



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(10): 532-534
www.allresearchjournal.com
Received: 19-08-2016
Accepted: 20-09-2016

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Extravasation- Prevention and management

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Abstract

Objectives: The objectives of the study was, to assess the existing knowledge and Practice of staff nurses on prevention and management of extravasation among Infant receiving I.V. Therapy, to correlate knowledge and practice of staff nurses and to find out the association with selected demographic variable.

Methods: Non experimental approach, descriptive correlational study was conducted with 60 staff nurses by using non probability purposive sampling technique at selected hospital. A self-administered structure questionnaire was prepared to assess the knowledge and a non-observational checklist was used to assess the practice of Staff Nurses on prevention and management of extravasation among Infant receiving I.V. Therapy.

Results: The overall mean knowledge score was 13.43 and mean practice score was 30.85 and it was positively correlated. There was no association with practice and knowledge score with selected demographic variable except Age at 0.05 level.

Conclusion: Thus, the study findings revealed that majority 40 (66.7%) of the staff nurses have moderate knowledge, 58 (96,7%) of staff nurses had good practice

Keywords: Knowledge, practice, extravasation I.V. therapy

1. Introduction

Extravasation is the leakage of intravenously (IV) infused potentially damaging medications into the extravascular tissues around the site of infusion. The leakage can occur from wrongly positioned venous access devices. Extravasation of medication during IV therapy is an adverse event related to therapy that, depending on the medication, amount of exposure and location, can potentially cause serious injury and permanent harm, such as tissue necrosis [1].

The pediatric patient is at greater risk for potential complication related to IV therapy and should be monitored at least every 2 hourly and more frequently, depending on the patients age and size, or type of therapy. When an infant infiltration or extravasation is present, the infusion slows or stops, and child usually complains of tenderness or pain at the site. The infant or younger child however may not be specific in identifying their pain, therefore the only visible sign of discomfort may be generalized crying and irritability [2].

Extravasation of IV Fluids into the subcutaneous tissues is a common occurrence. Reports estimate that up to 11% of children receiving intravenous fluids occurring extravasation. In such cases the effects are mild and resolve spontaneous, but in a few serious complication may develop. These include full thickness skin loss and muscle and tendon necrosis leading to permanent disability [3].

Sick and preterm neonates are particularly vulnerable to extravasation injury but many of these injuries could be prevented if a 'hyper-vigilant' approach to monitoring of the intravenous access is adopted. A number of barriers exist that may prevent rigorous and continuous monitoring of intravenous access sites in neonatal units. Several themes were identified in the literature as supporting quality nursing practice in this area, including: staffing and skill mix, preceptor ship of newly qualified staff, continuing professional development, record keeping and communication. These themes are explored and recommendations made to help reduce the incidence of extravasation injury [4].

An Experimental Study to evaluate an evidence-based wound protocol for intravenous extravasation injuries in neonates. Among 10 neonate, 9 newborns with intravenous extravasations injuries. Birth weight: 582–4,404 gm, gestational age: 24–40 weeks.

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Five wounds were colonized with coagulase-negative Staphylococcus species, two with diphtheroids, three with Enterococcus. Rates of wound healing ranged from one to six weeks [5].

“Extravasation is the complication that can occur during intravenous therapy. The nurse is the key to reducing the risk of extravasation, through her knowledge and skill in cannulation and the intravenous administration of drugs. The nurse must also be able to recognize the early signs and symptoms of extravasation and act promptly and effectively to limit tissue damage. Finally, accurate documentation of the event is vital to facilitate patient care and in case of litigation [6].

2. Methodology

Non-experimental descriptive correlational design was used. A formal approval was obtained from the authorities of the hospital and ethical consent was obtained from all subjects. Non-probability purposive sampling technique was adopted to select the sample of 60 staff nurses. Staff nurses on night duty during the time of data collection and already undergone I.V. Therapy training are excluded. A self-administered structured questionnaire were used to assess the knowledge and demographic data and a non-observational checklist were used to assess the practice. Reliability of self-administered structured questionnaire was established by Test-Retest reliability method i.e. was 0.96 for knowledge and 0.99 for practice. For each sample, the researcher spent 6 min for demographic data 20 minutes for knowledge and practice questionnaire respectively to complete the data collection process. The data were analyzed by descriptive and inferential statistics.

3. Results

The demographic variables of the study were age, Gender, designation, qualification, working experience in ward and source of information. Frequency distribution, mean score,

range, standard deviation and percentage of knowledge and practice of staff nurses were calculated.

Among 60 staff nurses 6 (10%) had inadequate, 40(66.7%) had moderate and 14 (23.3%) had adequate knowledge regarding prevention and management of extravasation.

Among 60 staff nurses 6 (10%) had, 2(3.3%) had moderate and 58 (96.7%) had good practice regarding prevention and management of extravasation.

Table 1: Mean, SD, range and mean percentage of knowledge and practice of staff nurses. N = 60.

Variables	Maximum score	Range	Mean	SD	Mean percentage
Knowledge	20	7-18	13.43	2.62	67.1
Practice	40	4-36	30.85	5.86	77.1

There was significant correlation between knowledge and practice of Staff Nurses on prevention and management of extravasation i.e. calculated by Karl Pearson’s correlation coefficient value $r = 0.546$ at $p < 0.05$ level of significance. Hence it was concluded that there is a positive linear correlation, when the knowledge increases Practice also increases and hypothesis (H₁) was accepted.

Table 2: Correlation between knowledge and practice of staff nurses.

Variable	Knowledge		Inference
	R	p – value	
Practice	0.546	$P < 0.05$	Significant

Note: $p < 0.05$ denotes the significance of correlation at 0.05 level.

There was a significant association of knowledge with selected demographic variables of Staff Nurses like Age i.e. (χ^2 – value = 4.022 df = 1) were significantly associated with knowledge at 0.05 level i.e. $P < 0.05$. The above results evidence that knowledge of staff nurses on prevention and management of extravasation among infant receiving (I.V) therapy is influenced by age. Hence (H_{2a}) was accepted.

Table 3: Association between knowledge with selected demographic variables of Staff nurses. N=60

S. No	Demographic characteristics	No.	%	Knowledge				χ^2 –value	p-value
				<median		≥median			
				No.	%	No.	%		
1	Age (years)							4.022*, df=1	$p < 0.05$
	20 - 25	43	71.7	25	83.3	18	60.0		
	26 - 30	17	28.3	5	16.7	17	40.0		

*-Significant at 0.05 level

The chi- square analysis was carried out to determine the association of practice and selected demographic variables. The association of practice with selected demographic variables were not significant at 0.05 level, i.e. $P < 0.05$. From here we can interpret that practice of staff nurses are not influence by any of the above demographic variables. Hence the research hypothesis (H_{2b}) was rejected.

4. Discussion

In the present study the characteristics of the demographic variables described that 43(71.7%) of staff nurses belongs to 20–25 years of age group, Qualification, 37 (62.7%) are GNM, Year of working experience in paediatric unit, 30 (50%) were 1month – 2 years of experience, present working ward 21 (35.0%) were working in Pediatric

intensive care unit, Gender 60 (100%) were female, source of information 32(53.3%) were got from Conference.

In the present study the level of knowledge of Staff Nurses were, about 40 (66.7%) of the staff nurses have moderate knowledge, 14 (23.3%) have adequate knowledge and 6 (10.0%) have inadequate knowledge.

The present study shows that the sample had a range of 2-7, mean of 5.10 (72.8% of mean percentage) with a standard deviation (SD) of 1.05 was obtained for knowledge on about concept of Extravasation, the range of 1-4, mean of 2.33(58.2% of mean percentage) with a standard deviation (SD) of 0.83 was obtained for knowledge on about Management of extravasations, the range of 2-9, mean of 6.00 (66.6% of mean percentage) with a standard deviation (SD) of 1.65 was obtained for knowledge on about

Prevention of extravasations. The overall knowledge total score of mean was 13.43(67.1%) with SD of 2,62.

The present study depicts that 58(96,7%) of staff nurses had good practice and 2(3.3%) of staff nurses had moderate level of practice. The overall practice score range from 4-36, mean value of 30.85(77.1% of mean percentage) with SD of 5.86.

The correlation between knowledge and practice mean score was 0.546. It was positively correlated and statistically significant at 0.05 level and there was no significant association of practice with selected demographic variables. Mean knowledge score was association with selected demographic variables i.e Age at 0.05 level (4.022).Hence Hypothesis H₂ is accepted. And practice was not having any association with the selected demographic variables, so, H₂ was rejected for practice.

The researcher searched for supporting articles for the research findings but as such the same study was not conducted before. Hence, the researcher recommends for further study based on this topics.

5. Conclusion

The study concludes that the majority of the staff nurses have moderate knowledge with good practice. The mean knowledge and practice score was positively correlated and there was no association with selected demographic variables except age shows significant association with the level of knowledge. Demographic variables have no influence on the level of practice of the staff nurses on prevention and management of extravasation.

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