



Effect OF Computer Facilitated Guidance Programme on Knowledge and Practices Regarding Safe Administration of Common Pediatric Drugs among Staff Nurses

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ABSTRACT

Medication errors are among the most common type and one of the most common and preventable causes of iatrogenic injuries. Children are particularly vulnerable to medication errors because of their unique physiology and developmental needs. Nurse as the primary care giver must be aware of the safety while administering medication to a child. Hence, the study was undertaken to assess the effect of computer facilitated guidance programme on knowledge and practices regarding safe administration of common pediatric drugs among staff nurses in a selected hospital, Thrissur. The other objectives of the study were to assess the pre-test knowledge and practices score of staff nurses, to correlate knowledge and practices, and to associate knowledge and practices with selected demographic variables. The analysis shows that there is a significant increase in knowledge and practice score of staff nurses after rendering computer facilitated guidance programme ($t = 21.22$, $p = 0.000$, $t = 9.3$, $p = 0.000$), respectively. The result also shows a positive correlation between the knowledge and practice of staff nurses ($r = 0.093$, $p = 0.627$). The significant association was found only with the practice and the age of the staff nurses and there is no association between knowledge score with selected demographic variables. Thus the study concludes that computer facilitated guidance programme was effective.

KEYWORDS

Staff nurses; Children; Medication errors; Computer facilitated guidance programme; Knowledge; Practice

INTRODUCTION

Background of the problem

Pharmacological management is an important aspect of nursing management for inpatients and community clients. Medications are used as one of the interventional strategies in the prevention and management of various ailments. The medication itself can turn into a health deteriorating agent if not used decorously. A medication error is a failure in the treatment process that leads to or has the potential to lead to harm to the patient. The nurse's role in administering drugs is often challenging when the drug taker is the child. Nursing and Midwifery Council's

Standards for Medicine Management says that "Medicines administration is not solely a mechanistic task to be performed in strict compliance with the written prescription...it requires thought and...professional judgement"¹.

Need and significance of the study

Hospitalized children are vulnerable to iatrogenic harm and pose unique safety risks in our health care system². Children and adults respond to drugs differently. There are important differences in the absorption, distribution, metabolism and excretion. Children's body systems are less developed, their gastrointestinal transit



time varies and their body composition changes with development. In addition, the physiologic reserves of children are lower, and they may be unable to verbalize adverse reactions. The limited scope of current research in pharmacokinetics and the effects on the developing child creates the need for more studies on drug therapy in the pediatric client³.

MATERIALS AND METHODS

The investigator adopted an evaluative approach for the study to evaluate the efficacy of computer facilitated guidance programme regarding safe administration of common pediatric drugs among staff nurses through a quantitative research approach and a Quasi experimental one group pre-test post-test design was adopted for the study. The setting used in this study was Aswini Hospital Thrissur. The sampling technique used was simple random sampling to select 30 samples. The tool used in this study consists of, Section A: Demographic pro-forma of staff nurses, Section B: Structured knowledge questionnaire on safe administration of common pediatric drugs, Section C: Structured practice check list on safe administration of common pediatric drugs and Section D: Computer facilitated guidance programme on safe administration of common pediatric drugs.

During the first phase of data collection, the investigator obtained permission from the Managing Director and Nursing Superintendent of Aswini Hospital pvt ltd to conduct the main study. In the next phase data was collected using self structured knowledge questionnaire and self reported checklist. In the third phase, computer facilitated guidance programme was given to the staff nurses regarding safe administration of common pediatric drugs. In the final phase, post test of the samples were conducted using the same questionnaire and checklist.

RESULTS AND DISCUSSION

SECTION A: Description on demographic profile of the staff nurses

- Regarding the age, it implies that majority of the samples 18(60%) belongs to the age of 22-25 years, 9 (30%) of samples were in the age group of 26-30 years and 3 (10%) belongs to age group of >30 years.
- With reference to the clinical experience of the staff nurses, 17 (56.7%) has got clinical experience from 1 year to 3 years, 6 (20%) belongs to experience category of 3 – 5 years, 5 (16.7%) has got experience of >5 years, while only 2 (6.7%) has experience between 6 months – 1 year.



- In a view to the educational qualification of the staff nurses, majority of the samples 13 (43.3%) were under graduates holding a degree of GNM Nursing, 12 (40%) were BSc Nurses and 5 (16.7%) were having post basic Nursing degree.
- In accordance with the area of work of the samples, majority 16 (53.3%) belong to general pediatric medical ward, 8 (26.7%) were in PICU and 6 (20%) were in pediatric surgical ward.
- Regarding the previous knowledge of the samples, none of the samples had previous knowledge.
- In the perspective of the previous medication error and its type, 27(90%) has not committed any previous error, only 3 (10%) had a history of previous medication error, out of which 2 (66.7%) was due to wrong time and 1 (33.3%) was due to wrong dose.

SECTION B: Description on the assessment of knowledge of staff nurses regarding safe administration of common pediatric drugs.

The pretest knowledge of staff nurses shows that the majority of the samples, 18 (60%) had moderate knowledge, 12 (40%) of staff nurses were having poor knowledge and none of the samples had adequate knowledge. The post-test analysis reveals that all the samples had adequate

knowledge and none of the samples is having moderate and poor knowledge.

SECTION C: Description on the assessment of practice of staff nurses regarding safe administration of common pediatric drugs.

In relation to the pre-test practice of staff nurses, 19 (63.3%) were showed good level of practice regarding safe administration of common pediatric drugs, 11 (36.7%) showed satisfactory level of practice regarding safe administration of common pediatric drugs and none of the samples had poor practice regarding safe administration of common pediatric drugs.

In accordance to the post-test practice of staff nurses after rendering computer facilitated guidance programme, 26 (86.7%) of the samples had good practice, and (13.30%) of the samples had satisfactory practice

SECTION D: Description on component wise distribution of knowledge scores using dependent sample 't' test.

The mean pre-test score of general aspects of drug administration was 4.7 ± 1.2 , and post test score was 9.1 ± 0.8 . The results ($t = 17.06$, $p < 0.01$) revealed that there was a significant improvement in the knowledge on general aspects of drug administration. The mean pre-test score of preparation and calculation of medication administration was 2.6 ± 1.5 and post test score was $8.3 \pm$



1.4. The results ($t = 14.96, p < 0.01$) revealed that there was a significant improvement in preparation and calculation of medication administration. The mean pre-test score of safe administration of common pediatric drugs was 2.0 ± 1.4 and post test score was 7.6 ± 1.4 . The result ($t = 12.63, p < 0.01$) revealed that there was a significant

improvement in knowledge regarding safe administration of common pediatric drugs. The mean pre-test score of drug administration and documentation was 5.1 ± 1.4 and post test score was 9.2 ± 0.7 . The results ($t = 13.04, p < 0.01$) shows that there was a significant improvement in knowledge regarding drug administration and documentation.

Table 1 Assessment of effectiveness of computer facilitated guidance programme on knowledge by paired 't' test

| Knowledge | Mean | SD | N | Mean difference | T value | P value |
|-----------|------|-----|----|-----------------|---------|---------|
| Pre | 14.4 | 3.9 | 30 | 19.93 | 21.22** | 0.000 |
| Post | 34.3 | 2.8 | 30 | | | |

**Significant at 0.01 level

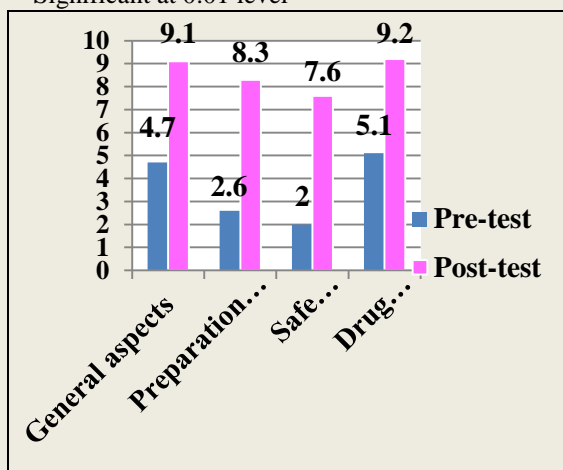


Figure 1 Components wise distribution of knowledge score of staff nurses regarding safe administration of common pediatric drugs

SECTION E: Description on assessment of effectiveness of computer facilitated guidance programme on safe administration of common pediatric drugs. (Table 1 & 2)

The mean pre-test score of knowledge on safe administration of common pediatric drugs was 14.4 and after rendering computer facilitated guidance programme, it has been raised to 34.3. To assess the

significance of computer facilitated guidance programme, the paired t test was applied. The calculated value for knowledge was found to be 21.22 and p value 0.000 which is significant at 0.01 level. The pre-test score of practice was 45.8 and after rendering computer facilitated guidance programmed, it has been raised to 57.1. The t value for practice was found to be 9.3 and the p value 0.000 which is significant at 0.01 level. This implies that the computer facilitated guidance programme was effective.

SECTION F: Co-relation between level of knowledge with practice of staff nurses regarding safe administration of common pediatric drugs. (Table 3)

It shows that there is a positive correlation between level of knowledge and practice of staff nurses regarding safe administration



of common pediatric drugs as the r value is 0.093 which is significant.

TABLE 2 Assessment of effectiveness of computer facilitated guidance programme on practice by paired 't' test

| Practice | Mean | SD | N | Mean difference | T value | Pvalue |
|----------|-------|-----|----|-----------------|---------|--------|
| Pre | 45.8 | 6.2 | 30 | 11.4 | 9.3** | 0.000 |
| Post | 57.11 | 2.4 | 30 | | | |

**Significant at 0.01 level

SECTION G: Description on association between knowledge regarding safe administration of common pediatric drugs with their selected demographic variables.

It shows that there is no significant association between pre-test knowledge

score and any of the demographic variables such as age ($\chi^2 = 0.02, p > 0.05$), educational qualification ($\chi^2 = 0.02, p > 0.05$), clinical experience ($\chi^2 = 0.22, p > 0.05$), area of work ($\chi^2 = 1.43, p > 0.05$), previous medication error ($\chi^2 = 2.22, p > 0.05$).

TABLE 3 Correlation between knowledge with practice of staff nurses regarding safe administration of common pediatric drugs.

| Variable | N | r value | P value |
|-----------|----|---------|---------|
| Knowledge | 30 | 0.093** | 0.627 |
| Practice | | | |

**Significant

SECTION H: Description on association between practices regarding the safe administration of common pediatric drugs with selected demographic variables.

It shows that there is a significant association only between practice score with the age of staff nurse ($\chi^2 = 4.04, p < 0.05$) and there is no association with any other demographic variables such as clinical experience ($\chi^2 = 2.39, p > 0.05$), educational qualification ($\chi^2 = 0.03, p > 0.05$), area of work ($\chi^2 = 0.43, p > 0.05$), previous medication error ($\chi^2 = 1.29, p > 0.05$).

potential to lead to harm to the patient. Medication errors are common among the pediatric populations due to their unique physiology. The present study concludes that the majority of nurses (60%) in the pretest had only moderate knowledge and most of the samples (63.3%) had good practice regarding the safe administration of common pediatric drugs whereas, after rendering a computer facilitated guidance programme both the knowledge (100%) and practice (86.7%) has been improved. The study also implies that with an increase in knowledge level there is an increase in practice of staff nurses regarding safe administration of common pediatric drugs with an r value of 0.093. The association shows that the age of the

CONCLUSION

A medication error is a failure in the treatment process that leads to or has the



staff nurses has influence on the practice with a significant p value of 0.044.

Figure 2 Comparison of pre-test and post-test knowledge score of staff nurses regarding safe administration of common pediatric drugs.

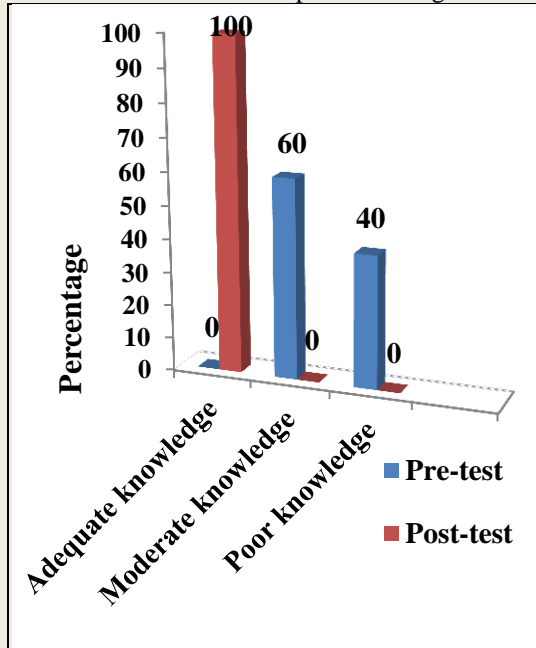
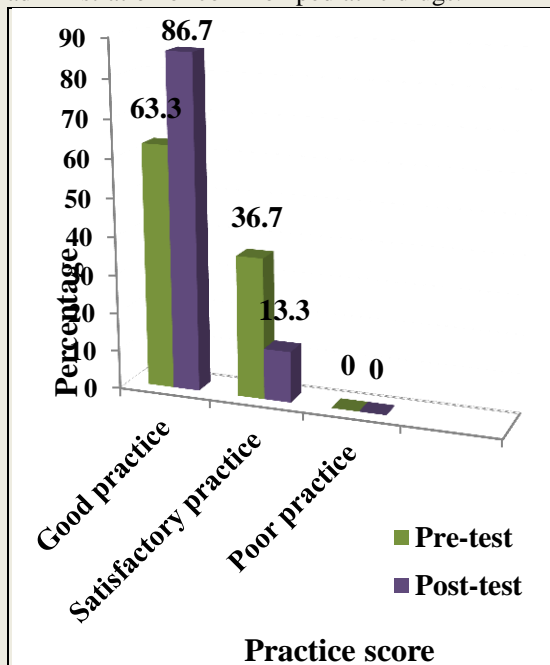


Figure 3 Comparison of pre-test and post-test practice score of staff nurses regarding safe administration of common pediatric drugs.





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