do occur in various wards and units of UMTH but these are not often reported by the nurses. This agrees with opinions of other authors that nurses may not report medication error because of reprisal and likely administrative consequences[22,5]. Studies also observed that medication administration is a process that also involves doctor and pharmacist, hence nurses could not ascertain the prescription errors as it was not within their jurisdiction, and even if it was discovered, they are not often reported[24].

RESEARCH QUESTION 2: WHAT IS THE NURSE'S KNOWLEDGE ABOUT MEDICATION ERRORS IN UMTH?

The knowledge of nurses about the causes of medication errors in UMTH was principally attributed to errors in drug administration and its relative adverse effect on the patient, although, few numbers of them perceived that medication error is caused by error of prescription and lack of proper communication between the prescriber (doctor) and the administrator of the medication (nurse); since medication administration by a nurse is a part of the process that also involves the doctor and pharmacist, adequate communication among health team is necessary[23]. While others opined that medication error is caused by error of administration[9].

RESEARCH QUESTION 3: WHAT ARE THE FACTORS THAT CONTRIBUTE TO MEDICATION ERROR?

About three quarters of nurses opined that many factors were found to be responsible for medication errors among nurses in UMTH. These factors include but not limited to wrongly interpreted prescription, negligence on the part of the nurse, shift change and work overload. This claim is in agreement with the study on correlates of medication error in hospitals in Canada, which revealed that nurses who worked overtime reported medication errors compared with those of them who did not work overtime[3,9]. Other factors were also attributed to organization or institution environment such as shortage of nursing staff, work overload and job stress. Studies have reported that most errors arise from systematic organizational failures, and not as a result of individual nurse's negligence, while, recognize that both organizational and individual variables affect the occurrence of errors as it was also observed that working relation between physicians and nurses was also associated with medication error[5,10,15,18].

RESEARCH QUESTION 4: WHAT ARE THE EFFECTS OF MEDICATION ERROR ON CLIENTS?

Most nurses in UMTH did not report effects of medication errors on clients even though quite a number of them had at one time or the other witnessed such effects on a client. Principal among the effects of medication error identified by the nurses are anaphylactic shock and tremors probably due to sudden onset and severe patient reaction to wrong medication. Others with varying degree of severity are shock, anxiety and paralysis. The nurses observation agreed with the work of which revealed that variety of severe complications are associated with medication error such as tremor, increased anxiety and paralysis[26]. Although it was widely accepted by majority of nurses that more than 50% of the adverse effects of errors in medication are reversible, but the devastating effects could not be ruled out completely. Medication errors not only affect the patient directly but also affect health system with increased health care cost on the patient. Indirectly, medication error adversely affects nurses in terms of professional status, confidence and practice[22].

QUESTION 5: WHAT ARE THE EFFECTS OF MEDICATION ERROR ON THE NURSE, NURSING PRACTICE AND THE PROFESSION?

The negative effects of medication error on the nurse and nursing practice were observed by majority of the respondents. They opined that effects of medication error create lack of patient's confidence on nursing services thus, gives the profession a bad image. The effects of medication error on the nurse also include loss of job, withdrawal of license to practice and punishment from higher authority. It was also observed that

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ournal of Pharmaceutical and Biomedical Sciences
ISSN NO- 2230 – 7885
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medication error adversely affects nurses in terms of professional status, confidence and practice[22]. On the reporting of medication error among nurses in UMTH, these are not often reported probably due to the fear of reprimand by the management of the institution. This was in agreement with a study which revealed that there are differences in the perception of nurses about the cause and reporting of medication errors, it was also observed that about fifty percent of the respondents believed that all drug errors are not reported and reasons for not reporting include fear of manager and peer reaction and also that nurses may not report medication errors because of reprisal[22,23].

The majority (76%) of the respondent confirmed that medication error has an effect on the nursing profession which is in agreement with the report that a nurse who worked two eight hour shifts back to back and made an error while administering medication to a patient towards the end of the last shift was charged with criminal neglect of patient causing bodily harm[17]. The effects of medication error on the nurse include exposure to litigation, loss of job, withdrawal of license for practice and punishment from higher authority.

RESEARCH QUESTION 6: HOW CAN MEDICATION ERROR CONTROLLED?

In an effort to checkmate medication errors among nurses at the university of Maiduguri Teaching hospital, almost all the nurses who participated in the study opined that medication errors can be checkmated. They however, offered several options most importantly the strict and diligent observation of the prescribed drug in terms of the right dosage, route, time and the right patient. Others are proper documentation and timely reporting of actions and reaction following each medication. To reduce patient risk from adverse reaction and to improve the health care team integrity, especially nurses, it is however, necessary to improve on effective communication channel among nurses, pharmacists and doctors who are involved in the process of medication administration. This support a claim on the communication problem in the nursing systems, that the more the service years, the fewer the nurses there were who attributed the medication errors to non-explanation and non-confirmation between nurses[21]. In view of the above, therefore, communication is a tool towards prevention of medication errors and improving medication administration among the health team in health institutions.

CONCLUSION

Based on the findings of this study, it was established that medication error occurs in hospitals on rare occasions. There are many factors which are associated with the causes of medication error; they include lack of information about the drug or the client, illegible handwriting of the prescriber, shift change, work overload and so on. The cause-effect, implication and perception of nurses on medication errors should be taken into consideration.

RECOMMENDATIONS

Considering the findings of this study, we recommend that:

- In checkmating medication error, all medical personnel should be called to order as it mostly originates from all levels of medication administration.
- Managers should create an atmosphere that is accommodating so that whenever an error is made, the nurse can easily report such to avoid confusion among the nurses which may lead to the punishment of an individual who is innocent.
- The authorities should provide adequate man–power to address the issue of nurse shortage which will minimize exhausted while caring for the patient.
- Five rights of drug administration should be strictly followed when administering drugs to the patient right from the prescribing stage to the administration stage.
- Effective communication should be established among nurses and physicians and other health professionals involved in medication administration.
- Patients should not be asked to take their drugs by themselves without closed supervision of the administering nurse.
- Regular training, motivation and continuing education of staff on medication administration should be encouraged all the professionals involved in medication administration.

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