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Nurses Knowledge on Prevention of Medication Error

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Abstract
Nurses are playing a vital role in caring the sick and wounded people. One of the important aspect in caring the patient is administration of medication to the patient. While caring patient, nurses must follow ten rights in order to safeguard themselves from the legal liabilities. Though nurses are following them, they must be aware about the different forms of medication error and its consequences. The investigator aimed to assess the nurse's knowledge on prevention of medication errors. A quantitative approach with descriptive survey design adopted for this study. Total of 50 nurses participated which includes 41 junior level nurses and 9 ward-in-charges. The study revealed that nurses had poor knowledge on prevention of medication error. Demographic variable like education had the association with nurse's knowledge on prevention of medication error.

Keywords: *Nurses, Medication error, prevention, Knowledge.*

Introduction

Safety during patient hospitalization consists of one of the patient rights and also the first priority of the health care professionals. Errors that occur during the application of medical/nursing interventions or patient hospitalization have capture the health researcher's attention over the last decade. Errors appearing in the hospital settings concern a lot of incidents like patient falls, use of wrong equipment, bed or pressure sores, hospital acquired infections, improper management of clinical situations and medication errors. Medication error defined as, any preventable event that may cause or lead to inappropriate medication used for patient and causes potential harm to the clients[1,2].

Medication errors are well-known problem in hospitals. Studies have shown that medication errors and adverse drug reactions (ADRs) are one of the main causes for adverse events in hospitals leading to disability and death. This constitutes up to 6.5% of hospital admission [3,4,5,6,7].

Every year between 44,000 and 98,000 individuals die in hospitals due to medical errors[8].It has been reported that this is only part of the problem, as thousands of other patients are adversely affected by medical errors or barely avoid injuries that are non-fatal [9]. These medical errors not only cost the loss of lives, but carry a financial burden that is estimated to be in a range of $17 billion to $29 billion annually. Additionally, there are physical and psychological pain and suffering related to these medication errors[8]. Another consequence is that medical errors diminish trust and satisfaction of the clients in the healthcare system and in healthcare professionals[8].

Recent studies reveal that medication administration errors is most common than the prescribing and preparing and it ranges from 19% to 28% of medication errors in hospitalized patients[11,12,13,14,15,16,17] While failure to comply with procedure has been a factor in medication administration error, failure to properly use the information system, or to ignore alerts or warnings, have also resulted in preventable errors[10,18,19]. Nurses may not follow the system instructions, may fail to maintain equipment, may intentionally misuse equipment, and may bypass required training and lack of knowledge on handling the equipment's. Discrepancies between anticipated system use and actual use can result in preventable system errors [18]. Although much has been written about how information technology can help reduce medication errors[17,18,19,20,21,22,23], little has been written about how information technology relates to errors in nursing medication charting systems[18,24,25]. Detection and prevention of medication errors require investigating their causes of medication errors [20] looking at the way a system used or not used is a first step in understanding. The causes of medication adminis-tration errors are, over workload, inexperienced staff, insufficient staffing, agency and temporary staffing, lack of access to patient information, emergency situation, poor lighting, patient transfers, floating staff, non- functioning of 24-hour pharmacy. Lack of updated knowledge and poor drug dose calculation among nurses may affect the health of patient. However researcher interested in assessing the nurse's knowledge on prevention of medication errors so that various continuing nursing education programme can be organised to inculcate the nurses knowledge on prevention of medication error, hands on training for safe administration of medication.

Materials and Methods

The research study was adopted quantitative approach with descriptive research design. Fifty staff nurses were chosen with convenient sampling technique. Necessary permission to conduct the study was obtained from the authorities of hospital based medical college also from the study sample. Data was collected through structured questionnaire method which consist of two section. Section A, related to personal information of the study samples like age, educational qualification, residential area, current working status, experience of the samples. Section B, related to research topic- meaning of medication error causes, types and prevention of medication error. It has 30 multiple choice questionnaire. Score - 0 was given for wrong answer and 1was given for correct answer. Those who scored less than 8 had very poor knowledge, score 8-15 had poor knowledge, score 16- 22 had average knowledge and score 23 above had good knowledge on prevention of medication error. The collected data was cleaned, analysed and tabulated.

Results and Discussion

In the age group of 21-30 years 82% (41 sample) of nurses participated in this study which constitutes highest percentage and only 18% (9 sample) of nurses participated are in the age group 31-40 years. The academic qualification of nurses were equally distributed between diploma and undergraduate nurses. All the nurses were clinically practising their profession in same hospital and of which 74% of nurses were working as clinical nurses at junior level and 26% of nurses are working as ward in-charge's. The living standard were taken into consideration which will allow nurses to access to knowledge with day to day development. Three fifth of nurses (64%) were residing in urban area and remaining were residing in rural area.60% of nurses were single and 40% of nurses were married. Majority of nurses (72%) possess 1 to 5 years of professional experience and the minority (28%) of nurses possess 6 to 10 years of professional experience.

Table I : Association of knowledge with demographic variables

S.No	Demographic Variables	Calculated Value	Table Value	Interpretation
1	Age	6.06	7.81	Non-Significant
2	Education	21.606		Significant
3	Professional Categories	1.3051		Non-Significant
4	Residency	2.392		Non-Significant
5	Marital Status	5.428		Non-Significant
6	Experience	4.88		Non-Significant

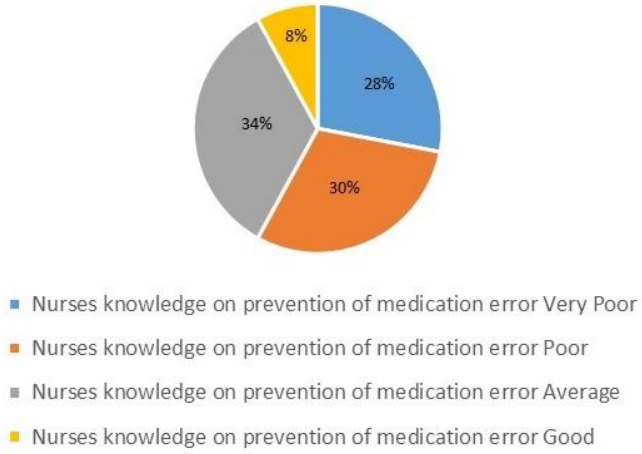

Figure 1: Nurses knowledge on prevention of medication error

The Nurses knowledge on prevention of medication error were categorized as very poor, poor, average and good. From the figure1, it is shown that 34% of nurses are average in the knowledge on prevention of medication error. 30% of nurses have poor knowledge, just above quarter (28%) of nurses have very poor knowledge and only 8% of nurses had good knowledge on prevention of medication error. From this statistics reveal mean of 13.26 with mean percentage of 44.2% and standard deviation of 6.31. This shows nurses had poor knowledge on prevention of medication error. This research study findings is in inline with Mohamed M. M. Abdel‑Latifet al (2016). In his study the author took 151 nurses, 64.90% were found to have poor knowledge. The poor knowledge about medication errors emphasized the urgent necessity to adopt appropriate measures to raise awareness about medication errors[29]. In contrast, Saila Bala Mohanty et al found that 67.6% of nurses had good knowledge and 33.4% of nurses had average knowledge on medication error and its prevention [31]

Among all six variables shown in the table I, only education had the association with knowledge on prevention of medication error with statistical significance of 0.05. The study strongly agree with the results of Grandell - Neimi et al. which correlates strong relationship with education and knowledge on medication error [30].

Saila Bala Mohanty et al concluded in his study that the majority of awareness is present within nursing group, yet the possibility of awareness in medication error is lower than that of medication management, also the techniques for prevention of medication error and its awareness are substandard to the awareness to medication error. A prompt continuous nursing programs and awareness programs are a mandate to decrease the medication errors [31].

Medication error occur due to lack of knowledge on particular drugs, rule based error like applying bad rule or misapplication of rule, action based error and memory based error. Knowledge-based errors can be prevented by improving knowledge, like ensuring that students and nurses are taught the basic principles of therapeutics and tested on their practical application and by continuing

nursing education programme their knowledge on drugs and its side effects should be thought. Nurses must be aware about the drug calculation method which may differ for adult, children and newborn and should be double checked by the competent nurse. Training can help in preventing technical (action-based) errors. Memory-based errors are the most difficult to prevent. They are best tackled by putting in place systems that detect such errors and allow remedial actions.

Specific recommendations to minimize drug errors, as drawn from published literature,[26,27] are to ensure consistency in documentation, and allow free uninterrupted flow of information from pre-assessment to the postoperative period. Also add prompts regarding drug allergies, to prevent omissions, possible overdose, and possible interactions. In communication, avoid using abbreviations, incorporate smart electronic prescribing with clear documentation. Standardized packaging and presentation: smart ampoule designs and labelling, segregate look alike packaging or ampoules, standardize storage of the drugs using cart trays, consider pre-filled syringes, ensure ampoules with concentrated solutions are not mixed with others, ensure drugs for intrathecal or epidural use are stored separately and are clearly marked, and segregate known hazardous products. For standardization of administration, standardize procedures for drawing up of drugs, avoid distractions, use clear standardized labelling, use bar-coding, and use electronic double check method. Under environment and flow category, minimize advance preparation of drug syringes, remove unused medications, minimize distractions during drug preparation and administration, and raise staff awareness and the level of education. Quality assurance should be done periodically by reporting all drug errors and near misses, irrespective of whether or not the patient came to harm, have systems in place to analyse these incidents and learn from them, convert lessons learnt into improvements in the systems with clearly defined goals, and monitor progress.

In addition to these specific measures, other recommended measures for use in the intensive care include avoiding extended working hours, computerized I.V. infusion pumps, standardized protocols and infusion regimes, medication reconciliation, and support systems for clinical decisions.[28] Despite many recommendations made to minimize drug errors, their uptake in clinical practiceis extremely low. With the exception of syringe labelling, other measures of preventing drug errors either do not exist or there is large variation in their implementation within, and between, organizations. Under-reporting still remains endemic among health-care professionals, and this limits the capacity of health-care workers and organizations to learn from the errors. Also, because of under-reporting, the true scale and extent of the problem, and its impact on patient safety, remain underestimated

Conclusion

Medication errors are preventable incidents where patients given the wrong medications, the wrong form of medications, the wrong dosage or at the wrong time due to an error in the process of prescribing, dispensing and administration. Health care professional must be aware about all strategies to prevent the occurrence of medication error so that the patient will be more secure from complication and long term illness. Nurses especially aware during the administration of correct dose of medication to the correct person at appropriate time. Proper communication with physician, nurses and pharmacist will reduce at least 85% of medication error. Nurses should be aware of the mechanism of reporting of medication errors and understand the need for the activation of reporting system in hospitals. The main reasons for under‑reporting of medication errors are poor knowledge on reporting mechanisms and availability and or accessibility of reporting systems. There is a need for continuous education and training of nurses and healthcare professionals about medication errors and reporting errors.

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