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Effectiveness of planned teaching programme on the knowledge of trained nurses regarding paediatric emergency drugs

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Abstract

Background: Administration of medication in children is the most important paediatric nurse responsibility. A slight mistake in the amount of drug administered, results a major error.

Objectives: Present study conducted to assess the existing knowledge of trained nurses regarding paediatric emergency drugs and calculation of drug doses and to find the effectiveness of planned teaching program on knowledge of trained nurses regarding pediatric emergency drugs and calculation of drug doses.

Materials and Methods: Total 30 Trained Nurses working in Paediatric ward and NICU units at Krishna Hospital & Medical research centre, Karad selected by convenient sampling technique. One group pre-test, post-test design and evaluative research approach was used. After ethical approval & written informed consent from participants, pre-test conducted using structured knowledge questionnaire to assess knowledge of trained nurses regarding paediatric emergency drugs and calculation of drug doses. Then planned teaching program was conducted. Post- test conducted after 7 days using similar tool. Data analysis done by descriptive and inferential analysis.

Results: In pre-test majority 12 (40%) trained nurses had average knowledge, 17 (56.66%) had poor knowledge and 1 (3.33%) good knowledge. Where as in post-test 29 (96.66%) had average knowledge, 1 (3.33%) had poor knowledge. Total knowledge score regarding paediatric emergency drugs and calculation of drug doses before and after planned teaching program of 30 observation with difference mean of 6.333 and standard deviation of (0.654). The computed 't' test statistics value is (13.49). Results shows that improvement in post-test knowledge score compare to pre-test.

Conclusion: The study concludes that the planned teaching programme regarding paediatric emergency drug and drug doses calculation was an effective method for improving knowledge of trained nurse's knowledge regarding pediatric emergency drugs.

Keywords: Effectiveness, planned teaching programme, Knowledge, trained nurse's pediatric emergency drugs, drug doses

Introduction

Paediatric nurses should be confident and competent while calculating drug dosages for children. The possibility for error is higher in the children so care must be taken when administering medications to paediatric age group ^[1].

Administration of medication is the most important nursing responsibility. A child's dose for medication is very small compare to adult dose. In children drug dose is calculated according to the body weight, body surface area, age of child, so paediatric nurse should be aware while calculation and administration of medication to children ^[2].

Most common type of error in nursing procedures is medication error may results damage and death of patients, especially paediatric age groups. Definitely these errors are preventable by various measures. Identifying and preventing undesirable events related to the medication error, are the prime responsibilities of nurse manger and these are the risk management activities ^[3].

There is high chances of medication errors in children and lot of factors associate to this risk like weight-based child doses, appropriate dilution of medicine with accurate dilutant. Other risk factors include decreased communication abilities of children due to illness or more

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younger age group, critically ill children susceptible to injury from medications, e.g. children with immature renal and hepatic systems [4].

Medication errors are a common cause of iatrogenic adverse effects in children. Preventable errors are significantly more common in emergency departments than in other hospital wards [5].

Many medication errors CAUSES INCLUDES lack of pharmacological knowledge, proper attitude and skills in medication administration Breakdown in communication and failure to follow policy [6].

Previous studies result shown that 20% of medication administration errors are observed while drug administration, 39% of drug administration errors observed while prescription and order, 38% observed at the time of drug administration, 12% occur at the time of drug preparation and 11% occur at the time of recording of drug administered. The most common includes administration of wrong doses, missing a dose and wrong administration speed which lead to morbidity and mortality [7].

Nurses were backbone of the health care system as they are directly involved in patient care as they are in well position to early detect the error, prompt reporting and preventing the error. So they should acquire adequate knowledge regarding paediatric emergency drugs and calculation of drug doses [8]. The key points to avoid medication error for child safety in paediatric departments includes development of standardized medication dosing guidelines or policy, facilitate for integration and use of information technology for nurses to support patient safety, and increased education standards across health care disciplines [9].

Materials and Methods

A structured questionnaire was prepared to assess the knowledge of trained nurses regarding paediatric emergency drugs and calculation of drug doses.

Part-1: Socio-demographic variables such as age, sex, education clinical experience in pediatric, any conference attended on pediatric emergency drugs and drug doses calculation.

Part-2: Structured questionnaire on paediatric emergency drugs and calculation of drug doses. Validity of tool done by 10 experts in the field. Total 30 Trained Nurses working in various units of Krishna Hospital & Medical research centre, Karad selected by convenient sampling technique. One group pre-test, post-test design and evaluative research approach was used for the study.

After ethical approval from ethical committee Krishna Institute of Medical Sciences, Deemed to be University, Karad& written informed consent from participant's data collection was done. The pre-test knowledge questionnaire was administered by the investigator and followed by planned teaching program on emergency drugs and drug doses calculation was conducted. After 7 days post test was conducted by the investigator using the same questionnaire to find out the effectiveness of planned teaching program.

Results

Among 30 trained nurses 53.33% nurses were within 20-30 years, while 20% nurses were within 31-40 years age group and 20% were within 41-50 years age group and above 51 years age group only 6.66% trained nurses. Total 96.6%

nurses were female and 3.33% were male. Majority of the respondent 11(36.66%) nurses had 6-12 months experience in paediatric ward and 11(36.66%)nurses had 27 and above experience in paediatric ward and 3(10%) had 13- 19 months experience in paediatric ward and remaining 5(16.66%) had 20-26 months experience in paediatric ward. Majority of the respondent 7(23.33%) nurses were working in Maternity ward and 5(16.66%) nurses working in M.I.C.U.(Medical Intensive Care Unit) And 3 (10%) nurses were working in S.I.C.I. (Surgical Intensive Care Unit) and 5(16.66%) nurses had working in P.I.C.U. (Paediatric Intensive Care Unit) and 5(16.66%) nurses were working in N.I.C.U. (Neonatal Intensive Care Unit) and remaining 5 (16.66%) nurses had working in Paediatric ward.

Table 1: Frequency and percentage of knowledge scores in pre-test and post-test of trained nurses regarding paediatric emergency drugs.

| Knowledge score | Pre-test | | Post-test | |
|-----------------|-----------|------------|-----------|------------|
| | frequency | percentage | frequency | Percentage |
| Good | 1 | 3.33% | 25 | 83.33% |
| Average | 16 | 53.33% | 4 | 13.33% |
| poor | 13 | 43.33% | 1 | 3.33% |

N=30

Above table reveals that in pre-test among total 30 trained nurses majority trained nurses 16 (53.33%) had average knowledge, followed by 13(43.33%) had average knowledge & only 1(3.33%) had good knowledge score regarding paediatric emergency drugs, where as in post-test 25(83.33%) had good knowledge,4 (13.33%) average knowledge and 1(3.33%) had poor knowledge regarding paediatric emergency drugs.

Table 2: Effectiveness of planned teaching programme on knowledge score of trained nurses regarding paediatric emergency drugs.

| | Mean | Standard deviation | 't' value | Inferences |
|-----------|-------|--------------------|-----------|-------------|
| Pre test | 5 | 2.393 | 11.40 | Significant |
| Post test | 10.86 | 1.479 | | |

N=30

Above table presents that pre-test mean was 5& post-test mean was 10.86. 't' value is 11.40, $p < 0.0001$. Which gives interpretation that planned teaching programme was very effective to improve knowledge of trained nurses regarding paediatric emergency drugs.

Table 3: Distribution of frequency and percentage of knowledge scores of trained nurses regarding pediatric emergency drug doses calculation.

| Knowledge score | Pre-test | | Post- test | |
|-----------------|-----------|------------|------------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| Good | 6 | 20% | 11 | 36.66% |
| Average | 19 | 63.33% | 14 | 46.66% |
| Poor | 5 | 16.66% | 5 | 16.66% |

N=30

Above table showed that in pretest majority 19(63.33) trained nurses had average knowledge, 6(20%) and had Good knowledge and 5(16.66) had poor knowledge, where as in posttest 14(46.66%) had average knowledge, 11(36.66%) had good knowledge and 5(16.66%) poor knowledge regarding pediatric emergency drug doses calculation.

Table 4: Mean, Median, Standard deviation of knowledge score of trained nurses regarding paediatric emergency drug doses calculation.

| | Mean | Standard deviation | 't' value | Inferences |
|-----------|------|--------------------|-----------|-------------|
| Pre- test | 4.33 | 1.398 | 3.58 | Significant |
| Post-test | 5.5 | 1.106 | | |

N= 30

Above table presents that pre-test mean was 4.33 & post-test mean was 5.5. 't' value is 3.58, $p < 0.0001$. Which gives interpretation that planned teaching programme was very effective to improve knowledge of trained nurses regarding paediatric emergency drug doses calculation.

Table 5: Overall knowledge score of trained nurses regarding paediatric emergency drugs & doses calculation.

| Knowledge score | Pretest | | Post test | |
|-----------------|-----------|------------|-----------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| Good | 1 | 3.33% | | |
| Average | 12 | 40% | 29 | 96.66% |
| Poor | 17 | 56.66% | 1 | 3.33% |

Above table presents that in pretest majority 12 (40%) trained nurses had average knowledge, 17 (56.66%) had poor knowledge and 1 (3.33%) good knowledge. Where as in posttest 29 (96.66%) had average knowledge, 1 (3.33%) had poor knowledge in total knowledge score of the study.

Table 6: Overall Mean, Median, Standard deviation of knowledge score of trained nurses regarding paediatric emergency drugs & doses calculation.

| | Mean | Standard deviation | 't' value | Inferences |
|-----------|------|--------------------|-----------|-------------|
| Pre test | 9.43 | 2.096 | 13.49 | Significant |
| Post test | 15.7 | 1.442 | | |

N= 30

Above table presents that overall pre-test mean was 9.43 & post-test mean was 15.7. 't' value is 13.49, $p < 0.0001$. Which gives interpretation that planned teaching programme was very effective to improve knowledge of trained nurses regarding paediatric emergency drug doses calculations.

Chi-square test was done to analyze the association between pre-test knowledge scores and selected demographic variables. There was significant association between age of participants with pre-test score of participants (chi-square 16.73, $p < 0.01$). There was no significant association between other demographic variables with pre-test score of participants.

Discussion

In present study in pretest majority 12 (40%) trained nurses had average knowledge, 17 (56.66%) had poor knowledge and 1 (3.33%) good knowledge. It showed insufficient knowledge score of the staff nurses.

Above results supported by study conducted by K. Padma, to assess the level of knowledge on paediatric drug calculation. Descriptive cross sectional study done on 30 samples. Data was collected using structured questionnaire. Results showed that with regard to level of knowledge of drug dosage calculation in children among staff nurses 7 (46.7%) had inadequate knowledge, 8 (53.3%) had moderately adequate knowledge. Study concluded the need for organizing education programme for the nurses [10].

Present study overall pre-test mean was 9.43 & post-test mean was 15.7. 't' value is 13.49, $p < 0.0001$. Which gives interpretation that planned teaching programme was very effective to improve knowledge of trained nurses regarding paediatric emergency drug doses calculations.

This findings of the study supported by study done by Deepa Prince to Assess the Effectiveness of Planned teaching Programme On paediatric Drug Dose Calculation among 30 BSC Nursing students. Results showed that pre-test mean was 17 & post-test mean was 27. 't' value is 2.585, $p < 0.05$. Study concluded that planned teaching programme improve the knowledge of participants.²

In present study, there was significant association between age of participants with pre-test score of participants (chi-square 16.73, $p < 0.01$). There was no significant association between other demographic variables with pre-test score of participants. This findings supported by a descriptive study conducted by Ravi to assess knowledge regarding paediatric drug calculation among the staff nurses, using 22 items structured questionnaire. Total 100 staff nurses working in Paediatric ward were chosen for the study through non-probability purposive sampling technique. Result revealed that there is no significant association found with knowledge score and selected demographic characteristics of staff nurses working in paediatric department [11].

Conclusion

Based on the findings the result shows that the total pre-test mean knowledge score of the trained nurses was 9.433 which indicate that the trained nurses had inadequate knowledge regarding paediatric emergency drugs and drug doses calculation. In the post test the mean knowledge score of the trained nurses was 15.7 which is the net benefit to the trained nurses due to the effectiveness of planned teaching programme. Thus it was inferred that the planned teaching programme was effective to improve the trained nurse's knowledge regarding paediatric emergency drugs and drug doses calculation. The study concludes that the planned teaching programme regarding paediatric emergency drug and drug doses calculation was an effective method for improving knowledge of trained nurses and it helps to nurses to understand that knowledge regarding paediatric emergency drugs is essential to avoid the complication in children.

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