

Research Article

Effectiveness of peripheral I/V line with splint in neonates admitted in NICU

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Abstract

Neonates admitted to NICU routinely undergo peripheral venous cannulation for administration of intravenous fluids & drugs. Multiple cannulations expose the vulnerable newborn to repeated painful & stressful experience as well as the risk of infection. Therefore, a quasi-experimental study was conducted to assess the effectiveness of peripheral intravenous line with splint and without splint among neonates who are admitted in NICU at Rani Durgawati Hospital, Jabalpur (M.P). Quantitative Research Approach with comparative research design was used in this study. The sample consisted of 40 neonates (20 in control group & 20 in experimental group) selected through random sampling technique. Observational checklist was tool used for the study. The score was arbitrarily graded by the investigator. Data revealed that the mean, SD of IV with splint and IV without splint was 6.35, 2.09 and 3.4, 1.52 respectively. The mean difference was 2.95 and 't' value was 2.58, df at $p < 0.05$ which indicated that the peripheral intravenous line with splint (experimental group) was more effective than peripheral intravenous line without splint (control group) among neonates who were admitted in NICU. Thus the finding of the study revealed that the peripheral intravenous line with splint increases the functional duration of peripheral intravenous line. Skill drill training on peripheral intravenous line cannulation with splint should be provided to the nursing staffs working in NICU to develop competency on the same.

Key Word: Assess, Effectiveness, Peripheral I/V Line, Splint, Neonate

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INTRODUCTION

Intravenous cannulation is a technique in which a cannula is placed inside a vein to provide venous access. Venous access allows sampling of blood as well as administration of fluids, medications, parenteral nutrition, chemotherapy, and blood products.⁷ Neonates admitted to neonatal intensive care unit (NICU) routinely undergo peripheral venous cannulation for administration of intravenous (IV) fluids and drugs. This often requires multiple peripheral venous cannulations to provide fluids and drugs for prolonged periods. Multiple cannulations expose the vulnerable

newborns to repeated painful and stressful experiences as well as the risk of infection, which might result in adverse effect on health and long-term neurodevelopment outcome. Measures to prolong the functional duration of a peripheral IV cannula may reduce the number of cannulation attempts and save neonates from pain and stress, as well as reduce the risk of infection.

Complications may arise in the vein as a result of the cannulation procedure, the four main groups of complication are:

- **HEMATOMA:** A collection of blood, which can result from failure to puncture the vein when the cannula is inserted or when the cannula is removed.
- **INFILTRATION:** When infusate enters the subcutaneous tissue instead of the vein.
- **EMBOLISM:** This can be caused by air, a thrombus, or fragment of a catheter breaking off and entering the venous system.
- **PHLEBITIS:** An inflammation of the vein resulting from mechanical or chemical irritation or from an infection.⁸

Perez A, Feuz I, Brotschi B, Bernet V. (2012) conducted a study on intermittent flushing improves cannula patency compared to continuous infusion for peripherally inserted venous catheters in newborns. Peripheral cannulas in newborns are commonly used for intravenous treatment. However sustained maintenance of cannula patency is often difficult to achieve in this age group. Splinting to immobilize the limb is one traditionally used method to prolong the functional duration of these cannula. It is not known whether the application of a splint is of any benefit in prolonging the functional duration of this cannula in newborn populations. The present study was designed to study the efficacy of splinting the joint on the functional duration of peripheral IV cannula in neonates requiring continuous IV infusion.

OBJECTIVES

- To observe the efficacy of peripheral intravenous cannula functional duration without splint
- To observe the efficacy of peripheral intravenous cannula functional duration with splint.
- To compare the functional duration of a peripheral I/V cannula with splint & without splint.
- To find out the correlation between with splint & without splint score.

MATERIALS AND METHOD

A quasi experimental study was conducted to assess the effectiveness of peripheral I /V line with splint & without splint in neonates. A probability convenient sampling technique was used to select neonates in NICU from selected hospital of Jabalpur. The sample

comprised of 40 neonates in selected hospital. Data was collected using observational checklist.

inclusion criteria

- Both male & female neonate.
- Neonates who are admitted in NICU
- Neonates those who are admitted in selected hospitals, Jabalpur.

exclusion criteria

- Neonates who have any congenital anomalies.
- Neonates who are on ventilator or in resuscitation process

RESULT

The First Objective Is To Observe The Efficacy Of Peripheral Intravenous Cannula Functional Duration Without Splint. The present study reveals that according to observation of peripheral intravenous cannula functional duration without splint 7 (35%) neonates have got the scoring 0-3 which is the most effective & 3 (15%) have got the scoring 4 -7 which is effective & 10 (50%) have got the scoring 8 -12 which is the least effective, that shows efficacy of peripheral I/V line is the least effective in neonates without splint. The second objective is to observe the efficacy of peripheral intravenous cannula functional duration with splint. The present study reveals that according to observation of peripheral intravenous cannula functional duration with splint 15 (75%) neonates have got the scoring 0-3 which is the most effective & 1 (5%) have got the scoring 4 -7 which is effective & 4 (20%) have got the scoring 8 -12 which is the least effective, that shows efficacy of peripheral I/V line is the most effective in neonates with splint. The third objective is to compare the functional duration of a peripheral I/V cannula with splint & without splint.

Table 1: Significance of difference between peripheral I/V line with & without splint.

S.NO	GROUP	MEAN	MEAN	SD	t-TEST
		N	DIFFERENCE		VALUE
1	Without splint	6.35	2.95	2.09	2.58
2	With splint	3.4		1.52	

Table above shows that the mean score of group without splint is 6.35 with standard deviation 2.09 & mean score of group with splint is 3.4 with standard deviation 1.52, and mean difference is 2.95. The efficacy of the peripheral I/V line with and without splint statistically tested by applying t-test method at the level of 0.05%. In this case the calculated value of 't' (2.58) is more than the table value (1.645), the research hypothesis is accepted. To find out the correlation between with splint & without splint score with selected variables. The present study reveals that there is a significant correlation with splint & without splint score with selected variables, the significance is 1.

Table 2: Correlation between efficacy of peripheral I /V line with splint & without splint.

S.N	GROUP	MEAN	SD	Correlation
1	With splint	6.35	2.09	1
2	Without splint	3.4	1.52	

Table above shows that the mean score of control group is 6.35 with standard deviation 2.09 mean score of experimental group is 3.4 with standard deviation 1.52. Correlation is the statistical method to compare the pre test & post test score. The result shows positive correlation.

DISCUSSION

In this chapter an attempt has been made to discuss the findings of the study in accordance with the objectives of the research. The study was comparative in nature. It was conducted among neonates who were admitted in NICU. The purpose of this study was to assess the effectiveness of peripheral I/V line with splint & without splint in neonates, in order to achieve the objective of the study finding of the study is discussed with reference to objective & hypothesis.

CONCLUSION

Through the findings of the study we can make policies & protocols related to the use of splint in peripheral I/V line to longer the functional duration of peripheral I/V line. These findings of the study have implication for the child health in various settings where cannulation procedure are use for therapeutic aspect & also useful to develop skill in nursing practice, nursing education, nursing administration & nursing research. The health team workers must be equipped with the up to date knowledge about the effectiveness of peripheral I/V line with splint so that they can practice routinely.

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