A Comparative Study To Determine The Incidence of Local Reactions at Iv Cannula Site and Nursing Care in Selected Government and Private Hospitals of Mangalore and Karkala Taluk

Rose Mary George[1], B. A Yathi Kumara Swamy Gowda[2]
[1]Assistant Professor, Akal College of Nursing, Eternal University, Baru sahib, H.P, India
[2]Principal, Alva's College of Nursing, Mangalore,Karnataka,India

Abstract- *The use of peripheral intravenous cannula and the administration of drugs and solutions can occasionally result in complications. Venous reactions can be painful; correct technique, appropriate standards of hygiene, and sound knowledge of the equipment can minimise their occurrences and severity. The aim of the study was to compare the incidence of local reactions at intravenous cannulation site and nursing care among the government and private settings. The Study adopted a quantitative research approach utilizing a descriptive survey design. A total of 120 patients with I.V cannula admitted in selected government and private hospitals were selected through purposive sampling. Data analysis was done by descriptive and inferential statistics. The study results showed that there was a statistically significant difference between the incidence of local reactions at IV cannula site in government and private hospitals. Also, statistically significant difference was seen in the nursing care between government and private hospitals. There was a statistically significant association between the incidence of local reactions and nursing care in the private hospital.*

Keywords- Local reactions; IV cannula; Nursing care..

I. INTRODUCTION

A cannula is a small flexible tube containing a needle which may be inserted into the body for the administration of drugs or fluids. The stylet is removed once the cannula is in position[1]. Peripheral cannulation provides access for the purpose of intravenous (IV) hydration or feeding and the administration of medications. Cannula are usually inserted for short-term therapy as well as for bolus injections or short infusions in the outpatient or day-unit setting[2]. The use of cannula can occasionally result in complications which can be very painful and sometimes damaging. This is where good management and observation of the cannula site by medical staff is vital[1].Bloodstream infections remain underestimated and are potentially serious complications of peripheral vascular cannula. Targeted interventions should be introduced to minimise this complication by identifying the number of attempts and duration required[3].

II. MATERIAL AND METHODS

The study adopted a quantitative research approach using a descriptive survey design. The study was conducted in selected government and private hospitals of Mangalore and Karkala Taluk. A total of 120 patients with intravenous cannula (60 from government and 60 from private hospitals) admitted in general medical and surgical wards were selected through purposive sampling. The data was collected by tools developed by the researcher which consisted of socio-demographic data and an observational checklist to determine the local reactions at IV cannula site and nursing care related to cannulation.

III. RESULTS

Table 1 depicts that the majority of patients admitted to general wards in both government (35%) and private (31.7%) hospitals were in the age group of 60-70 years. In the government hospital, the majority of patients admitted to the general wards were males (53.3%) whereas in the private hospital, majority were females (61.7%).Among the patients admitted to the general wards, majority in the government hospital (88.3%) and in private hospital (71.7%) were educated below 10th standard; 8.3% of patients in the government hospital and 13.3% in the private hospital were SSLC. Majority of the patients in both government (83.3%) and private hospitals (92%) were admitted for acute conditions. Most of the patients in both government and private hospitals (68.3% and 83.3% respectively) were admitted to medical wards. In both government (78.3%) and private (63.3%) hospitals majority of the patients with IV cannula had no comorbid conditions. In the government hospital, 5% of patients had diabetes mellitus, 11.7% had

hypertension, 1.7% had allergic conditions, and 3.3% suffered from more than one comorbid condition. In the private hospital, 5% had diabetes, 8.3% had hypertension, 11.7% had cardiac problems, 3.3% had allergies and 8.3% of patients suffered from more than one comorbid condition.

Table 1: Frequency and percentage distribution of patients in government and private hospitals based on their demographic data
N =60+60

Demographic variables	Government hospital		Private hospital		Total	
	f	%	f	%	F	%
Age (in years)						
a. 10 – 20	6	10.0	5	8.3	11	9.2
b. 21 – 30	8	13.3	14	23.3	22	18.3
c. 31 – 40	7	11.7	4	6.7	11	9.2
d. 41 – 50	9	15.0	12	20.0	21	17.5
e. 51 – 60	9	15.0	6	10.0	15	12.5
f. 61 – 70	21	35.0	19	31.7	40	33.3
Gender						
a. Male	32	53.3	23	38.3	55	45.8
b. Female	28	46.7	37	61.7	65	54.2
Education						
a. < 10th standard	53	88.3	43	71.7	96	80.0
b. SSLC	5	8.3	8	13.3	13	10.8
c. Plus two	1	1.7	5	8.3	6	5.0
d. Degree	1	1.7	4	6.7	5	4.2
Diagnosis						
a. Acute	50	83.3	42	70.0	92	76.7
b. Chronic	10	16.7	18	30.0	28	23.3
Ward						
a. Medical	50	83.3	41	68.3	91	75.8
b. Surgical	10	16.7	19	31.7	29	24.2
Comorbid conditions						
a. Diabetes	3	5.0	3	5.0	6	5.0
b. Hypertension	7	11.7	5	8.3	12	10.0
c. Cardiac problems	0	0.0	7	11.7	7	5.8
d. Allergies	1	1.7	2	3.3	3	2.5
e. Nil	47	78.3	38	63.3	85	70.8
f. More than one condition.	2	3.3	5	8.3	7	5.8

Table 2: Frequency and percentage distribution of incidence of local reactions in patients having IV cannula in government and private hospitals
N = 60 + 60

Incidence of local reaction	Govt. hospital		Private hospital		Total	
	F	%	F	%	F	%
Present	41	68.3	9	15.0	50	41.67
Absent	19	31.7	51	85.0	70	58.33

The table shows that the majority of patients, 68.3% in the government hospital had local reactions at IV cannula site. In the private hospital only 15% of the patients were having local reactions. The data is also depicted in the fig.1.

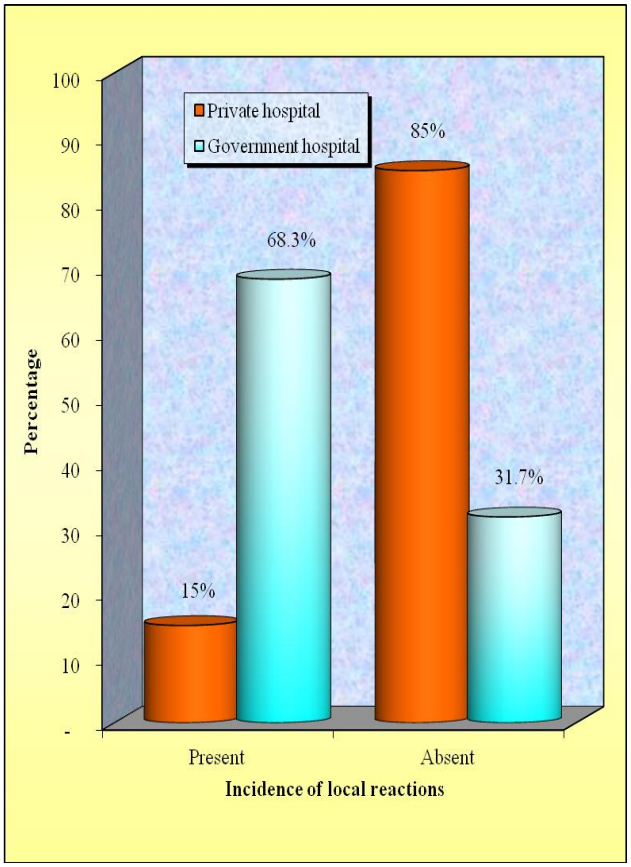

Fig.1 Cylinder diagram showing the percentage distribution of incidence of local reactions in government and private hospitals

Table 3: Comparison of the incidence of local reactions at IV cannula site between government and private hospitals
N = 60 + 60

Variable	Govt. hospital		Private hospital		Z test	RR
	F	%	F	%		
Local reaction	41	68.3	9	15.0	*5.71	4.6

Z table value =1.96, P<0.05; * Significant

The findings shown in Table 3 show that on testing equality of proportion, there was statistically significant difference (Z = 5.71, table value=1.96, P < 0.05) between the incidence of local reactions at IV cannula site in government and private hospitals .Relative risk (RR) was computed for the incidence of local reactions and was found to be 4.6. This means that the incidence of local reactions in the government hospital was 4.6 times higher than that in the private hospital.

Table 4: Frequency and percentage distribution of nursing care scores in private and government hospitals
N = 60 + 60

Nursing care related to cannulation	Private hospital		Government hospital	
	F	%	F	%
Poor	0	0.0	23	38.3
Average	4	6.7	37	61.7
Good	56	93.3	0	0.0
Very good	0	0.0	0	0.0

The data presented in table 4 shows that the maximum number of patients (93.3%) having IV cannula in the private hospitals received good nursing care, whereas in the government hospital the majority of patients (61.7%) received average nursing care.

Table 5: The mean, median, SD and mean percentage of nursing care in government and private hospitals
N = 60 + 60

Subjects	Max. possible score	Score obtained		Mean	Median	SD	Mean %
		Max.	Min.				
Government	14	3	7	5.60	6.00	1.092	40.00
Private	14	8	11	10.08	10.00	0.926	72.02

The data presented in Table 5 shows that the mean percentage of score of nursing care in the private hospital (72.02%) was higher than the mean percentage of score of nursing care in the government hospital (40.0%).

Table 6: Mean, SD and 't' value of nursing care in private and government hospitals
N = 60 + 60

Variable	Area	Mean	SD	't' value (d.f)
Nursing care	Government	5.60	1.09	*24.25 (118)
	Private	10.08	0.93	

$t_{(118)}$=1.96, P<0.05; * significant

The data presented in Table 6 shows that there was statistically significant difference ($t_{(118)}$=24.252; table value $t_{(118)}$=1.96, P<0.05) between the scores of nursing care in private and government hospitals. It shows that there was a significant difference in the nursing care between government and private hospitals. Hence the investigator interpreted that the private hospitals were providing better nursing care related to cannulation than the government hospitals.

Table 7: Association between the incidence of local reactions at IV cannula site and selected factors in private hospital
N = 60

Selected factors	Local reactions		χ^2 value (d.f)
	Present	Absent	
Size of the cannula			
a. 16 gauge,18 gauge	3	14	0.13 (1)
b. 20 gauge,22 gauge	6	37	
Duration of cannulation			
a. Up to 24 hours	5	40	1.08 (1)
b. > 24 hours	4	11	
Purpose of cannulation			
a. Administer fluids	2	11	3.05 (2)
b. Medication & fluids	1	20	
c. Medication, TPN, blood transfusion	6	20	
Solution infused			
a. Dextrose	2	10	3.66 (2)
b. Not infused	6	19	
c. Others	1	22	
Medications taken			
a. Antibiotics	7	33	0.15 (1)
b. Others	2	18	
Site of cannula			
a. Distal in non-dominant arm.	3	20	0.38 (2)
b. Proximal in non-dominant arm	1	3	
c. Others	5	28	
Nursing care			
a. <10 (median)	5	10	*5.27 (1)
b. ≥ 10	4	41	
Personal hygiene			
a. ≤ 33.3%(median)	7	39	0.01 (1)
b. >33.3%	2	12	

Table value $\chi^2_{(1)}$=3.84, $\chi^2_{(2)}$= 5.99, P<0.05; * Significant

The findings presented in Table 7 show that there was statistically significant association ($\chi^2_{(1)}$=5.27, table value $\chi^2_{(1)}$=3.84, P < 0.05) between the incidence of local reactions at IV cannula site and nursing care in the private hospital. Hence the researcher interpreted that the standards of nursing care influence the occurrence of local reactions at IV cannula site. That is, when the standards of nursing care are high, the incidence of local reactions will be less.

There was no significant association between the incidence of local reactions at IV cannula site and other selected factors in the private hospital such as size of the cannula , duration of cannulation, purpose of cannulation, type of solution, medications being taken through the cannula, site of cannulation and personal hygiene . In case of government hospital, no significant association was found between incidence of local reactions and selected factors.

IV.DISCUSSION

The findings of the incidence of local reactions at IV cannula site in the private hospital revealed that among the patients admitted to general wards, local reaction was absent in 85% of patients and present in 15%. Among the patients admitted to the general wards in government hospital, in 68.3% of patients, local reactions were present and in 31.7% of patients local reactions were absent. These findings are supported by a study conducted in Saudi Arabia that studied the peripheral intravenous catheter related complications in patients and concluded that there was high incidence of intravenous cannula related complications in the hospital which needs to be reduced or completely eradicated in order to improve overall patient's health outcome[4].

The maximum number of patients (93.3%) having IV cannula in the private hospital received good nursing care, whereas in the government hospital the majority of patients (61.7%) received only average nursing care. Also the mean percentage of score of nursing care in the private hospital (72.02%) was higher than the mean percentage of score of nursing care in the government hospital (40.0%). Another study conducted to assess nurse's knowledge and practice towards care and maintenance of peripheral intravenous cannulation in Malaysia revealed that 24.1% nurses still do not have adequate knowledge in caring and maintaining IV cannula. They strongly suggested that nurses should know about this vital procedure in order to prevent risk and complications to the patient[5].

V. CONCLUSION

The present study found that there is increased occurrence of local reactions at intravenous cannula site among the patients in government hospital as compared with those at private hospital. Also it was found that significant association exists between the incidence of local reactions and the quality of nursing care. Hence it is recommended that adequate aseptic techniques be followed during cannulation in order to decrease the cannula associated complications.

REFERENCES

[1] Clinical negligence and cannulas. Available from : https://www.kiteleys.co.uk/personal-legal/clinical-claims/condition/clinical-negligence-cannulas/
[2] Dougherty L. Peripheral cannulation. Nursing Standard .Available from:

https://canvas.uw.edu/courses/973869/files/31726436/download?verifier...wrap...

[3] Srivastava KM. Peripheral Venous Cannula Introducing Technique and MRSA Infection. Available from: https://www.scribd.com/document/452088/Peripheral-Venous-Cannula-Introducing-Technique-and-MRSA-Infection

[4] Makafi SA and Marfega MACM**.** Peripheral Intravenous Catheter (PIVC) Related Local Complications among Patients in KFCH-Jizan. Available from: https://www.omicsonline.org/open-access/peripheral-intravenous-catheter-pivc-related-local-complications-amongpatients-in-kfchjizan-2573-0347-1000138.php?aid=91503

[5] Arbaee IF and Ghazali ANM. Peripheral Intravenous Cannulation in Pantai Hospital, Batu Pahat, Johor, Malaysia. Available from: https://www.researchgate.net/publication/236982617_Nurses_Knowledge_and_Practice_Towards_Care_and_Maintenance_of_Peripheral_Intravenous_Cannulation_in_Pantai_Hospital_Batu_Pahat_Johor_Malaysia.