Effectiveness of Self Instructional Module (SIM) on knowledge regarding management of selected poisoning in children among paediatric staff nurses

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Abstract

Background: Acute paediatric poisoning is a common medical emergency. Poisoning is one of the major causes of death among infants and toddlers in developing countries like India. Poisoning in children requires emergency intervention but, in every instance, medical evaluation is necessary to initiate appropriate action. *Objectives:* To assess the effectiveness of self-instructional module (SIM) on knowledge; *Method:* A quantitative, one group pre-test-post-test design was carried out among the purposive sample of 60 paediatric staff nurses. A structured knowledge questionnaire was used to assess the pre-test and post-test knowledge. A SIM was given on the day of the pre-test. Post-test was done on the 8th day. *Result:* In the pre-test, 71.7% (43 out of 60) subjects had inadequate knowledge scores and in the post-test 68.3% gained adequate knowledge (41 out of 60). This indicates the effectiveness of SIM in enhancing the knowledge of paediatric staff nurses. An association was found between the mean pre-test knowledge with their selected socio-demographic variables such as age (χ^2= 9.13), gender (χ^2= 5.24), religion (χ^2= 6.48), professional qualification (χ^2= 6.65), area of work (χ^2= 18.55), total years of experience (χ^2= 11.30) and experience in managing a child with poisoning (χ^2=5.63). *Conclusion:* There was a remarkable difference between mean pre-test and post-test knowledge level of staff nurses on the management of selected poisoning in children concluding that the SIM was effective.

Key words: children, emergency, knowledge, staff nurses, poisoning, self-instructional module

Introduction

Children are miniature adults; they are curious and explore the world using their senses. They learn by trying or imitating what they see. Consequently, home and its surroundings become a dangerous place. Among 'accidental' death in children under the age of six, poisoning has been notified as a fifth leading cause and it is one of the main reasons children are seen in emergency rooms (World Health Organization, 2009). In 2010, there were 1,619 deaths in Karnataka, India due to accidental poisoning in children. Early detection and management of poisoning represent a principal emergency nursing competency. A thorough nursing assessment during poisoning episodes makes an elemental difference in child improvement. It is important for the nurse to have a thorough knowledge regarding all aspects of the management of poisoning in children (Frithsen & Simpson, 2010).

A study was done to evaluate the profile of different types of poisoning as well as the immediate

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intervention offered by nurses to these cases. The sample consisted of 100 preschool age children with poisoning and 15 staff nurses. The research results show that the majority of children (76%) were 5 years or older. Corrosives (74%) are the most common type of poisoning. The majority (86.7%) of the nurses were not aware of the initial assessment of the child with poisoning. About 93.3% of the nurses were not having adequate knowledge to provide immediate care. Less than half of the nurses provided satisfactory nursing care (46.6%), while 26.7% of nurses had an unsatisfactory score in providing immediate care to a poisoned child. The findings exhibited that there is a need for an educational program for nurses in the care of a child with poisoning (Dakhakhny, Mohamed & Helaly, 2013).

A descriptive study was conducted to assess nurse's knowledge and practice on identification and treatment of acute poisoning in children at the National Centre for Clinical and Environmental Toxicology. The study results revealed that of 30 nurses that participated in the study, 100% of staff had inadequate knowledge and practice level (<75%) regarding identification and treatment of acute poisoning with a total mean knowledge and practice scores of 36.86 ± 2.046 and 28.20 ± 2.51 respectively. The researchers concluded that the nurses caring for the poisoned children had inadequate knowledge and practice regarding the identification and treatment of acute poisoning. So, it is necessary for establishing on the job functional training with evidence-based guidelines to improve nurse's knowledge and practice on identification and treatment of acute poisoning in children (Sayed, Youssef Hisham & Elfeky, 2015).

A pre-experimental study was conducted to investigate the efficacy of SIM on the knowledge of staff nurses in taking care of poisoned children. The data was collected using a structured questionnaire from 60 nursing staff. The results revealed that the mean pre-test knowledge scores were found to be 16.00 and the mean post-test knowledge scores of the subjects were 27.08 and the obtained 't' value 28.06 was found to be significant at 0.05 level. Thus, the researchers revealed that the SIM was effective in enhancing the knowledge

of staff nurses regarding the management of poisoned children (Dadpour, Soltani & Peivandi, 2013).

A nurse has a great role in the management of poisoning. Family interviews, physical examination, evaluation of house environment, nutritional assessment and an understanding of the socio-economic background are all vital for a complete nursing initial assessment. It is important for the nurse to have a thorough knowledge regarding all aspects of the management of poisoning in children. If nurses are adequately trained regarding the case management; assessment, planning, and evaluation of the children in the lead and chemical poisoning, it will prevent most life-threatening complications and also safeguard the child's life. Hence, a study titled effectiveness of SIM on knowledge regarding management of selected poisoning in children for paediatric staff nurses working in selected hospitals. The purpose of this study was to make the paediatric staff nurses aware of the management of poisoning in children. Objective

1. To assess the effectiveness of SIM on knowledge of paediatric staff nurses regarding the management of selected poisoning in children.

2. To find an association between the mean pre-test knowledge scores with their selected socio-demographic variables of paediatric staff nurses.

Materials and methods

A quantitative, one group pre-test-post-test design was carried out for data collection. The data collection was carried out among 60 paediatric staff nurses working in selected hospitals that had a paediatric specialty, Bangalore, using a non-probability purposive sampling technique.

The inclusion criteria of the study were paediatric staff nurses who show a willingness to participate in the study, were present at the time of data collection, and were working in Paediatric Intensive Care Unit (PICU), paediatric medical and surgical wards and emergency/casualty in selected hospitals.

The study excludes paediatric staff nurses with ANM certificate working in paediatric wards, with less than six months of working experience in the paediatric

wards and who have attended any seminars or in-service education program on the management of selected poisoning in children within a period of six months.

A structured knowledge questionnaire consists of two parts namely part I and part II. Part I consists of socio-demographic variables. Part II consists of 34 multiple choice items regarding various aspects of the management of lead, kerosene and corrosive agents. The knowledge level was graded as adequate knowledge >75%, moderately adequate knowledge 51-75% and inadequate knowledge ≤50%.

A SIM was planned and prepared on general information, classification, sources, pathophysiology, clinical manifestation, diagnostic evaluation, complication, management and prevention of lead, kerosene and corrosive poisoning in children.

The expert team of 12 members ensured the content validity of the tool. The split-half method was used to check the reliability of the questionnaire. Karl Pearson's correlation coefficient was found to be 'r' =0.88. Hence, the tool was found to be reliable. The pilot study was done to check the tool clarity and the feasibility of the study.

The proposed study was conducted after approval of the Research Committee and Ethical Clearance. Permission was obtained from the Medical Superintendent and Administrative Officer of the selected hospitals. Consent was obtained from each subject before starting data collection. Participants were informed about the anonymity.

On 1st day, a pre-test (O_1) was given followed by the administration of the SIM (X) and on day 8th, post-test (O_2) was done for the same subjects. The collected information was organized, tabulated, analysed and interpreted using descriptive and inferential statistics.

Results: The demographic data findings revealed that about 41.7% of staff nurses were in the age group of 22-25 years, 73.3% were females, 63.3% were Christian, 50% had completed Bachelors in Nursing, 43.3% were working in Paediatric medical ward, 41.7% had ≥ 7 years of experience, 58.3% had managed a child

with poisoning, 41.7% had not managed a child with poisoning and none of the staff nurses 100% had attended a continuing nursing education program.

As was observed in Table 1, the majority of the subjects 71.7% had inadequate knowledge and the remaining 28.3% had only moderately adequate knowledge. None of the respondents who participated in the study had adequate knowledge in the pre-test.

Table 1: *Pre-test knowledge level on the management of selected poisoning in children*

N = 60

Knowledge level	Category	Respondents	
		Number (N)	Percentage (%)
Inadequate	≤ 50 % Score	43	71.7
Moderately adequate	51-75 % Score	17	28.3
Adequate	> 75 % Score	0	0
Total		60	100.0

Key:
I -   General information
II -   Classification, sources, pathophysiology and clinical manifestation
III - Diagnostic evaluation and complications
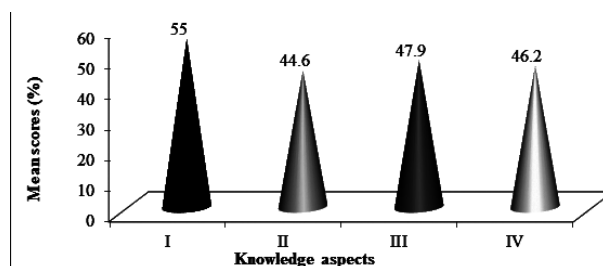IV - Management and prevention

Figure 1: Area wise pre-test mean knowledge scores of respondents on the management of selected poisoning in children

It was evident from Figure 1 that the subjects had high knowledge scores on the aspect of general information of poisoning in children with a mean percentage score of 55.0%. The least knowledge scores obtained in the pre-test were for the aspect of classification, sources, pathophysiology and clinical manifestation of selected poisoning with a mean percentage score of 44.6%.

Key:
I - General information
II - Classification, sources, pathophysiology and clinical manifestation
III - Diagnostic evaluation and complications
IV - Management and prevention

Table 2: *Post-test knowledge level on the management of selected poisoning in children*

N=60

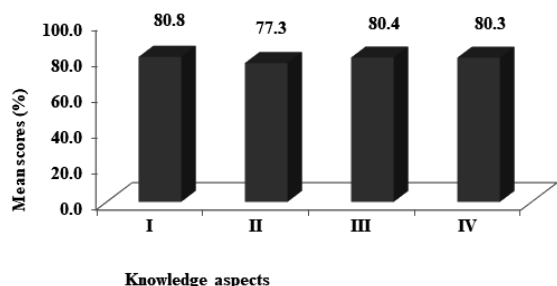| Knowledge level	Category	Respondents	
		Number (N)	Percentage (%)
Inadequate	≤ 50 % Score	0	0
Moderately adequate	51-75 % Score	19	31.7
Adequate	> 75 % Score	41	68.3
Total		60	100

Figure 2: Area wise post-test mean knowledge scores of respondents on the management of selected poisoning in children

In Table 2, it was observed that the majority of the subjects gained adequate knowledge 68.3% in the post-test followed by moderately adequate knowledge 31.7% and there were no respondents in the category with inadequate knowledge.

According to Figure 2, it was clearly evident that there was a remarkable improvement in mean percentage respondent's scores in all the area wise post-test knowledge regarding the management of selected poisoning in children.

Figure 3 depicts that the mean post-test knowledge scores of the subjects were 79.7 and the mean pre-test knowledge scores were found to be 47.1. When a paired 't' test was done, the obtained 't' value 32.6 was found to be significant at 0.05 level. There is a significant enhancement of knowledge after the post-
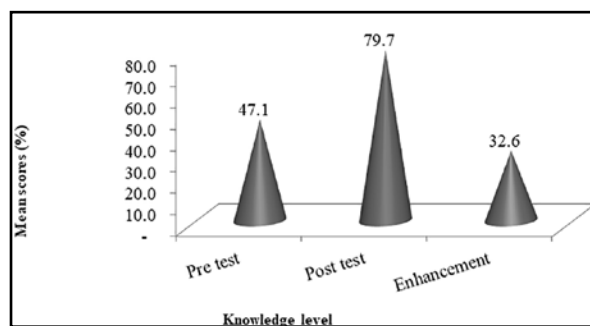
test thus proves the efficacy of SIM.

Figure 3: Overall pre-test and post-test mean knowledge scores of paediatric staff nurses on the management of selected poisoning in children
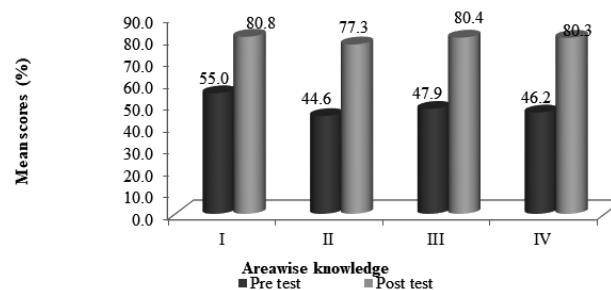

Figure 4: The area wise mean pre-test and post-test knowledge scores of respondents on the management of selected poisoning in children

To compare the pre-test and post-test mean knowledge scores on each aspect, a paired 't' test was done. Figure 4 clearly states that the mean post-test knowledge scores were found notably higher than the mean pre-test knowledge scores in all the aspects of management of poisoning. From the above information, it was evident that the self–instructional module was effectual in enhancing the knowledge of paediatric staff nurses on the management of selected poisoning in children.

Table 3 clearly states that an association was obtained by calculating χ^2 value for selected socio-demographic variables such as age (χ^2=9.13), gender (χ^2=5.24), religion (χ^2=6.48), professional qualification (χ^2=6.65), area of work (χ^2=18.55), total years of experience (χ^2=11.30) and experience in managing a child with poisoning (χ^2=5.63) was found. All the variables showed to be significant at 0.05 level of significance with their mean pre-test knowledge scores.

Table 3:

Association between mean pre-test knowledge levels of paediatric staff nurses regarding the management of selected poisoning in children with selected demographic variables

N=60

Demographic variables	Category	Knowledge level		χ^2 Value	P Value
		Inadequate	Moderate		
Age (years)	22-25	40.0	60.0	9.13*	P<0.05 (5.99)
	26-29	33.3	66.7		
	30-33	45.5	54.5		
Gender	Male	93.8	6.2	5.24*	P<0.05 (3.84)
	Female	63.6	36.4		
Religion	Hindu	89.5	10.5	6.48*	P<0.05 (5.99)
	Christian	60.5	39.5		
	Muslim	100.0	0.0		
Professional qualification	Diploma (N)	62.5	37.5	6.65*	P<0.05 (5.99)
	Bachelors (N)	36.6	63.3		
	Post basic B Sc (N)	50.0	50.0		
Area of work	PICU	20.0	80.0	18.55*	P<0.05 (7.82)
	Paediatric medical ward	61.5	38.5		
	Paediatric surgical ward	60.0	38.5		
	Emergency/ causality	70.0	20.0		
Total years of experience	1-3 years	64.7	35.3	11.30*	P<0.05 (5.99)
	4-6 years	44.4	55.6		
	≥ 7 years	56.0	44.0		
Experience in managing a child with poisoning	Yes	60.0	40.0	5.63*	P<0.05 (3.84)
	No	88.0	12.0		
Combined		71.7	28.3		

* Significant at 5% level

Discussion

In this study, it was observed that the mean pre-test knowledge scores of staff nurses concerning the management of selected poisoning in children were inadequate. Majority of the subjects 71.7% had inadequate knowledge. The remaining 28.3% had only moderately adequate knowledge. It was alarming to observe that none of the respondents had adequate knowledge.

The study shows that the mean post-test knowledge scores of the respondents with regards to the management of selected poisoning in children are greater than their mean pre-test knowledge scores. The majority of the subjects gained adequate knowledge of 68.3% (41 out of 60), followed by moderately adequate knowledge 31.7% (19 out of 60). The significant findings after the post-test were that there were no respondents in the category of inadequate knowledge.

In this study, the comparison of the overall mean pre-test and post-test knowledge scores of paediatric staff nurses with respect to the management of selected poisoning in children showed an enhancement mean

of 11.09. The observed mean percentage enhancement score was found to be 32.6% with the standard deviation percentage of 8.4. The statistical paired 't' test indicated that the obtained 't' value 30.06 [t (0.05, 59df) =1.96] was found to be significant. From this, it can be evident that the SIM was constructive in the enhancement of knowledge of paediatric staff nurses regarding the management of selected poisoning in children.

In this study, an association was found between the mean pre-test knowledge scores of the subjects concerning the management of selected poisoning in children with their selected socio-demographic variables. An association was obtained by calculating χ^2 value for selected socio-demographic variables such as age (χ^2=9.13), gender (χ^2=5.24), religion (χ^2=6.48), professional qualification (χ^2=6.65), area of work (χ^2=18.55), total years of experience (χ^2=11.30) and experience in managing a child with poisoning (χ^2=5.63). All the variables showed to be significant at 0.05 level of significance with their mean pre-test knowledge scores. Thus, a statistically significant association was found between selected socio-demographic variables and the pre-test knowledge levels of paediatric staff nurses in regards to the management of selected poisoning in children.

Conclusion: The results of the study showed that staff nurses need to revamp their knowledge concerning the management of selected poisoning in children. The study proved that SIM was an effectual teaching strategy in enhancing their knowledge. Poisoning in children is one of the important subjects in the field of paediatric nursing. Precise and meticulous assessment of the poisoned child can make a remarkable difference between life and death. Nurses need to be prepared to meet everyday emergencies in terms of first aid and lifesaving measures. The investigator felt that nurses should act as a facilitator to educate staff nurses on the management of selected poisoning in children. Conducting continuing nursing education improves the knowledge of staff nurses in regards to the management of poisoning in children which will assist the paediatric staff nurses to manage the child effectively and also helps in formulating interventions

to overcome the serious complications associated with poisoning. Nursing research can help to identify the existing knowledge gap. This will help to improve the quality and standards of care. There is a wide scope of conducting a research study in depth using other tools in order to assess the knowledge about the management of poisoning among staff nurses.

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