International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

A Randomised Control Trial to Assess the Effectiveness of Normal Saline Flush on Patients with IV Cannulation for Maintaining the Patency of IV Lines in HSK Hospital Bagalkot

Harijan Shilpa Pundalik[1], Vanitha U B[2], Dr. Deelip S Natekar[3]

[1]M. Sc. Nursing final Year, Shri B. V. V. S Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka, India
Email: *shilpaharija95[at]gmail.com*

[2]Assistant Professor & Department of Medical Surgical Nursing, Shri B. V. V. S Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka, India (Corresponding Author)
Email: *vanitha2695[at]gmail.com*

[3]Principal, (Ph. D. in Nursing), Shri B. V. V. S Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka, India
Email: *deelipsn[at]gmail.com*

Abstract: ***Background of the Study: The concept of intermittent use of an intravenous (I. V) catheter began in the early 1970s, when a stopcock was added to plastic tubing on a winged needle. Almost all patients admitted to hospital require a peripheral intravenous catheter to provide access for administration of drugs and fluids and Parenteral nutrition. Catheter flushing is the primary nursing intervention and to prevent lumen occlusion from thrombotic and precipitate cause. Some institutes use of dilution of heparin for this purpose, where as many others use of small amount of saline lock. A study was conducted titled as "A Randomised Control trial to assess the effectiveness of normal saline flush on patients with IV cannulation for maintaining the patency of IV lines in HSK hospital Bagalkot." Objectives: 1) To assess the level of patency of IV lines. 2) To determine the effectiveness of normal saline flush on patients with IV cannulation for maintaining the patency of IV lines. 3) To find out the association between the patency of IV lines with socio demographic variables among IV cannulation patient. Methodology: Study design was true experimental post test only design.100 hospitalized patients who having IV line were selected by Convenience sampling method and divided into two groups. Experimental group (n=50) received 2 ml of normal saline flush twice a day after IV injection and control group (n=50) were on a routine treatment. The data was analysed by using descriptive and inferential statistics. Results: The mean post test score of patency of intravenous line in the experimental group (0.86) is lesser than mean post test score of patency of intravenous line in the control group (1.24), hence the study revealed that normal saline flush is found effective to maintain the patency of intravenous line among IV cannulation patients in experimental group. The calculated t value (1.90) is greater than the table value (1.66) at 0.05 level of significance, showed that there is a significant difference between the two groups, hence it is significant. Interpretation and Conclusion: There was significant difference found between the two groups, therefore study showed that that normal saline flush was found effective to maintain the patency of intravenous line among IV cannulation patients.***

Keywords: Effectiveness, IV cannulation patients, normal saline flush, patency, Socio - demographic variables

1. Introduction

The concept of intermittent use of an intravenous catheter began in the early 1970s when a stopcock was added to plastic tubing on a winged needle. Peripheral intravenous line is the most common intravenous access method in both hospital and pre - hospital services. A peripheral line consists of a short catheter inserted through the skin into a peripheral vein, any vein that is not in the chest or abdomen.

Intravenous administration is the best method because of its advantages. Nurse can use the intravenous route in emergencies when a fast acting medication must be delivered quickly. The intravenous venous route is also the best when it is necessary to establish a constant therapeutic blood levels.

Flushing procedures are necessary before and after the administration of intermittent medications through a capped catheter lumen, lack of patency is a common and confusing problem. When the catheter is flushed or failures to obtain the required brisk blood return before catheter use, indicates a non functioning catheter.

Maintenance of patency of these indwelling catheters is important for minimising patients discomfort and expense associated with replacement. Vascular thromboses, visible scarring infection related to catheter are complications associated with use of these indwelling vascular catheters.1

The hospital protocols for flushing IV lines vary from no flushing, use of 0.9% NS solution.10 Around the globe, protocols for flushing the catheter to maintain the patency of central venous catheter [cvc] vary from institution to institution or from practitioner to practitioner.2

2. Materials and Methods

Study design: "True experimental post test only control group design". The participants were randomly allocated to two groups; experimental group (receiving intervention) and control group (not receiving intervention). The sample size

was 100 IV cannulation patients with 50 in experimental group and 50 in control group.

Setting of the study: The study was conducted in Hangal Shri Kumareshwar Hospital And Research center, Bagalkot. It is located in Bagalkot District in Karnataka. It is situated 1 kilometers from the researcher's institution, B. V. V. S Sajjalashree Institute of Nursing Sciences, Bagalkot.

Participants: Sample consists of 100 IV cannulation patients, 50 in experimental group and 50 in control group attending Hangal shri Kumareshwar Hospital and research center, Bagalkot.

Sampling Technique: The samples were selected by convenient sampling technique. The sample size was 100 IV cannulation patients, 50 in experimental group and 50 in control group.

Criteria for Sample Selection

Inclusion Criteria
1) Willing to participate in the study.
2) Available at the time of data collection.
3) Patients who are having the IV line for more than 3 days
4) Patient having the patent IV line
5) Able to speak Kannada or English.

Exclusion Criteria:
1) Patients who are not willing to participate in the study
2) Patients from Paediatrics, OBG, Emergency wards are excluded.
3) Patients who are suffering from chronic diseases like stroke and paralysis, such patients are excluded from the study.

Sample Size Estimation:
The sample size was calculated by "Power Analysis" by using the results of pilot study. The confidence level was 95%, the Z value at 5% level of significance is 1.96, the power of the test was 80% and the sample size estimated by statistician was 176. Hence the final sample size was 100 IV cannulation patients, 50 in experimental group and 50 in control group.

Description of Data Collection Instrument

Part I
Interview guide which consist of questions to collect the demographic data.

Part II
Phlebilitis grading scale was used to assess the patency of intravenous line in experimental group and control group. The score range from 0 to 5 and patency level of intravenous line was assessed by the researcher.

Grade	Description
0	No signs of phlebilitis
I	Slight pain or slight redness near IV site
II	Pain and redness at the IV site
III	Pain along the path of cannula Redness around site Swelling
IV	Pain along the path of cannula Redness around site Swelling Palpable venous cord
V	Pain along the path of cannula Redness around site Swelling Palpable venous cord Pyrexia

Data Collection
Data collection was done from 07 - 04 - 2021 to 27 - 04 - 2021 at HSK Hospital, Bagalkot.

Variables under the Study
Dependent variables: Patency of IV line.
Independent variable: Normal saline flush.

Statistical Analysis
The data was analyzed using SPSS 18 statistical package. The data obtained from the sample, was organized and summarized with the help of descriptive statistics like frequency and percentage, arithmetic mean, and standard deviation. Karl Pearson's correlation coefficient was used to justify the reliability of tool. Independent t test was used to find the difference between pre - test and post - test. Chi - square test was used to find the association between selected demographic variables with their post - test scores.

3. Result

The study was begun with selection of 100 IV cannulation patients, 50 in experimental group and 50 in control group attending Hangal shri Kumareshwar Hospital and research center, Bagalkot. All the IV cannulation patients were screened for eligibility criteria.

Organisation of Findings
The study findings were analyzed and interpreted under the following sections.

Section I
Frequency and percentage distribution of sample according to demographic variables in experimental group and control group.

Section II
a) Post test level of patency of intravenous line among patients in Experimental group.
b) Post test level of patency of intravenous line among patients in Control group.

Section III
Comparison of patency of IV line among patients in experimental group and control group.

Section IV
a) Association of post test level of patency of intravenous line among patients in experimental group with their selected demographic variables.
b) Association of post test level of patency of intravenous line among patients in control group with their selected demographic variables.

Section I

Table 5.1: Frequency and Percentage Distribution of Sample according to Demographic Variables in Experimental Group and Control Group

S. No	Demographic Variables	Experimental Group		Control Group	
		N=50	P=100%	N=50	P=100%
		F	P	F	P
1)	**Age**				
	20 - 29 years	14	28%	14	28%
	30 - 39 years	16	32%	17	34%
	40 - 49 years	14	28%	11	22%
	Above 50 years	6	12%	8	16%
2)	**Gender**				
	Male	22	44%	20	40%
	Female	28	56%	30	60%
3)	**Educational level**				
	1) No formal education	19	38%	16	32%
	2) S. S. L. C	19	38%	25	50%
	3) Graduation	10	20%	9	18%
	4) Post - graduation	2	4%	0	0%
4)	**Any history of previous IV cannulation**				
	Yes	6	12%	12	24%
	No	44	88%	38	76%
5)	**Gauze of cannula**				
	18g	23	46%	25	50%
	20g	27	54%	25	50%
	22g	0	0%	0	0%
6)	**Frequency of drug administration**				
	8 hourly	17	34%	11	22%
	12 hourly	20	40%	18	36%
	24 hourly	13	26%	21	42%

Section II

Table 5.2 (A): Post Test Level of Patency of Intravenous Line among Patients with Normal Saline Flush in Experimental Group

S. No.	Grades	Frequency	Percentage
1)	G - 0	21	42%
2)	G - I	17	34%
3)	G - II	10	20%
4)	G - III	02	04%
5)	G - IV	00	00%
6)	G - V	00	00%

Table 5.3 (B): Post Test Level of patency of intravenous line among patients in control group

S. No	Grades	Frequency	Percentage
1)	G - 0	14	28%
2)	G - I	20	40%
3)	G - II	07	14%
4)	G - III	08	16%
5)	G - IV	01	02%
6)	G - V	00	00%

Section III

Table 5.4: Comparison of post test mean score of patency and standard deviation in experimental group and control group

Groups	Total Score	Mean	S. D	M. D	T Cal	T Table
Experimental Group	05	0.86	0.88	0.38	1.90	1.66
Control Group	05	1.24	1.09			

Table 5.4 Represents to compare the mean and standard deviation of the post test level of patency of intravenous line among patients in experimental group and control group. In experimental group the mean score was 0.86 with standard deviation of 0.88 and in control group the mean score was 1.24 with standard deviation of 1.09. The mean difference was 0.38 and the calculated t value was 1.90 indicating that there was a significant difference in post test level of patency of intravenous line among patients in experimental group and control group at $P<0.05$ level.

Hence H1 is accepted, that is there is a significant difference between the scores of normal saline flush and maintenance of patency of IV lines with IV cannulation patients.

Section IV

Table 5.5: Association of Post Test Level of Patency of Intravenous Line among Patients in Experimental Group with their Selected Demographic Variables

S. No	Demogaphic Variables	df	Chi Square	Table Value	P Value	Association
1)	Age	1	0.65	3.84	0.05	Not significant
2)	Gender	1	0.03	3.84	0.05	Not significant
3)	Educational level	1	2.77	3.84	0.05	Not significant
4)	Any history of previous IV cannulation	1	1	3.84	0.05	Not significant
5)	Gauze of cannula	1	0.10	3.84	0.05	Not significant
6)	Frequency of drug administration	1	0.9	3.84	0.05	Not significant

4. Conclusion

Finding reveal that the mean post test score of patency of intravenous line in the experimental group (0.86) is lesser than mean post test score of patency of intravenous line in the control group (1.24), hence the study revealed that normal saline flush is found effective to maintain the patency of intravenous line among IV cannulation patients in experimental group. The independent t test was used was used to find out the significant difference between the two groups that is experimental and control group, the calculated t value (1.90) is greater than the table value (1.66) at 0.05 level of significance, showed that there is a significant difference between the two groups, hence it is significant.

5. Delimitation

The study is delimited to:

1) The 100 IV Cannulation patients who all are admitted in the HSK hospital, Bagalkot.
2) The study is delimited to IV cannulation patient whose IV line is patent.
3) The study is delimited to the assessment of effectiveness of normal saline flush in maintaining the patency of IV lines in IV cannulation patients.

Source of Funding: Nil

Conflict of interest: None

References

[1] Black M J et al (2005) Medical surgical nursing, 8th edition, vol - 1, Philapeiphia W B Saunders.
[2] International Journal of health sciences and research, vol - 4, issue - 3, March - 2014. (www.ijhsr. org).