Perception of Medication error among Interns and Staff Nurses in a Selected Hospital at Mangaluru- A Mixed Method Approach

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Abstract

Objectives: The present study assessed the perception of medication error among the Interns and Staff Nurses and also elicited the experiences of those who have witnessed or committed medication error.

Method: A mixed method approach was adopted, and by Purposive sampling technique, 50 Interns and 50 Staff Nurses were selected as participants. The initial Quantitative Phase Data was obtained by using Demographic proforma, and Modified Gladstone scale of medication error. Qualitative Phase data was collected by Semi-Structured open-ended Questionnaire.

Result: The findings of Descriptive and Inferential statistical analysis revealed that Majority of the Staff nurses had High Perception (52%) and Interns had Moderate perception (68%) about the medication error. Staff nurses (51.14) perception of medication error was higher than that of Interns (46.70). In the second phase Qualitative data was collected by Semi-Structured open-ended Questionnaire, and the verbatim was analyzed by Colaizzi's data analysis. With the verbatim, six themes emerged, which are Patient safety threat, Physical and physiological effect, Handling the error, reporting attitude, negative emotions, and problem focus strategy of medication error. The triangulation of Qualitative and Quantitative findings revealed the congruency between the four domains like causes, types, reporting behavior, and Views or feelings on medication error.

Conclusion: The study identified the gap between the nurse's perception of medication error with their actual knowledge. It was clear that the nurses need specific information about what constitutes medication error.

Key Words: *Medication Errors, Perception, Health Personnel, Patient safety*

Introduction

In the healthcare system, advancements and Errors are an all-time high happening. The system of treatment is becoming more hi-tech and more sophisticated, which is vulnerable to errors at the same time.[1] If wrong medicine is administered, it can cause severe adverse reactions instead of cure. A medication error is a significant threat to the patient's safety. It is the most frequent error occurring in the health care set up due to the negligence or malpractice of the health care professionals, who involve in the direct patient care such as Nurses, Doctors, and the Pharmacists which lead to the harmful effects on the patients .[1]

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India records around 5.2 million injuries due to the medical errors of which medication error is one of them.[2] According to the Food and Drug Administration, in the United States, about 1.3 million people have been injured annually due to the medication error.[3]

An Indian study conducted on the medication error in a general hospital of Bangalore; Karnataka, revealed that the incidence of medication error was 38.12%.[4] Another study conducted in a tertiary care teaching hospital of Gulbarga, Karnataka, revealed that the incidence of medication error was 33.4%.[5] Hence it was found that medication error is the most common and severe problem that occurs in the hospital due to the various causes.

Nurses play an influential role in preventing, identifying, and reporting medication error. Despite the medication error, some nurses fail to report the error because of their perceived barrier. Nurse's perception should be changed to prevent medication error by enhancing their knowledge regarding the safe practices of medication administration. Nurses are the line of defense for patient's safety in administering medication, detecting and managing errors during the patient care. There is a lack of statistics about the medication error as the committed persons do not report it. The present study aimed to assess the perception of medication error among the Interns and Staff Nurses and also to elicit the experience of health personnel who had witnessed or committed medication error so that the corrective actions can be taken to prevent future errors thus increasing the patient's safety.

Materials and Method

A Mixed method approach with sequential exploratory design (Phase I- Quantitative followed by Phase – II Qualitative) was adopted. In this study, health personnel refers to staff nurses and nursing interns. The required permissions were obtained from the hospital authorities.GNM and B.Sc (N) Interns who are undergoing internship and Staff nurses who are involved in direct patient care were included for the study.50 Staff nurses and 50 Nursing interns working in all the wards were selected by purposive sampling technique in Phase I. Informed written consent was taken from the participants. Ward in-charges, supervisors, M.Sc qualified nurses and Nurses working in the Hospital for less than 1 Year and those under supervision were excluded. In phase II focussed group discussion was held to obtain qualitative findings from the few Nurses who had witnessed or committed medication error.

Data collection tools:

The quantitative data was collected by demographic proforma and modified Gladstone scale of medication error in Phase I and Semi-Structured open-ended questionnaire in phase II.

Demographic Proforma:

It consisted of 14 items, which includes age, gender, Education, working area, years of experience, work experience in other hospital, number of patients handled, Practice of basic rights, Medical Professional in the family, Previous Knowledge, facilities to gain knowledge, training during initial days of internship, medication administration without supervision, witnessed medication error and committed Medication error.

Modified Gladstone Scale of Medication error:

This scale initially was developed by Jill Gladstome (1995) [6] and the researcher obtained permission to use and modify it for the present study. Items were categorized into four domains, such as Causes, Types, Reporting Behaviour, and Views/ Feelings with a maximum score of 75. The overall score of all four domains was calculated and interpreted as Low Perception 1-25, Moderate Perception 26-50, and High Perception 51-75.

The Semi-Structured open-ended Questionnaire had six questions entailed of experience of a medication error, consequences, managing, reporting, emotional changes, and coping strategies adopted after a Medication error.

Nine subject experts of nursing tested the content validity and relevance of the questionnaire. By using "Cronbach's alpha," the reliability of the tool was measured and was found adequate for the study (0.75).

Quantitative data analysis: Descriptive statistics (Frequency, Percentage, Mean, Mean Difference, and Standard Deviation) and inferential statistics were used for the analysis of quantitative data. Independent t-test was used to compare the perception of medication error among the Interns and Staff Nurses and Chi-square test

to find out the association between the level of perception with selected demographic variables). Significance level was considered at $p < 0.05$.

Qualitative data analysis: The written verbatim of the Staff nurses who have either witnessed or committed medication error was analyzed using "Colaizzi's data analysis framework, and themes and sub-themes were emerged. The themes were validated by two experts in the field of qualitative research.

Triangulation of data: Triangulation of data is the merging of quantitative and Qualitative data. The congruent findings from the Phase I Quantitative (Collected with Modified Gladstone scale) and the Phase II-Qualitative (written verbatim) were analyzed and merged to derive a common conclusion.

Findings

Majority of the Nurses and interns were in the age group of 20-25 years and completed (54%) diploma in Nursing education.Most (64%) of the staff nurses had 1-3 years of experience,and 52% of the staff nurses handle 7- 11 patients during a shift. Table 1 presents descriptive characteristics of Staff Nurses and Interns.

TABLE NO: 1 DISTRIBUTION OF SUBJECTS ACCORDING TO THE DEMOGRAPHIC CHARACTERISTICS n = 100

Characteristics	Interns	Staff Nurses	Percentage
Age			
20-25	50	19	69
26-30	0	25	25
31-35	0	6	6
Education			
GNM	25	29	54
B.Sc (N)	25	15	40
P B B.Sc (N)	0	6	6
Currently working			
Medical	11	12	23
Surgical	10	16	26
ICU	10	6	16
Paediatric	5	5	10
OBG	10	7	17
Casualty	4	4	8
The practice of 10 basic rights of drug administration			
Yes	33	46	79
No	17	4	21
Witnessed medication error			
Yes	10	19	29
No	40	31	71
Committed medication error			
Yes	0	1	1
No	50	49	99

Figure 1 represents the Interns Perception of medication error where majority 46% had moderate level of perception about the causes of medication error, 58% had moderate level of perception about the types of medication error, 64% had a low level of perception about the reporting behavior of medication error, 60% had a Moderate level of perception about the Views/ feelings of medication error.

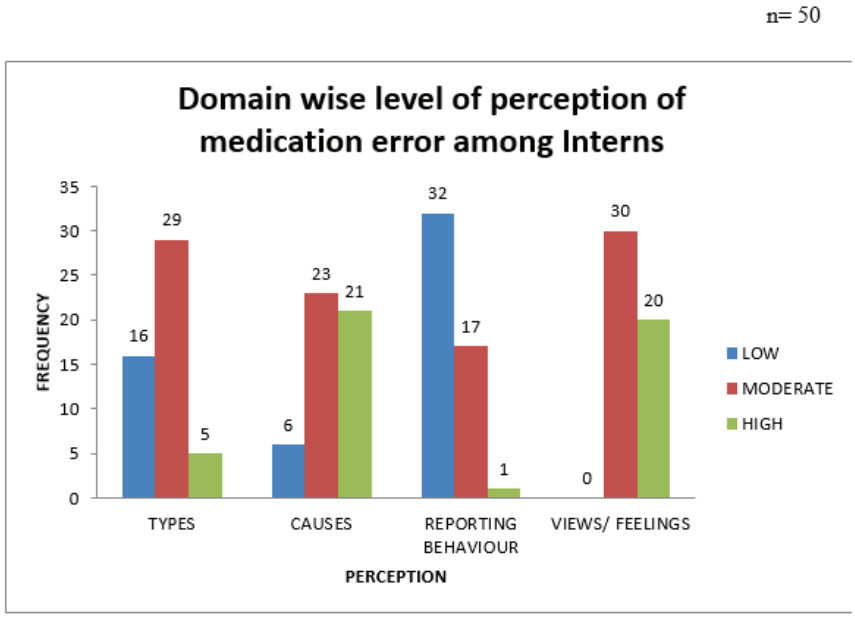

Fig No 1: Bar diagram representing domain wise level of perception of medication error among Interns

Figure 2 represents the Staff nurses Perception of medication error which depicts that majority 50% had moderate level of perception about the causes of medication error, 54% had moderate level of perception about the types of medication error, 52% had low perception about the reporting behavior of medication error and 84% had high level of perception of the Views/ feelings of medication error.

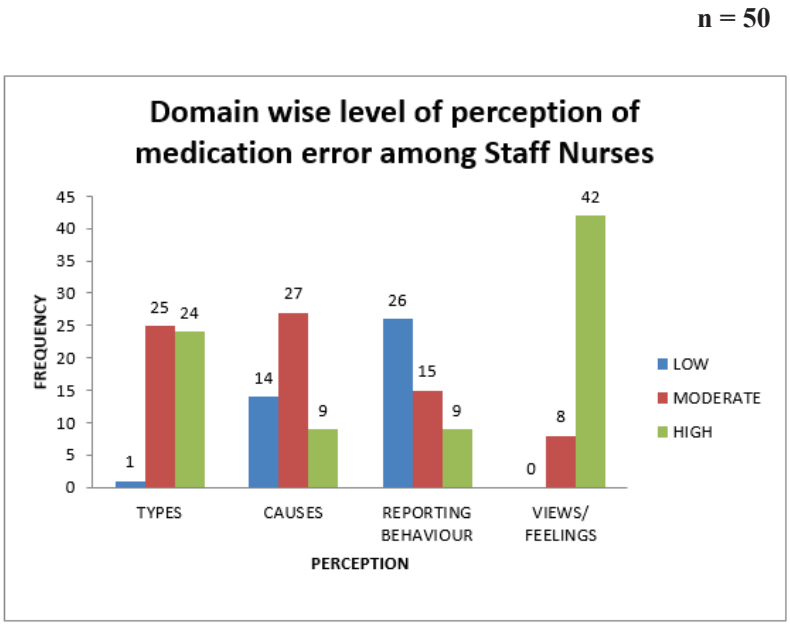

Fig No 2: Bar diagram representing domain wise level of perception of medication error among Staff nurses

From the error bar diagram (Figure 3) it is clear that among the Staff nurses and Interns, the level of mean perception about medication error was 51.14±6.65 and 46.7±9.6.

n= 100

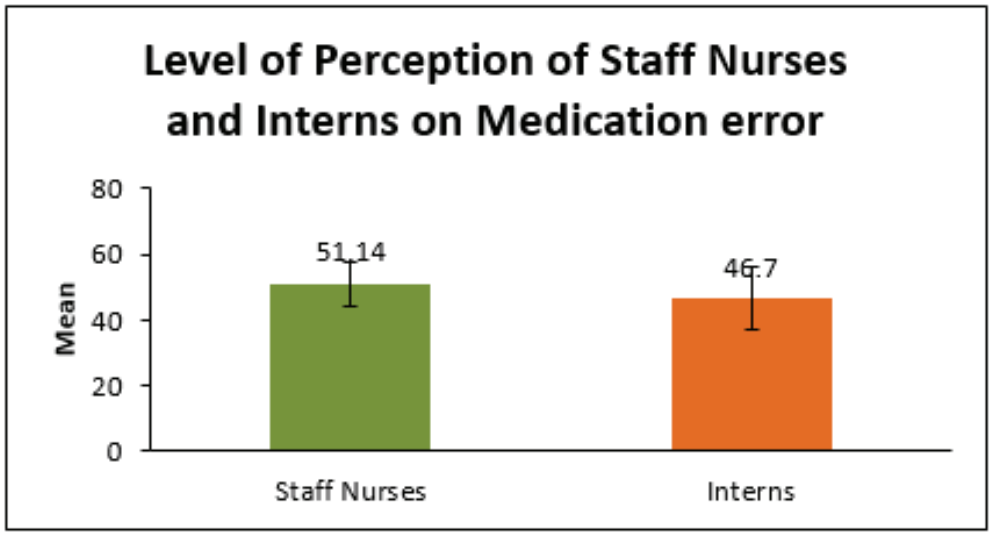

Fig no 3: Error bar diagram representing the mean and standard deviation of staff nurses and Interns level of perception of medication error

The independent sample 't' test calculated value is 2.68, with the p-value of 0.009, which is less than 0.05. Hence the research Hypothesis is accepted, and it is concluded that there is a difference in the overall perception of medication error between the staff nurses and interns at a 5% level of significance. (Table no. 2). There is no significant association found between the Interns and staff nurses level of perception with the selected demographic variables at a 5% level of significance.

TABLE NO 2: COMPARISON OF THE LEVEL OF PERCEPTION AMONG INTERNS AND STAFF NURSES

n = 100

Level	Group	Mean difference	't'	P value
Over all Perception	Interns	4.440	2.68	0.009*
	Staff nurse			
Causes	Interns	0.70	0.67	0.504
	Staff nurse			
Types	Interns	0.460	1.64	0.104
	Staff nurse			
Reporting	Interns	0.50	1.821	0.072
	Staff nurse			
Views/ Feeling	Interns	2.780	3.981	<0.001*
	Staff nurse			

* indicates significant

The findings of the study revealed that there was no significant association between the staff nurses and Interns

level of perception with the selected demographic information.

An attention-grabbing finding found is that 10 Interns and 20 Staff Nurses had witnessed or committed medication error. Those were asked to write in-depth about the medication error experiences based on the Semi-Structured open-ended questionnaire. The verbatim of the Interns and Staff nurses was analyzed and found that 10 Interns Verbatim was inadequate. Therefore 20 Staff Nurses Verbatims were selected for the In-depth Qualitative analysis.

Based on the staff nurses verbatim, six main themes were derived. They are patient safety threat, impact and severity, strategies adopted, reporting attitude, psychological effect and problem focus strategy.

- **Patient safety threat** theme was derived from the three subthemes such as communication error; failure to adhere to the rights of medication administration and nurse's dereliction to the duty.

- **Impact and severity** was derived from the physical and physiological effects of medication error such as no harm, minor adverse effects, major adverse effects and life threatening.

- **Strategies adopted** was derived from the ways of handling error such as reporting the error, monitoring the patient, symptomatic error, antidote administration and transferring the patient to ICU.

- **Reporting attitude** was derived from the subtheme of positive and negative attitudes.

Positive attitude were following the correct Hierarchy of reporting (Doctor, NS, Quality assurance department), reporting through the incident form and reporting the error to the patient and patient relatives. Negative attitude such as not reporting the error to anyone, nurses think that the error was not serious to report, hiding the error with support, reporting the error only to the Doctor, not disclosing the error to the patient or patient relatives and disclosing the error to the patient due to the death of the patient.

- **Psychological effect** was derived from primary and secondary negative emotions of the staff nurses after the medication error. Primary negative emotions were scared, anxious, stress, upset, worried, crying, embarrassment, guilty. Secondary negative emotions were fear of getting scolding, fear of retaliation, fear of paying penalty and fear of losing job.

- **Problem focus strategy** was derived from the various defence mechanism adopted by the nurses. They are adaptive coping strategies such as understanding the responsibility, seeking help from Doctor, discussing with peers and carry out remedial measures quickly and mal adaptive coping strategies were blaming others, Self isolation and avoiding peers, trying to manipulate and ignoring the mistake done.

For the Triangulation of the Data, findings of the Quantitative phase (50 Staff nurses) and the Staff Nurses Verbatim (19 Witnessed and one committed medication error) of the qualitative phase have been merged, and a matrix developed.

In the modified Gladstone scale, 12 items of causes of medication error were compared with the qualitative findings of the Staff nurses. Out of which, five causes were similar with 7 participants verbatim of the qualitative findings namely patients with similar names, failure to check the IP number, incorrect setting of the infusion device, illegible handwriting of the doctor in the prescription chart, and received verbal or telephonic orders.

Regarding types of medication error, which contains six items, two were coinciding with that of the four staff nurses verbatim. They were Wrong dose error and the deteriorated error.

Among the Six items of the reporting behavior, three items of the scale were corresponding with eight nurses verbatim of the qualitative findings. Those are staff nurses report medication error immediately, failure to follow the correct hierarchy of reporting (Doctors, Nursing superintendent, and quality assurance department) and failure to report error through the incident form.

Another interesting finding to note is that 4 Perceived barriers of medication error were coinciding with 14 participants verbatim of the qualitative findings like failure to report due to the reaction from the authority and others; nurses think that the error was not serious to report, fear of disciplinary action, loss of job and they

think that it is safe not to report to patient relatives in some situations.

Conclusion

The study result findings state that the work experience plays an important role in committing any kind of error in a hospital setup. As the age increases the clinical experiences also improves and makes the nurses more mature thereby, they may be more cautious to avoid all chances of committing the mistakes and errors.

The results attribute to a salient point that, medication error is the most common error in the hospital which varies with the severity, and the most strong point is that the causes of medication errors are preventable. During the induction training, all the nurses and interns should be provided with an equal opportunity to familiarize with hospital policies in medication administration and standing orders related to medication administration.

The medication error is not only a local or regional issue; it has a global impact where the errors seem to be silly but have a huge implication in the patient's life. If it is not identified early and counteractions were not initiated at the earliest, it may cost the life of the patient. However, these errors can be completely avoidable if the care provider or nurse shows alertness and mindfulness. Shortage of workforce and workload of individual nurses patient care settings may be the hindering factor leading to lethargic environment, which need to be addressed at the administrative level.

The researcher felt that there was a gap between the perception of medication error and the actual knowledge of the staff nurses and Interns. Fear of the nurse manager and loss of job was the strongest barrier found in reporting the medication error. These findings emphasize the importance of developing a rational blameless climate for honest reporting of the intended or unintended medication errors and using those reports for improving patient safety.

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Ethical Clearance: The research proposal was placed in the Institutional ethics committee and obtained permission.(NUINS/CON/NU/IEC/ 2015-16 dated 16/01/2016).

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