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A Study to Assess the Effectiveness of Self-Instructional Module (SIM) On Knowledge Regarding Medication Error Among Nursing Officers Working at Selected Hospital, Jaipur, Rajasthan

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Abstract

Background: Medication errors are among the most common medical errors in hospital settings and are associated with increased morbidity, mortality, length of hospital stay, and healthcare costs. According to the World Health Organization (WHO), medication errors contribute substantially to avoidable harm, with an estimated global cost of US$ 42 billion annually (WHO, 2017). Nurses, being the primary healthcare professionals responsible for medication administration, play a crucial role in preventing, identifying, and reporting medication errors.

Nurses are pillars of neonatal care, so they should be aware of all the risk factors known to be associated with Medication Error. Their knowledge and clinical skills help in providing the best practices to prevent Medication Error. Therefore, the researcher has taken the topic A Study to Assess the Effectiveness of Self-Instructional Module (Sim) on Knowledge Regarding Medication Error Among Nursing Officers Working at Selected Hospital, Jaipur, Rajasthan."

Methodology: It is an experimental study carried out on the nursing officers working at JK LON Hospital, Jaipur, Rajasthan. A pre-experimental study was conducted in 2025, where 60 nursing officers who are working under JK LON Hospital were selected by a non-probability convenience sampling technique. A self-structured knowledge questionnaire was used to assess knowledge before and after the implementation of the SIM, to collect data from participants and the SIM is based on medication error and its prevention.

Results: The pre-test findings of nursing officers revealed that 15% (09) of participants had good knowledge, 43.33% (26) had average knowledge, and 41.67% (25) had poor knowledge regarding medication error Following the implementation of the SIM, post-test results showed a significant improvement with 71.67% (43) had Good knowledge, 28.33% (17) Average knowledge and only 00% (00) remaining poor knowledge category. The mean post-test knowledge scores were significantly higher than pre-test scores ($p < 0.05$), indicating the effectiveness of the intervention.

Conclusion: The study highlights a gap in knowledge regarding medication errors among nursing officers, which can be effectively addressed through structured educational interventions. Enhancing awareness and education on medication errors for early detection, intervention, and improved child health outcomes.

Keywords: Effectiveness, Medication error, Self-instructional module, Nursing officers.

Introduction

Medication errors, defined as any preventable occurrence that could lead to or cause inappropriate medication use or patient

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harm while the medication is under the control of healthcare professionals, patients, or consumers, [1] present a substantial threat to patient safety. These errors can manifest at any point in the medication process, encompassing prescribing, transcribing, dispensing, administering, and monitoring.

The consequences of such errors can range from minor adverse drug reactions to severe complications, prolonged hospitalizations, escalated healthcare costs, and tragically, even mortality.

Medication errors are a major concern in healthcare systems worldwide and represent a significant threat to patient safety. The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines a medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of a health care professional, patient, or consumer" (NCC MERP, 2001). These errors may occur at any stage of the medication use process, including prescribing, transcribing, dispensing, administering, and monitoring of drugs.

Several factors contribute to medication errors, such as heavy workload, inadequate staffing, lack of knowledge, poor communication, illegible prescriptions, similar drug names, and interruptions during medication administration (Aronson, 2009). In developing countries like India, limited resources, high patient-nurse ratios, and insufficient training further increase the risk of medication errors (Bates et al., 1995).

Understanding the knowledge, attitudes, and practices of nursing officers regarding medication errors is essential for developing effective strategies to reduce their occurrence. Improving nurses' knowledge through education, training programs, and self-instructional modules can significantly enhance medication safety and improve patient outcomes. Therefore, this study aims to assess the knowledge regarding medication errors among nursing officers and evaluate the effectiveness of educational interventions in preventing medication errors in clinical practice.

Medication errors are not confined to specific healthcare settings or geographical boundaries. Studies conducted across diverse nations have consistently demonstrated their presence in hospitals, clinics, and even home healthcare environments. The complexity inherent in medication regimens, the expanding array of available pharmaceuticals, and the intricate processes involved in prescribing, dispensing, and administering medications all contribute to the potential for errors to arise.

Methodology

This includes the various materials and methods, including:
Population- Nursing officers who are working at JK LON Hospital Jaipur, Rajasthan.
Sampling technique: Non-probability convenience sampling technique.
Delimitations: -The study is delimited to: -
Nursing officers of JK LON Hospital only.
Nursing officers will be available during the time of data collection.
Nursing officers who are willing to participate in the study.

Tool for Data Collection

- Part I: Background Variables (Age, Gender, Professional qualification, Clinical experience, and Attained any training |Workshop).
- Part-II: A self-administered structured knowledge questionnaire was prepared, which consists of 35 items regarding medication error among Nursing officers.

Results

The results are shown in the sections that follow (Tables 1-5):

- The study in pre-test 15 % (9) nursing officer had good, 43.33% (26) had average and 41.67% (25) had poor level of knowledge regarding medication error, whereas in the post-test 71.67% (43) of them were found to have good, 28.33% (17) had average and 00% (0) had poor level of knowledge of nursing officers. Hence, we can say that SIM helps in increasing the level of knowledge regarding Medication error.
- The calculated value of the 'Z' test is 10.69, which is found to be greater than the tabulated value of 1.67 at the 0.05 level of significance. Indicates that the mean difference between pre-test and post-test is a significance difference not by chance. Therefore, the researcher was able to reject the null hypothesis H_{01} and accept the research hypothesis H_1. Hence, we can say that self- instructional module (SIM) is found to be effective in enhancing knowledge regarding medication error among nursing officers.
- The study of the association between post-test knowledge regarding medication error among nursing officers and their selected background variables, such as gender, age, and clinical experience, and previous training | workshop. The calculated value of chi-square is less than the tabulated value at the 0.05 level of significance, hence these demographical variables do not show a statistically significant relationship.

Therefore, the researcher was failed to reject the research hypotheses and the null hypotheses were rejected.

Analysis and interpretation of tables regarding the knowledge score of medication error among nursing officers –

- Table 2 clearly reveals the frequency and percentage distribution of the background variables of nursing

Table 1: Interpretation of knowledge score

Knowledge level	*Score*	*Percentage*
Poor	0–17	50
Average	18–25	51–75
Good	26–35	Above 75

Table 2: Frequency and percentage distribution of the background variable of nursing officers N-60

1.	Gender		Frequency {f}	Percentage (%)
		Male	27	45.00
		Female	33	55.00
2.	Age (age in years)	21–30	11	18.33
		31–40	34	56.66
		41–50	13	21.66
		51–60	02	03.33
3.	Professional qualification	GNM	37	62.00
		P.B.B.Sc. Nursing	13	22.00
		B.Sc. Nursing	10	16.00
		M. Sc. Nursing	00	00
4.	Previous training	Yes	30	50
		No	30	50
5.	Clinical experience	Up to 5 years	20	33.33
		6–10 years	21	35
		11–15 years	10	16.66
		>15 years	09	15
		TOTAL	60	100

Table 3: Frequency and percentage distribution of the knowledge score among Nursing officers N-60

Level of knowledge	*Categories*	*Pre-test*		*Post-test*	
		Frequency	*Percentage*	*Frequency*	*Percentage*
Good	26–35	09	15.00	43	71.67
Average	18–25	26	43.33	17	28.33
Poor	0–17	25	41.67	00	00

officers such as gender, age (in completed years), professional qualification, clinical experience and previous training.

- Table 3 Clearly represents that in the pre-test 15% (9) nursing officer had good, 43.33% (26) had average and 41.67% (25) had poor level of knowledge regarding medication error, whereas in the post-test 71.67%(43) of them were found to have good, 28.33% (17) had average and 00% (00) had poor level of knowledge regarding medication error.
- Table 4 Clearly represents that pre-test, mean, median and mode and high standard deviation, indicates that the group is heterogeneous in term of their knowledge regarding medication error, Whereas in post-test, mean, median and mode and small standard deviation, indicates that the group is homogenous and in the pre-test and post test, mean median and mode and high standard deviation, indicates that the group is heterogeneous.

Table 4: Comparison of mean, median, mode and standard deviation of level of pre-test and post-test knowledge score regarding medication error among nursing officers N-60

Level of knowledge	*Mean*	*Median*	*Mode*	*Standard deviation*
Pre-test	19.05	18.05	16	4.79
Post-test	27.18	27	29	3.50

Table 5: Difference in the mean pre-test and mean post-test knowledge score regarding medication error among nursing officers N-60

Knowledge Score	*Mean*	*Calculated 't' value*	*Tabulated 't' value*	*S/NS*
Pre-test	19.05	10.69	1.67	S
Post-test	27.18			

- Table 5 clearly reveals that the calculated value of the 'z' test, 10.69, is found to be greater than the tabulated value of 1.67 at a 0.05 level of significance. Indicates that the mean difference between pre-test and post-test is a significance difference not by chance.

Discussion

The Findings of the present study on the effectiveness of a self-instructional module (SIM) on knowledge regarding medication error among nursing officers revealed that the mean score of knowledge in the pre-test was 19.05 with a standard deviation of 4.79, which was increased after administration of the self-instructional module, with a mean knowledge score of 27.18 with SD of 3.50.

It was also revealed that 41.67% of nursing officers had poor knowledge, 43.33% had average knowledge, 15% had poor knowledge regarding medication error.

Conclusion

This chapter dealt with the important conclusions drawn based on the findings of the study and their nursing implications.

Assess the effectiveness of a self-instructional module in improving knowledge regarding medication error among nursing officers working at JK Lon hospital, Jaipur.

Assess the pre-test knowledge level among nursing officers before providing self- instructional module, regarding medication error, the scores are- poor 25 (41.67%), Average 26 (43.33%) and Good 9 (15%).

Assess post-test knowledge level among nursing officers after providing self- instructional module, regarding medication error score is poor 00 (00%), Average 17 (28.33%), and Good 43 (71.67%).

Find out the difference between the pre-test and post-test knowledge regarding medication error among nursing officers before and after providing a self-instructional module. Calculated value (10.69) was more than the tabulated (w) value(1.67) at a 0.05 level of significance, so there is a significant difference in the mean pre and mean post-test knowledge score, which means the self-instructional module is effective in improving knowledge regarding medication error among nursing officers working at JK Lon hospital, Jaipur.

So, it can be concluded that there is a significant association between post-test knowledge score regarding medication error among nursing officers working at JK Lon hospital, Jaipur. Socio-demographic variables such as age, gender, qualification, Clinical experience, and previous training/workshop were not associated with the post-test knowledge score regarding medication error among nursing officers working at JK Lon Hospital, Jaipur.

Recommendations

Keeping in view the findings of the present study, the following recommendations were made. A similar study can be conducted in an abrader area in order to draw a generation. Encourage collaborative studies involving nursing, pharmacy, and medical departments to develop holistic approaches to medication error management.

A study can be conducted to explore the effectiveness of SIMs in improving knowledge and practice related to other medical health conditions, such as taking medicine without a prescription, more uses of over-the-counter medicines.

A similar study can be conducted on the awareness regarding medication errors among medical students.

Contribution of Authors

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Conflicts of Interest

The author declares that they have no conflict of interest with regard to the content of the report.

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