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Effectiveness Of Nursing Care Package On Mild Phlebitis Among The Children Admitted In Paediatric Unit Of Selected Hospitals Of The City.

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ABSTRACT:-

Introduction : Phlebitis is a frequent problem in paediatric patients having endogenous treatment, susceptible to prevention using the implementation of control measures and a program of continuous vigilance. Superficial Thrombophlebitis is usually an easily diagnosed condition, it may be an iatrogenic, resulting from intravenous catheter or infusion of solutions. A recent systemic review on PIVC failure and complications in children estimated the overall pooled incidence of catheter failure to be 38% and the total incidence of phlebitis to be 5%. In Maharashtra, according to a study conducted in the Hospital, where the incidence rate of phlebitis related to peripheral intravenous catheters was found to be 6.3%. From the above information, the researcher has realized that there is a high prevalence of phlebitis among children with intravenous therapy. Hence for the purpose of relieving phlebitis, there is a management with the nursing care package including aloe vera gel, limb elevation & cold compress. This package is very feasible and less expensive.

RESULT: It showed that there was a significant difference in pre and post-test score of phlebitis among patients in Experimental group and proves that Nursing care package application was effective in minimizing phlebitis. Hence H1 accepted. This improvement was strongly supported by statistical analysis, including a marked reduction of phlebitis score in post-test alongside the rejection of the null hypothesis through paired t-test analysis.

CONCLUSION

Hence the study concluded that the Nursing care package is effective in reducing phlebitis among children admitted in paediatric unit of selected hospitals of the city, which is denoted by significant reduction in score of phlebitis.

Key words: Nursing care package, Paediatric unit, mild phlebitis, hospitals.

INTRODUCTION

An impairment of the normal state of a human being that interrupts or modifies its vital functions is known as disease. Medical treatment can be defined as therapies such as the prescription of medications or others that are specifically ordered and supervised by a physician.

The word "Paediatrics" comes from the Greek words "paidos," which means "a kid" or "one related to a child," "iatricke," which means "surgery," and "ics," which is the suffix for a scientific field. Pediatrics is a field of medicine that focuses on the care and development of children as well as the diagnosis and treatment of childhood disorders.

In this context, the intravenous therapy performed in children is considered a complex procedure and may have determinant aspects in the development of complications such as the type of catheter used, the technique of insertion and catheter stabilization, the insertion site, the characteristics of the infusion solution, as pH less than 5 and greater than nine and osmolarity above 350 mol/L, the time of permanence of the device, among others, in addition to characteristics inherent to the patient such as skin colour, sex, prematurity and certain clinical conditions such as infections, trauma, malnutrition and burns.

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BACKGROUND OF STUDY

The complications arising from the Intra venous therapy are classified into local and systemic. Some of the systemic complications are sepsis, circulatory overload, pulmonary edema, air embolism, catheter embolism, and shock by rapid infusion. Phlebitis is the inflammation of the vessel, and may be classified, according to the predisposing factor, as chemistry phlebitis, when related to the administration of medications or risk solutions; mechanical phlebitis, which may result from the trauma

caused by the catheter in the vessel wall and infectious phlebitis, related to contamination of the solution, the catheter insertion site and device.Superficial Thrombophlebitis is usually an easily diagnosed condition, it may be an iatrogenic, resulting from intravenous catheter or infusion of solutions. The treatment of Thrombophlebitis consists of self-care steps that include applying heat to the painful area and using an over-the-counter non-steroidal anti-inflammatory drug (NSAID), medications like anticoagulant support stockings, and bypass surgeries.

Aloe vera is an important and traditional medicinal plant being used for various medicinal purposes like to reduce dental plaque, reducing constipation, lowering blood sugar levels, acting with antioxidant and antibacterial properties, helping to treat cancer sores, and accelerating the healing of burns. It may also improve skin and prevent wrinkles.

In phlebitis, signs and symptoms such as edema, local heat, hyperemia, fibrous cord

in the path of the vessel, pain, and exudate output can be observed at the puncture

site. For the Infusion Nursing Society (INS) the proportion of 5% of phlebitis is

considered as the maximum accepted for the occurrence of this kind of complication.

The highest prevalence was in East Mediterranean (11.8%), followed by the South

East Asia (10%), Western Pacific 9% and Europe 7.7% (Mayon-White, 1988).

A recent systemic review on PIVC failure and complications in children estimated the

overall pooled incidence of catheter failure to be 38% and the total incidence of

phlebitis to be 5%.[4]

NEED FOR STUDY

Phlebitis is one of the most common complications of the intravenous cannulation. Peripheral infusion is a stressful procedure for children. It is estimated that over 80% of all children entering the hospital receive IV therapy it is mild, and may or may not cause symptoms. Pain, tenderness, redness (Erythema), and bulging of the vein. Phlebitis is the inflammation of a vein. Veins are blood vessels in your body that carry blood from your organs and limbs back to your heart. Phlebitis may be caused by damage to the vein wall or by a blood clot that blocks a vein.

St. John's Hospital in Bangalore 2010 reported an average of 240- 250 children irrespective of age were admitted to the paediatric medical ward per month and 92% of them required a venipuncture for reasons such as blood sampling, starting an IV line either for infusion or injection. In the surgical ward, 45- 50 children were admitted and 99% of them required venipuncture. In Maharashtra, according to a study conducted in Dr. D. Y. Patil Hospital of Pune city, where the incidence rate of phlebitis related to peripheral intravenous catheters was found to be 6.3%.[6]

From the above information, the researcher has realized that there is a high prevalence of phlebitis among children with intravenous therapy. There is a management for phlebitis with the nursing care package including fresh aloe vera gel, limb elevation & cold compress. This package is very feasible and less expensive. All these factors made the researcher design a study to assess the effectiveness of the application of fresh aloe vera gel, limb elevation, and cold compression mild phlebitis.

METHODOLOGY

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The current research study was designed to assess the effectiveness of Nursing care package on mild phlebitis among the children admitted in peadiatric unit of selected hospitals of the city.

A quasi-experimental non-equivalent control group design with a quantitative research approach was used. The assessable population is children admitted in paediatric unit of selected hospitals with phlebitis. 60 samples were taken by non-probability convenient sampling techniques. They were divided into two groups: 30 into the control group and 30 into the experimental group. Descriptive inferential statistics were used to analyse the data.

In the data analysis, both descriptive and inferential statistics have been used. Paired t-test was used for the comparison of the pre-test and post test phlebitis in experimental group and Two sample t-test was used for the comparison of change in phlebitis score in experimental and control group.

a Fisher's exact test was used for the association between phlebitis among children and the selected demographic variables in experimental group.

RESULT

Section I

Description of samples (children) based on their personal characteristics

Table 4.1: Description of samples (children) based on their age in terms of

frequency and percentage

N = 30, 30

Age	Experimental		Control	
	Freq	%	Freq	%
4 years 1 Day - 6 years	9	30.0%	8	26.7%
6 years 1 Day - 8 years	6	20.0%	4	13.3%
8 years 1 Day – 10 years	3	10.0%	7	23.3%
10 years 1 Day -12 years	12	40.0%	11	36.7%
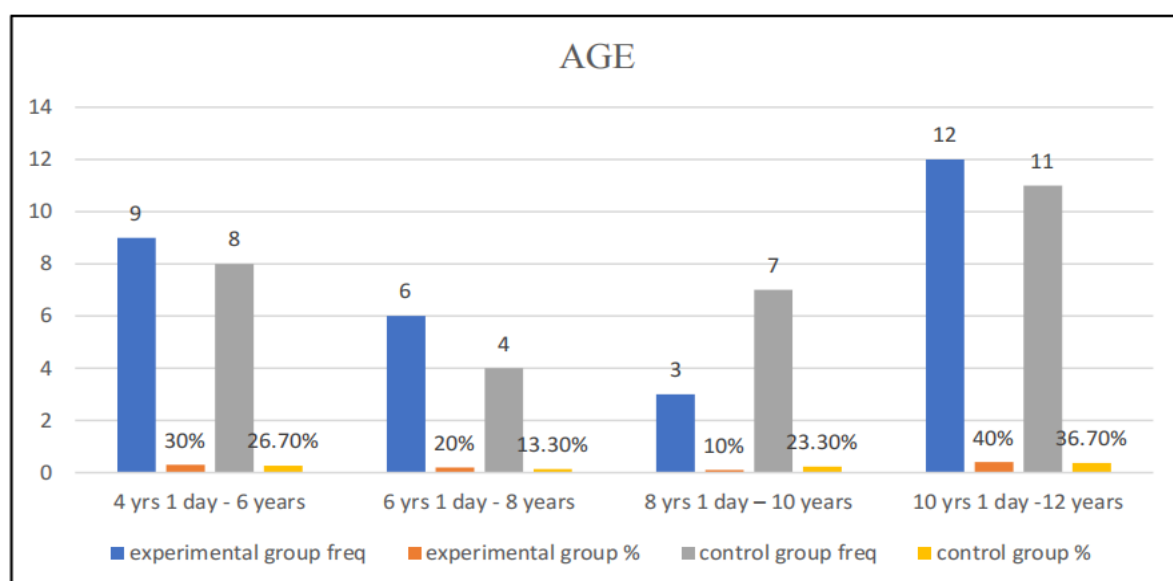
Fig. 4.1. Description of samples (children) based on their age

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The above table and graph shows that -

➢ In the experimental group, 30% of the children had age 4 years 1 Day -6 years,

20% of them had age 6 years 1 Day -8 years, 10% of them had age 8 years 1 Day

-10 years and 40% of them had age 10 years 1 Day -12 years.

➢ In the control group, 26.7% of the children had age 4 years 1 Day -6 years, 13.3%

of them had age 6 years 1 Day - 8 years, 23.3% of them had age 8 years 1 Day -

10 years and 36.7% of them had age 10 years 1 Day-12 years

able 4.2: Description of samples (children) based on their gender in terms of

frequency and percentage

N = 30, 30

Gender	Experimental		control	
	Freq	**%**	**Freq**	**%**
Male	26	86.7%	15	50.0%
Female	4	13.3%	15	50.0%
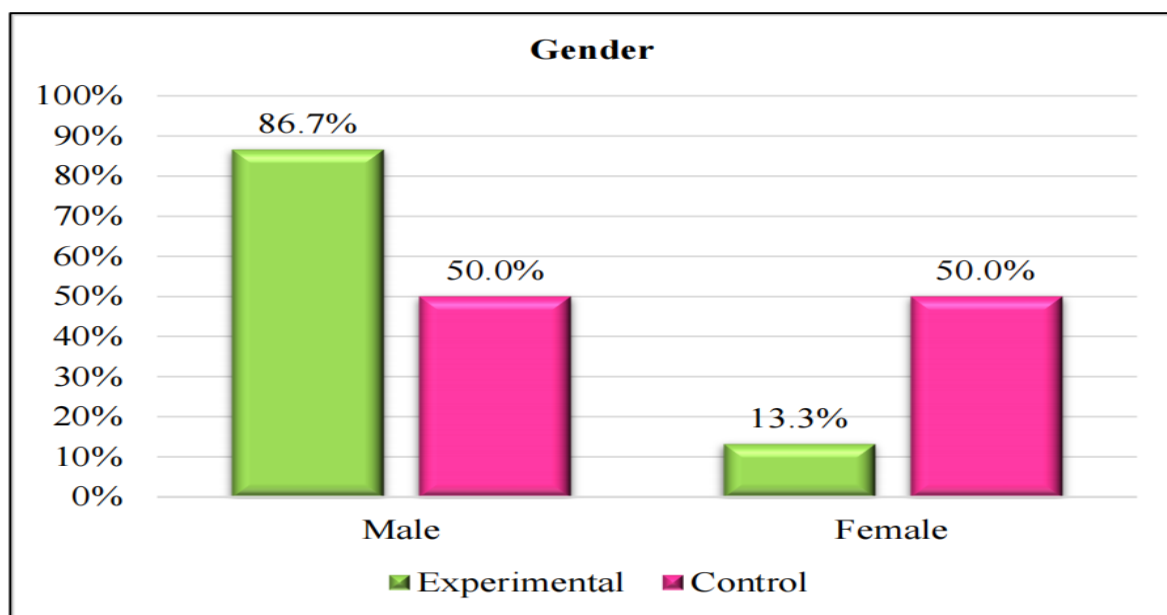
Fig. 4.2 description of children according to their gender

The above table and graph shows that -

➢ In experimental group, 86.7% of them were males and 13.3% of them were

females.

➢ In control group, 50% of them were males and 50% of them were females.

Table 4.3: Description of samples (children) based on day from IV cannula

Insertion in terms of frequency and percentage.

N = 30, 30

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| Day from IV cannula insertion	Experimental		control	
	Freq	%	Freq	%
Less than 2 Days	5	16.7%	5	16.7%
2-4 Days	25	83.3%	25	83.3%
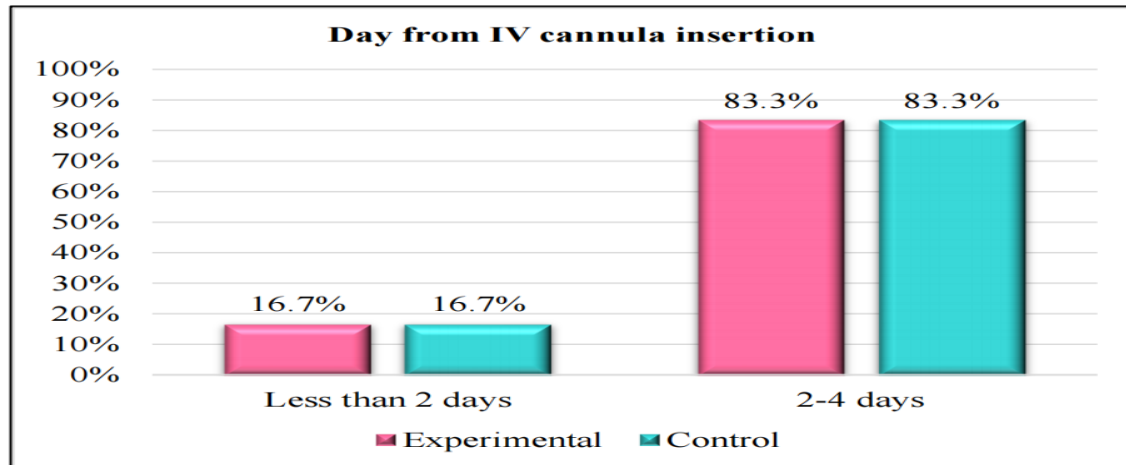
Fig. 4.3 description of children according to the day from IV cannulation

The above table and graph shows that -

➢ In the experimental group, 16.7% of them had IV cannula insertion for less than 2

Days and 83.3% of them had IV cannula inserted for 2-4 Days.

➢ In the control group, 16.7% of them had IV cannula insertion for less than 2 Days

and 83.3% of them had IV cannula inserted for 2-4 Days

Table 4.4: Description of samples (children) based on the site of IV cannulation

in terms of frequency and percentage.

N = 30, 30

The site of IV cannulation	Experimental		control	
	Freq	%	Freq	%
Radial vein	15	50.0%	15	50.0%
Median vein	15	50.0%	15	50.0%
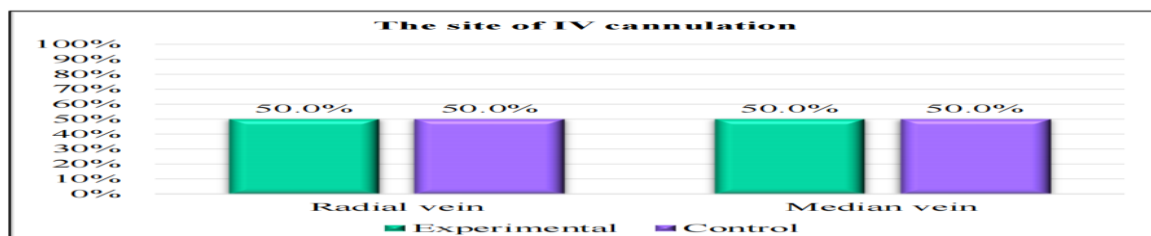
Fig. 4.4 description of children according to the site of IV cannulation

The above table and graph shows that –

➢ In the experimental and control group, 50% of them had IV cannulation in radial vein and 50% of them had IV cannulation in median vein.

able 4.5: Description of samples (children) according to intravenous catheter

size in terms of frequency and percentage

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N=30, 30

Intravenous catheter size	Experimental		control	
	Freq	%	Freq	%
22 Gauge	15	50.0%	18	60.0%
24 Gauge	15	50.0%	12	40.0%
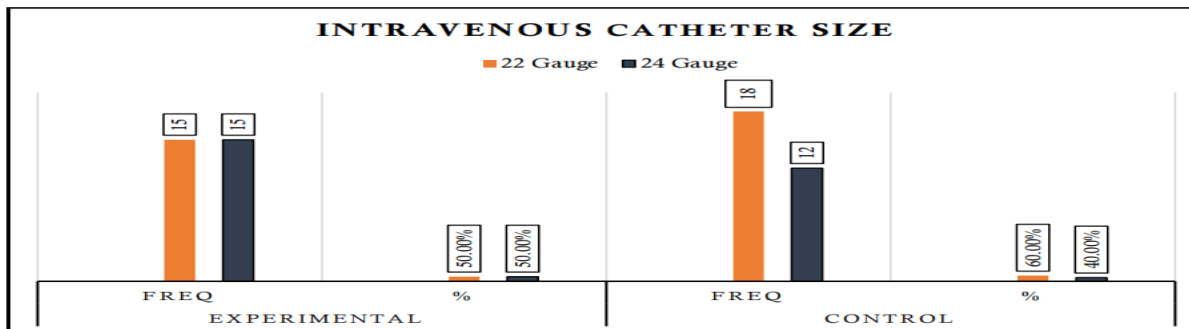
Fig. 4.5 description of children according to Intravenous catheter size
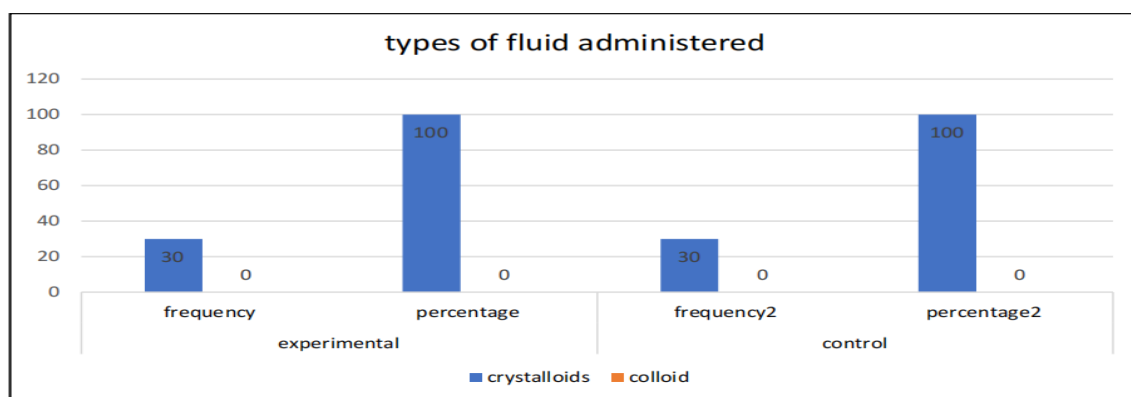
The above table and graph shows that –

➢ In the experimental group, 50% of them had intravenous catheters of size 22 gauge and 50% of them had intravenous catheter size 24 gauge.

➢ In the control group, 60% of them had intravenous catheter of size 22 gauge and 40% of them had intravenous catheter size 24 gauge.

Table 4.6: Description of samples (children) according to types of fluids administered in terms of frequency and percentage

N=30, 30

Types of Fluids	Experimental		control	
	Freq	%	Freq	%
Crystalloids	30	100.0%	30	100.0%
Colloids	00	00	00	00

Fig. 4.6 description of children according to types of fluid administered

The above table and graph shows that –

➢ In experimental and control group, all of them had crystalloids administered.

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Table 4.7: Description of samples (children) according to use of restraints at the site in terms of frequency and percentage

N=30, 30

Use of restraints at the site	Experimental		control	
	Freq	%	Freq	%
Yes	20	66.7%	20	66.7%
No	10	33.3%	10	33.3%
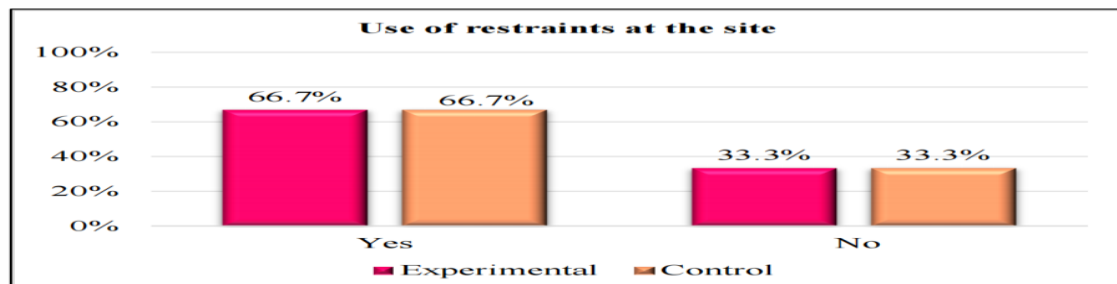
Fig. 4.7 description of children according to use of restraints at the site
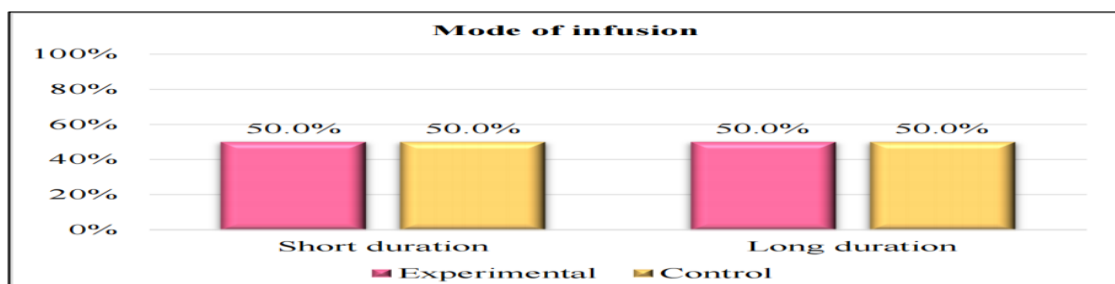
The above table and graph shows that –

➢ In the experimental and control group, 66.7% of them had used restraint at the site while 33.3% didn't use the restraints.

Table 4.8: Description of samples (children) according to mode of infusion in terms of frequency and percentage

N=30, 30

Mode of infusion	Experimental		control	
	Freq	%	Freq	%
Short duration	15	50.0%	15	50.0%
Long duration	15	50.0%	15	50.0%

Fig. 4.8 description of children according to the mode of infusion

The above table and graph shows that –

➢ In experimental and control group, 50% of them had infusion for short duration and 50% of them had infusion for long duration.
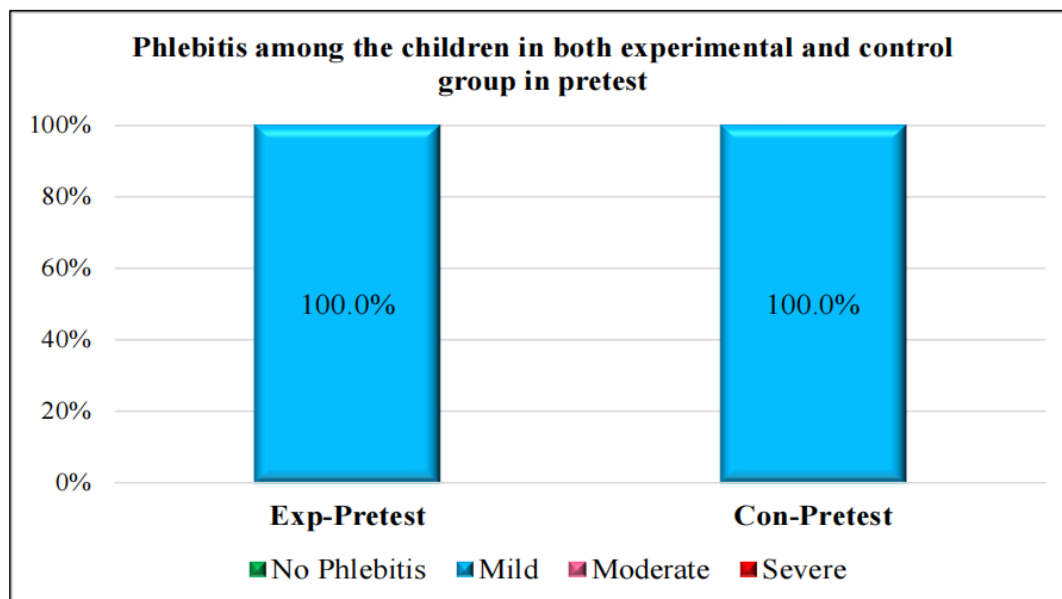
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Section II

Analysis of data related to phlebitis among the children in both experimental and control group
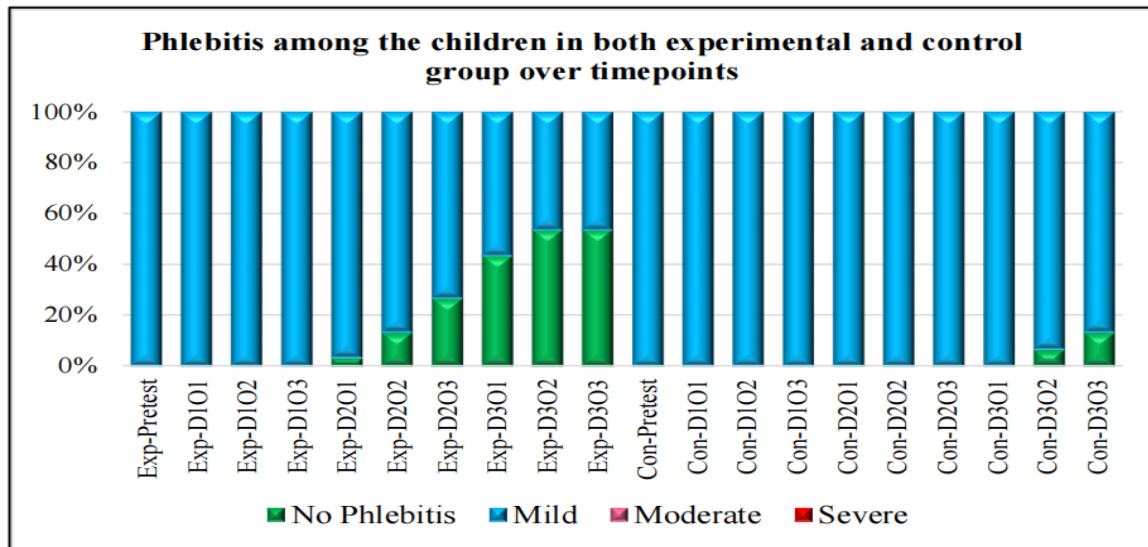
Table 4.9: Phlebitis among the children in both experimental and control group

N=30, 30

Timepoint	Phlebitis	Experimental		Control	
		Freq	%	Freq	%
Pretest	No Phlebitis	0	0.0%	0	0.0%
	Mild	30	100.0%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%

Fig 4.9: Phlebitis among the children in both experimental and control group

The above table and graph shows that -

➢ In experimental and control group, all the children had mild phlebitis.

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Section III

Analysis of data related to post test score of phlebitis among the children in both experimental and control group

Table 4.10: Post test score of phlebitis among the children in both experimental and control group

N=30,30

Timepoint	Phlebitis	Experimental		Control	
		Freq	**%**	**Freq**	**%**
Pretest	No Phlebitis	0	0.0%	0	0.0%
	Mild	30	100.0%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 1 O1	No Phlebitis	0	0.0%	0	0.0%
	Mild	30	100.0%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 1 O2	No Phlebitis	0	0.0%	0	0.0%
	Mild	30	100.0%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 1 O3	No Phlebitis	0	0.0%	0	0.0%
	Mild	30	100.0%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 2 O1	No Phlebitis	1	3.3%	0	0.0%
	Mild	29	96.7%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 2 O2	No Phlebitis	4	13.3%	0	0.0%
	Mild	26	86.7%	30	100.0%

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	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 2 O3	No Phlebitis	8	26.7%	0	0.0%
	Mild	22	73.3%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 3 O1	No Phlebitis	13	43.3%	0	0.0%
	Mild	17	56.7%	30	100.0%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day 3 O2	No Phlebitis	16	53.3%	2	6.7%
	Mild	14	46.7%	28	93.3%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%
Day3 O3	No Phlebitis	16	53.3%	4	13.3%
	Mild	14	46.7%	26	86.7%
	Moderate	0	0.0%	0	0.0%
	Severe	0	0.0%	0	0.0%

➤ In experimental group, all the children had mild phlebitis on timepoints pretest, Day1 O1, Day1 O2 and Day1 O3. On Day2 O1, 3.3% of them had no phlebitis and 96.7% of them had mild phlebitis. On Day2 O2, 13.3% of them had no phlebitis and 86.7% of them had mild phlebitis. On Day2 O3, 26.7% of them had no phlebitis and 73.3% of them had mild phlebitis. On Day3 O1, 43.3% of them had no phlebitis and 56.7% of them had mild phlebitis. On Day3 O2 and Day3 O3, 53.3% of them had no phlebitis and 46.7% of them had mils phlebitis. In control group, all the children had mild phlebitis on timepoints pretest, Day1 O1, Day1 O2, Day1 O3, Day2 O1, Day2 O2, Day2 O3 and Day3 O1. On Day3 O2, 6.7% of them had no phlebitis and 93.3% of them had mild phlebitis. On Day3 O3, 13.3% of them had no phlebitis and 86.7% of them had mild phlebitis. This indicates that the phlebitis among children reduced remarkably in posttest after nursing care package.

Fig. 4.10. Phlebitis among the children in both experimental and control group over timepoints.

Section IV

Analysis of data related to comparison of the pre-test and post-test study findings.

Table 4.11: Paired t-test for the comparison of the pre-test and post-test phlebitis in experimental group

N=30,30

Timepoint	Mean	SD	T	df	p-value
Pretest	8.8	0.92			
D1O1	8.8	0.92			
D1O2	8.8	0.92			
D1O3	8.4	1.07	3.2	29	0.001
D2O1	7.1	0.84	11.1	29	<0.001
D2O2	6.6	0.89	14.2	29	<0.001
D2O3	6.0	0.79	17.3	29	<0.001
D3O1	5.6	0.61	17.6	29	<0.001
D3O2	5.5	0.57	20.6	29	<0.001
D3O3	5.5	0.57	20.6	29	<0.001

> Researcher applied paired t-test for the comparison of phlebitis scores in pretest and posttest in experimental group. Average phlebitis score in pretest was 8.8 which was same till Day1 O2 then reduced to 8.4 on Day1 O3, 7.1 on Day2 O1, 6.6 on Day2 O2, 6 on Day2 O3, 5.6 on Day3 O1 and 5.5 on Day3 O2 and Day3 O3. T-values for this test were 3.2, 11.1, 14.2, 17.3, 17.6, 20.6 and 20.6 with 29 degrees of freedom on Day1 O3, Day2 O1, Day2 O2, Day2 O3, Day3 O1, Day3 O2 and Day3 O3. Corresponding p-values were small (less than 0.05) for all the timepoints Day1 O3 onwards, the null hypothesis is rejected. It is evident that the nursing care package is significantly effective in reducing phlebitis among children.

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Table 4.12: Two sample t-test for the comparison change in phlebitis score in experimental and control group

N=30, 30

Group	Experimental		Control		T	df	p-value
	Mean	SD	Mean	SD			
D1O1	0.0	0.0	0.0	0.0			
D1O2	0.0	0.0	0.0	0.0			
D1O3	0.4	0.7	0.0	0.0	3.1	58	0.001
D2O1	1.7	0.8	0.2	0.4	9.1	58	<0.001
D2O2	2.2	0.8	0.3	0.5	9.5	58	<0.001
D2O3	2.8	0.9	0.7	0.7	8.1	58	<0.001
D3O1	3.2	1.0	1.1	0.7	6.0	58	<0.001
D3O2	3.3	0.9	1.6	0.6	5.1	58	<0.001
D3O3	3.3	0.9	1.6	0.6	10.4	58	<0.001

The above table describes that -

➢ Researcher applied two sample t-test for the comparison of phlebitis scores in experimental and control group. In experimental group, there was no change in phlebitis score on Day1 O1 and Day1 O2. Average change in phlebitis was 0.4 on Day1 O3, 1.7 on Day2 O1, 2.2 on Day2 O2, 2.8 on Day2 O3, 3.2 on Day3 O1 and 3.3 on Day3 O2 and Day3 O3.

➢ In control group, there was no change in phlebitis score till Day1 O3. Average change in phlebitis was 0.2 on Day2 O1, 0.3 on Day2 O2, 0.7 on Day2 O3, 1.1 on Day3 O1 and 1.6 on Day3 O2 and Day3 O3.

➢ T-values for this test were 3.1, 9.1, 9.5, 8.1, 6, 5.1 and 10.4 with 58 degrees of freedom on Day1 O3, Day2 O1, Day2 O2, Day2 O3, Day3 O1, Day3 O2 and Day3 O3. Corresponding p-values were small (less than 0.05) for all the timepoints Day1 O3 onwards, the null hypothesis is rejected. It is evident that the nursing care package is significantly effective in reducing phlebitis among children.
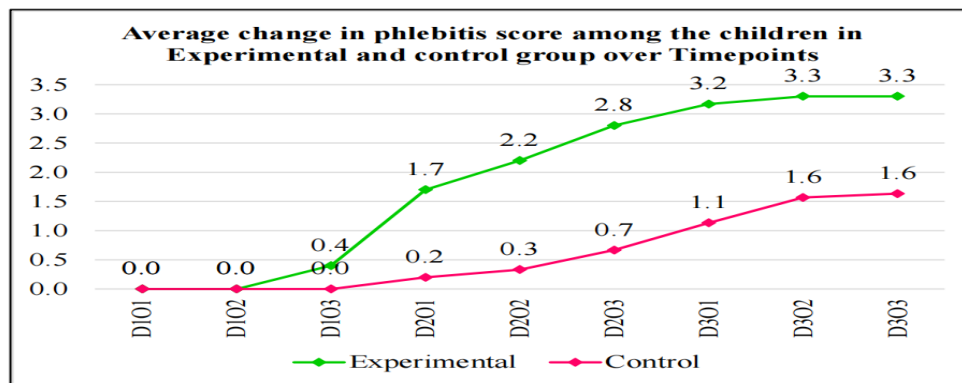
Fig. 4.11 average change in phlebitis among experimental and control group over timepoints.

Above figure describes that the average change in score of phlebitis among experimental and control group has significant difference. Thus, it reveals nursing care package is useful in reducing phlebitis.

Table 4.14: Fisher's exact test for the association between phlebitis among children and the selected demographic variables in control group

n=30

Demographic variable		Phlebitis		p-value
		No phlebitis	Mild	
Age	4 years 1 Day - 6 years	1	7	0.719
	6 years 1 Day - 8 years	0	4	
	8 years 1 Day – 10 years	2	5	
	10 years 1 Day - 12 years	1	10	
Gender	Male	1	14	0.598
	Female	3	12	
Day from IV cannula insertion	Less than 2 Days	1	4	0.538
	2-4 Days	3	22	
The site of IV cannulation	Radial vein	2	13	1.000
	Median vein	2	13	
Intravenous catheter size	22 Gauge	13	5	1.000
	24 Gauge	7	5	
Use of restraints at the site	Yes	3	17	1.000
	No	1	9	
Mode of infusion	Short duration	1	14	0.598
	Long duration	3	12	

The above table describes that –

➤ Since all the p-values were large (greater than 0.05), none of the demographic variables was found to have significant association with phlebitis among children.

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Section V

Analysis of data related to association between phlebitis among children and the selected demographic variables

Table 4.13: Fisher's exact test for the association between phlebitis among children and the selected demographic variables in experimental group

n=30

Demographic variable		Phlebitis		p-value
		No phlebitis	Mild	
Age	4 years 1 Day - 6 years	5	4	0.282
	6 years 1 Day - 8 years	3	3	
	8 years 1 Day – 10 years	0	3	
	10 years 1 Day - 12 years	8	4	
Gender	Male	14	12	1.000
	Female	2	2	
Day from IV cannula insertion	Less than 2 Days	1	4	0.157
	2-4 Days	15	10	
The site of IV cannulation	Radial vein	6	9	0.272
	Median vein	10	5	
Intravenous catheter size	22 Gauge	12	3	1.000
	24 Gauge	9	6	
Use of restraints at the site	Yes	9	11	0.260
	No	7	3	
Mode of infusion	Short duration	9	6	0.715
	Long duration	7	8	

➢ Since all the p-values were large (greater than 0.05), none of the demographic variables was found to have significant association with phlebitis among children.

CONCLUSION:

This chapter has dealt with analysis and interpretation finding of the study and conclusion. Both descriptive and interferential statistics have been used to analyze the data. The data analysis and interpretation are described on the basis of research objectives.

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