

A STUDY TO EVALUATE THE EFFECTIVENESS OF HOT  
COMPRESS IN REDUCING THE SIGNS AND SYMPTOMS OF  
PHLEBITIS AMONG TODDLERS WITH IV INFUSION  
THERAPY IN A SELECTED HOSPITAL  
AT COIMBATORE



**COIMBATORE**

DISSERTATION SUBMITTED TO THE TAMILNADU  
DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL  
FULFILLMENT OF REQUIREMENT FOR THE DEGREE OF  
MASTER OF SCIENCE IN NURSING

APRIL 2012

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BY

**S.P. BLESSLY PRAMILA**

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"The person who makes a success of living is  
the one who sees his goal steadily and aims for it  
unswervingly.

That is dedication".

- Cecil B. Demille.

\*\*\*

I

Dedicated This Book To  
My Beloved PARENTS, BROTHER, Family  
Members & Friends

\* \* \* \* \*

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**“Look upward with confident**

**Backward with gratitude**

**And toward with hope”**

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## LIST OF ABBREVIATIONS

df	:	Degree of Freedom
Hr	:	Hour
IV	:	Intravenous
K <sup>+</sup>	:	Potassium Ion
MgSo <sub>4</sub>	:	Magnesium Sulphate
NICU	:	Neonatal Intensive Care Unit
n	:	Number
ORT	:	Oral Rehydration Therapy
PICC	:	Peripherally Inserted Central Catheter
PIVC	:	Peripherally Inserted Venous Catheter
PPN	:	Peripheral Parenteral Nutrition
PVC	:	Peripheral Venous Catheter
$\chi^2$	:	Chi Square

## ABSTRACT

Intravenous therapy although one of the most commonly performed procedures in hospitalized children. The occurrence of infusion phlebitis is common for children with IV infusion therapy. Infusion phlebitis is defined as the acute inflammation of the vein directly linked to the presence of an IV access device.

The aim of the present study was to evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.

The objectives of the study were

- To assess the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To determine the association between the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

The study was conducted by using pre experimental design, among toddlers with IV infusion therapy at Child Trust Hospital, Coimbatore. Non Probability Purposive sampling technique was adopted to select the desired sample. The sample size was 30. Hot compress was given to toddlers with signs and symptoms of phlebitis for 20 min at an interval of 2 hours for 2 times.

The standardized visual infusion phlebitis scales, observation and interview schedule were used to assess the signs and symptoms of phlebitis among toddlers with

IV infusion therapy. The data collection was validated by experts and was found to be valid. The paired 't' test found significant value of 8.86\*  $p < 0.05$  level. Discussions on findings were arranged, based on the objectives of the study. The findings of the study revealed that hot compress was effective in reducing the signs and symptoms of phlebitis among toddlers.

**Key words:** Effectiveness, Hot Compress, Signs and Symptoms of Phlebitis, Toddlers.

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# CHAPTER I

## INTRODUCTION

**Sharp is the grief of a child: Take it from him.**

**Soft is the heart of a child: Do not harden it.**

**- Pamela Glenconner**

The terrible twos have often been used to describe the toddler years, the period from 12 to 36 months of age. It is a time of intense exploration of the environment as children attempt to find out how things work and how to control others through temper tantrum, negativism, and obstinacy. Although this can be a challenging time for parents and child as each learns to know the other better, it is an extremely important period. Toddlers continue to gain new motor skills as well as refine others. Development of eye hand coordination increases the ability of mobility and manipulation and helps the curious toddlers to explore and learn more about his or her environment.

Often illness and hospitalization are the first crisis children must face. Children, especially during the 1 – 5 years are particularly vulnerable to the crisis of illness and hospitalization. A hospital stay can be a stressful experience for a child. Children miss home and normal everyday life. They may experience fear, confusion, and unfamiliarity with events. Children deserve to understand what is happening to them.

Being away from home is probably the most stressful part of hospitalization for a toddler. For this reason, two or three days before admission are ample time to explain the hospitalization process to their child. Children need only simple explanations. In the hospital, toddlers benefit when at least one parent stays overnight with them.

In the hospital, children undergo different investigations and procedures. After the orientation, history collection, assessment, admission procedure, routine investigation, and they start an IV therapy. Intravenous therapy is one procedure which is seen across all the specialities of a hospital. It is a universally acceptable component of medical care. This procedure is so common that there is a tendency to assume that it is routine and will not be associated with any clinical problem.

The practice of inserting an intravenous cannula into a patient is fast becoming routine in many hospitals. Estimates suggested that 80% of all patients who enter into the health service each year receive IV therapy. Inserting an IV cannula is often a precautionary move aimed at providing quick and efficient access in an emergency.

About the IV therapy, as we know it today is a technical, highly specialized form of treatment. It has evolved from an extreme measure used only on the most critically ill to a therapy used for almost 90% of all hospitalized patients. No longer confined to the hospital, IV therapies are now delivered in alternative care settings such as homes, skilled nursing facilities, and physician offices.

IV therapy refers to the parenteral administration of fluids and medication, nutritional support, and transfusion therapy. Type of intravenous administration are intravenous push, bolus, continuous or intermittent infusion using infusion central devices and intermittent infusion. Technology and research have produced advanced infusion products and equipment specific to the administration of parenteral solutions and medications. IV therapy systems are just a few of the state of the art tools used to deliver superior IV therapy in the 21<sup>st</sup> century.

In the maintenance of IV therapy, adults are able to understand and communicate and keep the hand in same position in a safe manner, unless they are restless or in a confused state, when somebody needs to sit at the bedside and nurses should watch the patient frequently. There by we can reduce the complication of IV infusion therapy in adults.

But in children, there is wide variety of physical characteristics different from those in adults. The infants cannot verbalize their pain. The toddlers have an increased number of activities as a result of gross and fine motor skill advancement. So in toddlers, IV connections must be tagged, and secured, and equipment kept out of the child's reach.

Children are not little adult, but adults are grown up children. Most of the basic principles of safe administration of IV solution and medication are the same, regardless of the patient's age. Some of the very important differences exist in the preparation of the parent's and children, calculation of flow rates, veins used for

infusion, equipment, procedure, methods of protecting the child and the site of infusion.

Although the complications associated with peripheral vascular devices are typically minor. To reduce the risk associated with peripheral IV therapy, the risks need to be identified and managed.

Peripherally inserted venous catheter is the most commonly used intravenous device. Phlebitis is largely a mechanical rather than infection process remains the most important complication associated with the use of peripheral venous catheter.

Complications of intravenous therapy are infiltration, infusion phlebitis, bacteraemia, circulatory overload, mechanical failure, haemorrhage and venous thrombosis.

First and foremost complications are infiltration and phlebitis. Infusion phlebitis is defined as the acute inflammation of the vein directly linked to the presence of an intravenous access device. Causes are injury to vein during venipuncture large bore needle or catheters use, or prolonged needle or catheter use, irritation vein due to rapid infusions or irritating solutions. Clot formation at the end of the needle or catheter due to flow rates are more commonly seen with synthetic catheters than steel needles.

Infusion phlebitis is characterized at the cannulation insertion site by pain and tenderness along the course of the vein, erythematous and inflammatory swelling with a

feeling of warmth at the site or in the blood stream causing fatigue, malaise, rigor and fever (Perucca 1993). The important intervention of reducing signs and symptoms of phlebitis are like stop the IV administration, remove the cannula, and observe the area, hot compress and cold compress.

In all these measures thermo therapy is the cheapest and easily practicable one. Thermotherapy can be given in 2 methods one is moist heat and another one is dry heat. Moist heat application increases the metabolism of all types of cells. The heating modalities are divided into 2 categories namely superficial and deep heating modalities. Superficial modalities include infrared lamps, moist heat packs, paraffin bath and warm whirlpool. Among them hot compress is an effective method in reducing the phlebitis signs and symptoms.

The conditions of the children receiving IV therapy can deteriorate rapidly, if complication occur and nurses caring for these patients must be vigilant at all time. So that every signs of infection and other complications can be detected, investigated and corrected.

Hot compression is one of the nursing interventions. Hot Compression is moist application of folded gauze or other suitable material firmly applied over an inflammatory area. The Primary effects of hot compress are peripheral vasodilatations, increased capillary permeability, increased local metabolism, increased oxygen consumption, decreased blood viscosity, increased blood flow and increased lymph flow.

The uses of local heat application are suppuration, increase blood flow to that particular area, so oxygen supply, phagocytosis, nutrients, leucocytes, antibodies are increased, and promotes healing process. Heat relaxes muscles and relieves fatigue and stiffness, heat stimulates blood circulation, which relieves pain of the congested area.

Hence, it is the prior most responsibility of the nurse to provide comfort to the patient. Although many pharmacological and non-pharmacological interventions are available to reduce the signs and symptoms of phlebitis. Hot compress is the easiest, practicable, applicable and cost effective method to keep the toddlers in comfort zone while undergoing IV infusion therapy.

### Need for the Study

Intravenous administration of fluids, drugs, and nutrition is very common in hospitals. Although insertion of peripheral and central cannula and subsequent intravenous therapy are usually well tolerated. Intravenous therapy although one of the most commonly performed procedures in hospitalized children, may make them susceptible to infections and non infectious adverse events. Approximately 1% to 10% of such patients develop local or systemic catheter related infections caused by alteration or disruption of skin integrity.

Americans had 36 million hospital stays in 2000, and about 18 percent of these stays were children and adolescents 17 years and younger. Among them children and adolescents accounted for 6.3 million hospital stays or 18 percent of all stays; adults accounted for approximately 30.0 million hospital stays, about 82 percent of all stays.

Department of primary health and social hospital stated a report over the ten calendar years 1997 to 2006 there were a total of 1,566,829 unplanned admissions in children aged under 1 year, 2,115,664 in children aged 1–4 years and 1,118,011 in children aged 5–9 years in England. The unplanned admission rate for all children under 10 years old increased by 21.6% from 73.6 to 89.5 per 1000 children. This represents a rise in the incidence rate of 18.4% in children less than 1 year, 22.0% in children aged 1–4 years and 15.1% in children aged 5–9 years.

Recent studies showed that in 2006 over 38 million patients were admitted in U.S. hospitals. In this total out of 2.1 million were children under 17 years of age. It is estimated that greater than 90% of hospital stays involve use of infusion therapy which would imply that a staggering 1.8 million plus infusion devices are expected to be placed in paediatric patients alone that year.

Lewis (2008), described 65% of phlebitis occurred due to intra venous therapy.

In the United States, there are nearly 150 million PIV catheters consumed every year.

Perucca (1993) stated that the incidence of phlebitis is between 20%-80 %.

Chinese (2010) article reported that, phlebitis cases in a year, June 2008 to 2009 infusion room in our department a total of 61,820 cases were identified in intravenous infusion therapy, in that 213 cases developed phlebitis.



Chinese nursing infusion society 2010 reported, based on their clinical data June 2008 to 2010 -35 cases of phlebitis were identified among the patients undergone IV therapy.

St. John's hospital at Bangalore 2010 reported an average of 240- 250 children irrespective of age were admitted in 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 surgical ward 45- 50 children were admitted and 99% of them required venipuncture.

In Coimbatore child trust hospital over the year of 2009- 2010 hospitalization rate was 1500. In that 1200 were under 5, among them 99% required IV cannulation in inpatient department.

Beverly et al., (2009) conducted a prospective study of Care of veins during intravenous therapy and Incidence of phlebitis as related to knowledge and performance at Canada. Factors associated with an increased risk of phlebitis included use of plastic catheters and the duration of IV therapy. Our findings suggested that careful supervision may lead to improved vein care and a concomitant reduction in infusion-associated phlebitis.

Boltá et al., (2002) conducted a prospective study of phlebitis in children. The total of 153 patients admitted having 201 peripheral veins canalized; occurrence of phlebitis was 8.4%; a venous cord (53%) was the most frequent clinical sign. In cases of phlebitis, the back of a patient's hands (64.7%) was the main spot to make an

insertion using a 22G "Vasocán" catheter (70.6%). Phlebitis appeared 2 days after insertion; the high number of antibiotics administered increased the risk of phlebitis ( $p>0.05$ ).

Jin., (2010) conducted an experimental study of effect of hirudoid combining with hot wet compress on prevention of Peripherally inserted central catheter related phlebitis of very low birth weight infants. The Result showed that the incidence rate of phlebitis in experimental group was 5% and in control group was 40%. There was significant statistic difference of the comparison. They concluded that there is better effect of reducing phlebitis on very-low-birth-weight infants with placing Peripherally inserted central catheter by early nursing including application of Hirudiod combined with hot-wet compress.

The scientific principle for hot compress, this causes dilation of the blood vessels and increases the blood supply to the area. Thus stimulates metabolism and the growth of new cells and tissues. The heat is transferred through the conductive heating; it is defined as heat transfer from one point to another without noticeable movement in the conducting medium. Typically, direct contact takes place between the heat source and the target tissues. Superficial heat is usually conductive heat (eg, hot water baths, hot packs, electric heating pads, warm compresses).

During the clinical posting the investigator experienced that most of the children were developed phlebitis. In that hot compress is the best intervention to

reduce phlebitis signs and symptoms. So the investigator felt that there is a need to study in this topic and also reducing the signs and symptoms of phlebitis.

### Statement of the Problem

A Study to Evaluate the Effectiveness of Hot Compress in Reducing the Signs and Symptoms of Phlebitis among Toddlers with IV Infusion Therapy in a Selected Hospital at Coimbatore.

### Objectives

- To assess the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To determine the association between the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

### Hypotheses

- H1 : There will be a significant difference between the mean pre and post-test level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- H2 : There will be a significant association between the level of signs and symptoms of Phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

## Operational Definitions

### Effectiveness

It refers to the outcome of hot compress in terms of reducing the signs and symptoms of phlebitis among toddlers. This is estimated by using visual infusion phlebitis scale.

### Phlebitis

Phlebitis is an inflammation in the wall of vein.

### Signs and symptoms of phlebitis

This is characterized by complaints of pain, erythema, swelling, induration, palpable venous cord and fever (100<sup>0</sup>F).

### Toddlers

It refers to the child between 2-3years of age with IV therapy admitted in the paediatric ward at selected hospital.

### Hot Compress

It refers to the application of moist heat over the infusion site by using gauze pieces with warm water, checked by placing back of the hand in water. The total duration of the intervention was 20 min.

## IV Infusion Therapy

IV infusion therapy refers to the parenteral administration of fluids and medications through IV site.

## Assumptions

- Hot compress stimulates circulation.
- Hot compress promotes absorption in the IV site.
- Hot compress reduces the signs and symptoms of pain, redness, erythema, and swelling.
- Hot compress is an effective management of phlebitis.

## Delimitations

- The study is delimited to the children with phlebitis in inpatient Department of selected hospital at Coimbatore.
- The study period is limited to 6 weeks.

## Projected Outcomes

- The study will help the nurses to assess the level of phlebitis among children.
- The study will help the nurses to identify the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among children.

- The study findings will help the nurses to incorporate hot compress as an intervention among children with phlebitis.
- The study findings will enable nurses to encourage practice of hot compress as an intervention among children with phlebitis.

## CHAPTER II

### REVIEW OF LITERATURE

Review of literature is an important step in the development of any research project. According to Polit and Hungler, literature review is a critical summary of research on a topic of interest, often prepared to put a research problem in context.

For the study, the literature reviews are divided into following:

- Studies related to Prevalence of Phlebitis.
- Studies related to Hot Compress.
- Studies related to Effectiveness of Hot Compress on Phlebitis.

#### Studies Related to Prevalence of Phlebitis

Yang et al., (2011) conducted a retrospective study of effect of Peripherally inserted central catheter in Premature Infants with Parenteral Nutrition at china. The total number of samples was 208. The Result showed that the average dwelling time of Peripherally inserted central catheter was  $(16.7 \pm 10.3)$  days. Some infants were with catheter-related complications in the process of using parenteral nutrition (n=45). Occlusion was the most common complication induced by Peripherally

inserted central catheter, followed by exsmosis, slide of catheter, suspected infection, phlebitis ,breaking of catheter and hemorrhage in puncture point.

Ouyang et al., (2011) conducted an experimental study of Influence of Panel Management on Peripherally inserted central catheter for Patients with Malignant Bone Tumors in Chemotherapy at china. Control group included 22 patients admitted before the establishment of Peripherally inserted central catheter panel consisting of 4 nurses with certificate while experimental group included 26 patients admitted after the establishment of the panel. Time and success rate of Peripherally inserted central catheter, puncture bleeding and mechanical phlebitis were compared. The Result showed that Catheterization time in experimental group was less than that of control group, success rate in experiment group was significantly higher than that of control group, while blood loss and incidence of mechanical phlebitis in experiment group were less and lower than those of control group (P0.05).

Van winkle et al., (2010) conducted a retrospective study of Peripherally inserted central catheter for outpatient parenteral antibiotic therapy in children at a community hospital. 39 Peripherally inserted central catheters were placed in 34 patients. It was demonstrated that a 97% success rate in completing therapy at home, with 82.3% completion with a single Peripherally inserted central catheter. The result showed that over all IV complication rate was 33.3%.

Tripathi. (2008) conducted a prospective interventional study of peripheral Intravenous factors affecting complications and patency at US. This hospital was composed of 88 patients, from neonates to 12 year olds who were admitted to the

paediatric ward, on whom a total of 377 catheters were started. There was a statistically significant increase in the duration of patency with the use of heparin flushes and splints. The incidence of phlebitis increased with heparin flushes. Shorter patency duration and increased complications were associated with younger age wrist and scalp insertions, and 24-gauge catheters.

Singh. (2008) conducted a prospective observational study of peripheral intravenous catheter related phlebitis and its contributing factors among adult population at KU Teaching Hospital. A total of 230 clients who were under first time peripheral infusion therapy. Peripheral infusion site was examined for signs of phlebitis once a day. Jackson Standard visual phlebitis scale was used to measure the severity of the phlebitis. Phlebitis developed in 136/230 clients. It was concluded that incidence rate of phlebitis developed sharply after 36 hours of catheter insertion. There were higher incidence of phlebitis among the client with Intra venous drug administration and especially between ages 21 - 40 years.

Lou et al., (2005) conducted a prospective study for all Peripherally Inserted Central Catheter inserted in the NICU at the children's Hospital for four years. All clinical data of infant with Peripherally Inserted Central Catheter was collected and analyzed. Completion of therapy was achieved in 84.43 % ( 423 cases). 16.57 % ( 84 cases) Peripherally Inserted Central Catheter were removed for complication. The rate of catheter-related bloodstream infection was 2.16/1000 catheter days.

J. May. (2005) conducted a prospective study of the etiology of infusion phlebitis and line failure during peripheral parenteral nutrition at Indonesia. The



sample was of 15 in each 4 group. Patients in groups 1, 2 and 3 were fed over 12-h cycles and those in group 4 for a 24-h continuous cycle. A total of 408 patient-days of PPN were given. Mean duration of PPN in groups 1–4 was 7.5, 9, 5.5 and 5 days respectively. Infusion phlebitis was not recorded in patients who had a daily change of cannula (group 1), but occurred in four patients in group 2, eight in group 3 and eight in group 4. Phlebitis scores were 0, 9, 15 and 12 for groups 1–4 respectively. Severe phlebitis and line occlusion occurred more frequently in patients with a 15-cm catheter (group 3) and in those fed continuously over 24 hr (group 4). These results suggested that mechanical trauma is an important factor in the aetiology of infusion phlebitis. It was concluded that can be minimized by reducing the time for which the vein wall is exposed to nutrient infusion and by reducing the amount of prosthetic material within the vein.

**Gulten karadeniz. (2003) conducted a descriptive study of nurses' knowledge regarding patients with intravenous catheters and phlebitis interventions.** This study was planned and applied in 2 stages. Of the patients who participated in the study, 67.24% showed symptoms of phlebitis. They concluded that there was a significant relationship ( $P < .05$ ) between the selection of the vein and the occurrence of phlebitis in patients who had an intravenous catheter.

Revdantino. (2002) conducted a randomized controlled study on adverse events related to the use of peripheral intravenous catheters in children aged between 0 and 2 years old at Brazil. The total sample size was set at 150 peripheral venous catheters in 68 children distributed into 3 groups. Results of variables showed that statistically significant difference between the three studied groups. In relation to peripheral

venous catheter variables, it was observed that 24G was the preferred caliber for intravenous puncture and also was the most suitable for the children's age range studied while smaller diameter catheters were generally used for the venous dorsal arch of the hand, cephalic veins, and upper limb basilica vein (82.7%) infusions. The use of smaller caliber catheters is related to reducing the occurrence of phlebitis, since they prevent mechanical irritation to the inside of small diameter veins.

White. (2001) conducted a descriptive study of peripheral intravenous therapy-related phlebitis rates in an adult population. Ball Memorial Hospital, USA. A total of 305 peripheral IV catheter sites were observed from the time of admission of the patient (or initiation of the first peripheral IV catheter) to the time of the participant's discharge from the facility (or 48 hours after the removal of the final catheter). Parameters monitored included patient demographics, diagnosis, IV fluids and medications, type of peripheral catheter, dwell time, and dressing integrity. The result showed that of the 10 cases of phlebitis found in nine study subjects, all were associated with catheters indwelling less than 72 hours. In three cases, although the catheter site was clear at the time of catheter removal, post infusion phlebitis developed within 24 hours. Catheter site locations, diagnosis, medications, and IV fluids in these cases were varied.

### Studies Related to Hot Compress

Junfeng et al., (2007) conducted an experimental study of alleviation of polarized liquid IV infusion induced pain by hot compress. One hundred and sixty cases were randomly divided into 4 groups (40 in each group), no hot compress group (group O), hot compress around the puncture (group A), hot compress 10 cm distal to

the puncture (group B), heating the infusion tube proximal to the puncture (group C). The incidence of pain and infusion time was observed. The Result showed that there was significant difference in the incidence of pain among the groups (P0.05, P0.01) except between group A and B. There was significant difference among the groups (P0.05, P0.01). It was concluded that hot compress was effective in reducing IV infusion induced pain.

Hu yun et al., (2004) conducted a experimental study of microwave Aparatus PICC after Chemotherapy Treatment Efficacy of Phlebitis at china. 84 patients with PICC phlebitis after chemotherapy was randomly divided into two groups (observation group and control group). There were forty-two patients in each group. The observation group irradiated with microwave apparatus local phlebitis occurred in parts; control group using a local phlebitis occurred in parts of hot and humid deposition; were 2 times/day were observed after treatment 24,48,72 hr efficacy and different phlebitis ( I , II ,III degree of phlebitis) after treatment, an efficient situation. The result showed that the observation group 24, 48, 72 hr after treatment effective rate merit of mean in control group (P0.05 or P0.01), the observation group II ,III degree of phlebitis after treatment of effective rate merit of mean in control group (P0.05 or P0.01). They concluded that the use of microwave apparatus phlebitis after chemotherapy treatment PICC effect is significant, for grade II ,III degree of phlebitis in patients with a clear advantage.

Chen bin. (2004) conducted a experimental study of evaluation of MgSO<sub>4</sub> hot wet dressing to prevent the pain caused by intravenous injection of medicine that

contains K<sup>+</sup> at china. Patients with pain after intravenous injection of K<sup>+</sup> solution were treated with MgSO<sub>4</sub> hot wet dressing following the days before giving intravenous injection of K<sup>+</sup> solution. They were randomly divided into 4 groups, e. g. the 2nd day, 3rd day , 4th day and 5thday, and were treated with MgSO<sub>4</sub> hot wet dressing for 15 min, 30min, 60 min, and 120 min respectively. The effect of different time were observed and analyzed. The result showed that the pain were all released after treatment (P0. 05), The degree of pain released in 30min, 60 min, and 120 min groups is significantly higher than that of 15 min group. They concluded that effect of pain releasing is better when hot wet dressing is given before the injection of K<sup>+</sup> solution. Thirty minutes treatment is more preferable for the patients.

### Studies Related to Effectiveness of Hot Compress on Phlebitis

Lin Juan et al., (2004) conducted an experimental study on hot compress with traditional Chinese medicine for prevention and treatment of patients with phlebitis induced by mannitol infusion via trocar. A total of 60 cases in neurosurgical department needed mannitol infusion were selected and divided into experimental group and control group randomly. Patients in experimental group were given local hot compress with traditional Chinese medicine during mannitol infusion and patients in control group were not given any intervention. Indexes including incidence and onset time of phlebitis, pain degree, detaining time of trocar of patients with phlebitis in the two groups were observed. The Result showed that the incidence of phlebitis in patients of experimental group was lower than that in control group remarkably. It was concluded that hot compress is effective in reducing phlebitis symptoms.

Du hua et al., (2005) conducted an experimental study on the effectiveness of hot compress preventing mechanicalness phlebitis. 98 cases on Peripherally Inserted Central Catheter were divided into two groups: experimental group (Group A); control (Group B). Only Group A received hot compress, 20 minutes once, Bid, 12 hour after Peripherally Inserted Central Catheter was set and observed the phlebitis rate. The phlebitis rates were 4.17% in Group A, 18% in Group B  $P < 0.05$ . It was concluded that hot compress can prevent mechanicalness phlebitis caused by peripherally inserted central catheter.

Guo Mei et al., (2009) conducted a experimental study on prevention of mechanical phlebitis caused by Peripherally Inserted Central Catheter. A total of 416 patients with mechanical phlebitis caused by Peripherally Inserted Central Catheter were randomly divided into treatment group and control group. Patients in the treatment group were treated with hot compress plus phlebitis ointment after Peripherally Inserted Central Catheter. Patients in the control group received no treatment. The incidence of phlebitis was 10.31% in treatment group, which was significantly lower than that (30.18%) in the control group ( $P < 0.01$ ). It was concluded that hot compress plus phlebitis ointment is effective in reducing phlebitis symptoms.

Liu sen-jun et al., (2010) conducted an experimental study of wet heat compresses in preventing cancer patients after Peripherally Inserted Central Catheter phlebitis mechanical role at china. A total of 130 patients catheter sequence numbers were divided into two groups. The 65 cases of controlled group were nursed by routine method; the 65 cases trial group was implicated of wet heat compresses. The result showed that the incidence rate of mechanical phlebitis of the trial group was

significantly lower than that of the control group. It was concluded that heat compress is effective in reducing phlebitis symptoms.

Cai-lian. ( 2010) conducted an experimental study of effects of warm wet Dressing in Preventing Mechanical Phlebitis of Peripherally inserted central catheter at china. Thirty patients who underwent Peripherally Inserted Central Catheter were randomly divided into two groups, group A using conventional hot and humid deposition and group B using hydrocolloid dressing. The result showed that the discomforts such as skin irritation, phlebitis, restriction on activities and physical exposure in group A were significantly lighter than those in group B (P0.05). They concluded that warm wet dressing can reduce the incidence of mechanical phlebitis, improve patients 'comfort and reduce the nursing workload.

## CONCEPTUAL FRAMEWORK

The conceptual framework for research study presents the foundation on which the purpose of the proposed study is based. The framework provides the perspective form by which the Investigator views the problem.

The study is based on the concept that application of hot compression to toddlers with phlebitis may be an effective management of signs and symptoms of phlebitis. The investigator adopted the Widenbach's Helping Art of Clinical Nursing Theory (1964), as a base for developing the conceptual frame work. This is a perspective theory which directs action towards an explicit goal.

Widenbach proposes a prescriptive theory for nursing which is described as a conceiving of a desired situation and the ways to attain it. Prescriptive theory directs action towards an explicit goal. It consists of three factors.

- ▲ Central purpose
- ▲ Prescription

## ▲ Realities

### Central Purpose

The theory refers to what the nurse wants to accomplish. It is the overall goal towards which a nurse strives; it transcends the immediate intentions of the assignment or task by specifically directing activities towards the client benefits. In this present study, the central purpose was to evaluate the effectiveness of hot compress on signs and symptoms of phlebitis among toddlers.

A nurse develops a prescription based on a central purpose and implements it according to the realities of the situation. The conceptualization of nursing practice according to this dissertation consists of 3 steps as follows:

- Step 1 : Identifying the need for help
- Step 2 : Ministering the needed help
- Step 3 : Validating the need for help.
- Step 4 : Co-ordination

#### Step 1:

##### Identifying the need-for-help

The nurse identifies the need for toddlers with phlebitis calling for the need-for-help through the assessment of demographic variables (child's age, sex, duration of IV cannulation, size of cannula, amount of fluid per day through IV cannulation, the IV fluid flow, duration of hospitalization). The level of signs and symptoms of phlebitis is measured by using visual infusion phlebitis Scale. Based on this the nurse explores the patients need-for-help.



## Step 2:

### Ministering the needed help

It refers to the provision of required help to fulfil the identified need. It specifies the nature of the action that will fulfil the nurse's central purpose and the rationale for behind the action. It has two components.

(i) Prescription

(ii) Realities

#### (i) Prescription:

It refers to the plan of care for a client. It specifies the nature of the action that fulfils the nurse's central purpose and the rationale for that action. In this present study hot compress was prescribed and administered as an intervention to reduce the signs and symptoms of phlebitis among toddlers.

#### (ii) Realities:

It refers to the factors that influence the nursing actions, in the particular situation. It includes 5 components;

Agent : Investigator.

Recipient : Toddlers with signs and symptoms of phlebitis.

Goal : Refers to Effective reduction on level of signs and symptoms of phlebitis by application of hot compress for 20 min at an interval of 2 hrs for 2 times.

Means and

Activities : Application of hot compress for 20 min at an interval of 2 hrs for 2 times.

Framework : Coimbatore child trust hospital at Coimbatore.

30 samples were selected.

### Step 3:

Validating the need-for-help was met.

It refers to the collection of evidence that shows needed help has been met as a direct result of the action. In this present study this is explored by means of visual infusion phlebitis scale. This is accomplished by means of post-assessment of the phlebitis by using visual infusion phlebitis Scale. Based on this, again hot compress will be planned. Based on the effectiveness of hot compress, the patients with positive outcome were reinforced, while the patient's with negative outcome was reassessed, which is indicated in dotted lines, which is not included in the study.

### Step 4:

Co-ordination

Refers to reporting, consulting and conferring in this present study it refers to the post test findings are informed to the physician, client and family members about the effect of hot compress.

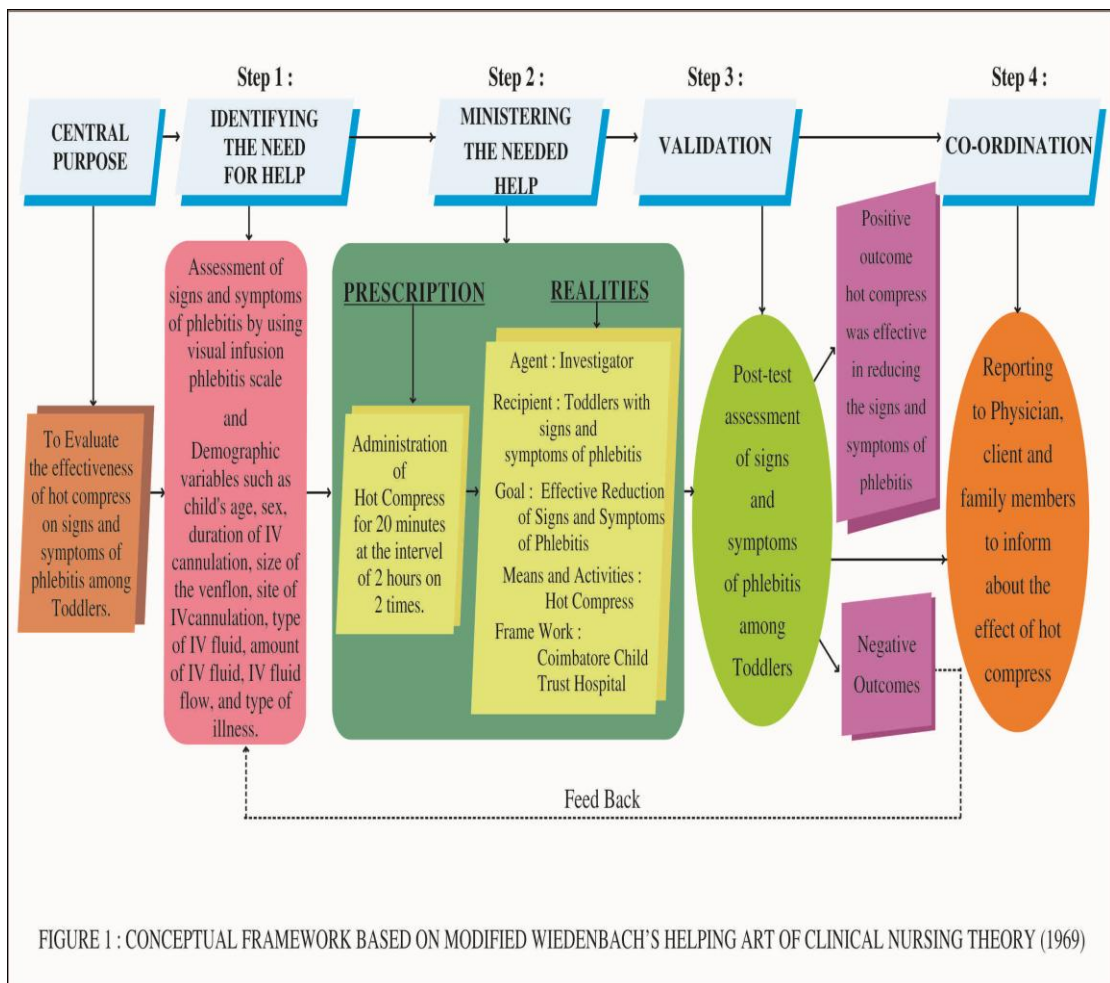


FIGURE 1 : CONCEPTUAL FRAMEWORK BASED ON MODIFIED WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY (1969)

# CHAPTER III

## RESEARCH METHODOLOGY

Methodology deals with the research approach, research design, setting of the study, population, criteria for selection of sample, sample size, sampling technique, description of tool, scoring procedure, pilot study, data collection procedure, data analysis and protection of human rights.

### Research Approach

Polit and Hungler, (2004) defined the research approach as “a general set of orderly discipline procedure used to acquire information”.

A quantitative approach was used to determine the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers.

### Research Design

Polit and Hungler, (2004) defined research design as “overall plan for addressing a research questions, including specification for enhancing the study integrity”.

A pre experimental one group pre test and post test design was chosen for this study.

The diagrammatic representation of the research design given as follows:

Groups	Pre Test	Intervention	Post Test
Pre Experimental	O <sub>1</sub>	X	O <sub>2</sub>

- O<sub>1</sub> - Pre-test level of signs and symptoms of phlebitis
- X - Intervention on Hot compress
- O<sub>2</sub> - Post-test level of signs and symptoms of phlebitis

### Variables

Polit and Hungler, (2004) defined an attribute of a person or object that varies, that is, takes on different values.

### Dependent Variable

Polit and Hungler (2004) defined dependant variables as “The variable hypothesized to depend on or be caused by another variable (the independent variable) the outcome variable of interest”.

The present study dependent variable was signs and symptoms of phlebitis.

### Independent Variable

Polit and Hungler (2004) defined independent variables as “The variable that is believed to cause or influence the dependent variable; in experimental research, the manipulated (treatment) variable”.

The present study independent variable was hot compress.

### Extraneous Variables

Polit and Hungler (2004) defined extraneous variables as “A variable that confounds the relationship between the independent and dependent variables and that needs to be controlled either in the research design or through statistical procedures”.

The present study extraneous variables were Child’s age, sex, duration of IV cannulation (in days), size of the venflon, site of cannulation, type of IV fluid, amount of fluid per day through IV cannulation, IV fluid flow rate, type of illness.

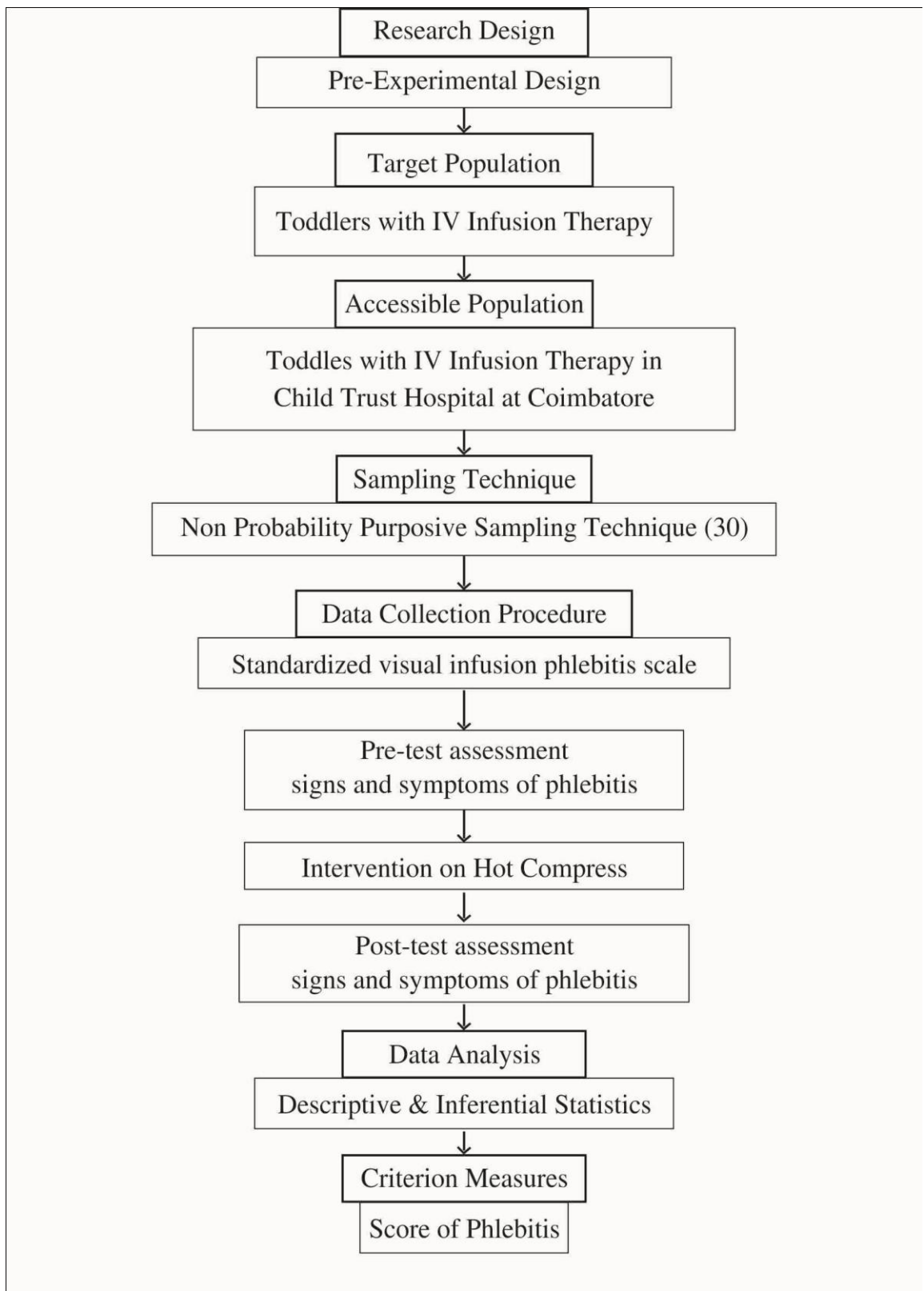


Figure 2 : The Schematic Representation of Research Methodology

## Setting of the Study

Polit and Hungler,(2001) stated that the physical location and condition in which data collection takes place in a study is the setting of the study.

The present study was conducted in paediatric department of Coimbatore child trust hospital. The hospital is situated at a distance of 12 kilometres away from Annai Meenakshi College of Nursing at Coimbatore. It is 50 bedded hospital. The hospital has a 4 floor building among them 8 beds ICU, 30 rooms and 12 beds in general ward with all basic facilities. During data collection period approximately 8 children got admitted daily. Among them 4 children are toddlers; all of them were needed IV infusion therapy. Based on the investigator criteria those who where fulfilled, those were all selected as eligible samples. The investigator selected 1 sample per day.

## Population

According to Polit and Hungler, (2005) “A population is the entire aggregation of cases in which a researcher is interested”.

The target population for this study were toddlers with IV infusion therapy. The accessible population for this study includes toddlers with IV infusion therapy inpatient department of Coimbatore child trust hospital.

## Sample

According to B.T. Basavanthappa, sampling is a process of selecting representative units of a population for study in a research. It is the process of



selecting a subset of a population in order to obtain information regarding a phenomenon in a way that represents the entire population.

The sample size for the study was 30. The samples were selected from the toddlers who have the signs and symptoms of phlebitis and admitted in the paediatric department Coimbatore child trust hospital Coimbatore.

## Criteria for Sample Selection

### Inclusion Criteria

- ▲ Children those who were getting score of 1 to 3 in the visual infusion phlebitis scale.
- ▲ Both genders.
- ▲ Children who can understand Tamil.
- ▲ Age group between 2-3 yrs.
- ▲ Those who were getting IV infusion.
- ▲ Children those who had IV cannulation for 48 hrs.

### Exclusion Criteria

- ▲ Children who were critically ill.
- ▲ Children with unconsciousness.
- ▲ Children with burns and skin disorder.
- ▲ Children who was undergoing blood transfusion.
- ▲ Children with fever above 100<sup>0</sup>F.

## Sampling Technique

Sampling technique is the process of selecting a portion of the population to represent to the entire population.

In this present study the Non-probability purposive sampling technique adopted. The investigator found the samples through admission register. The total sample size was 30. 30 samples were selected based on inclusion and exclusion criteria.

## Description of the Tool

Treese and Treese, (1986) emphasized that the instrument selected in research should as far as possible be the vehicle that could best obtain data for drawing conclusion, pertinent to the study.

The effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion was assessed by the standardized visual infusion phlebitis score scale. The standardized tool was developed by the author Andrew Jackson 1999.

## Part I

The demographic variables consists of 9 items, which includes the Child's Age, sex, duration of IV cannulation (in days), size of the venflon, site of cannula,

type of IV fluid, amount of fluid per day through IV cannulation, IV fluid flow rate and type of illness.

## Part II

The Standardized visual infusion phlebitis score scale consists of 6 items. The parameters included are pain along path of cannula, swelling, erythema, induration, palpable venous cord and pyrexia.

The score was 0-5.

## Scoring Procedure

### Part II

Each item is scored on a scale of 0 (not present) to 5 (severe), with a total score range of 0–5.

- 0- No symptoms of phlebitis.
- 1- Possible first signs.
- 2- Mild stage of phlebitis.
- 3- Moderate stage of phlebitis.
- 4- Severe stage of phlebitis.
- 5- Advanced stage of thrombophlebitis.

## Score Interpretation

Minimum score	-	0
Maximum score	-	5

## Intervention on Hot Compress

The investigator developed interventional strategy on hot compress by reviewing literature & obtaining expert opinion. Hot Compression is moist application of folded gauze firmly applied over an inflammatory area. The temperature of the water was checked by the back of hand. Hot compress was applied by using gauze pieces over the IV cannulation site for 20 minutes and the procedure is repeated after 2hrs. (Appendix G)

## Validity

Hostings – Tolsma (1989) stated that content validity is a judgement regarding how well the instrument represents the characteristics to be assessed. Judgements were based on prior research in the field and on the opinion of experts.

The content validity of the tool was evaluated by 5 nursing experts and 3 medical experts in the field of Paediatrics. The modifications were done in the tool based on experts suggestion and consultation with guide. In demographic variables was mother's education, family income were excluded and type of fluid, site of venflon, type of illness was added. The corrected tool was found to be valid.

## Reliability

Polit and Hungler (1999) stated that reliability refers to the degree of consistency or dependability with which an instrument measures the attribute, it is designed to measure.

The internal consistency and reliability of visual infusion phlebitis Scale was obtained by interrater reliability. The 'r' value is 0.85, which indicates high reliability. It is reliable at  $p < 0.001$  level. The corrected tool was found to be reliable.

## Pilot Study

Polit and Beck, (2004) denote that "pilot study is a small-scale version or trial run done in preparation of a major study".

After getting a written permission, the investigator conducted pilot study among 3 children with signs and symptoms of phlebitis in Tirupur Government hospital. The samples were selected by using purposive sampling technique and method of data collection done by interview and observation. The practical difficulty of the tool was that the children between 1 and 2 years were not able to verbalize about their site of pain and respond to the parameters included in the visual infusion phlebitis scale which was changed to 2-3 yrs in the main study. The obtained 't' value is 3.98\* which is statistically significant at  $p > 0.05$  level. The study reveals that setting, tool, samples were feasible and enough to conduct the main study.

## Data Collection Procedure

The data collection procedure was done for a period of 6 weeks in child trust hospital at Coimbatore. Permission was obtained from the Dean, Head of the department and Unit in-charge of Paediatric ward. The samples were informed about the nature and purpose of the study by the investigator. The oral consent was obtained from child and written consent was obtained from mother. The standardized visual

infusion phlebitis score scale was used to assess pre test score of signs and symptoms of phlebitis. Based on the pre test score who were fall in 1, 2 and 3 were selected as samples. The water temperature was checked by the back of hand. Hot compress was applied by using gauze pieces over the IV cannulation site for 20 minutes and the procedure is repeated after 2hrs. Post test done on the same day after 2hrs of last compression.

### Planned Data Analysis

The demographic variables analyzed by using descriptive statistics (frequency and percentage). The level of signs and symptoms phlebitis was analyzed by using descriptive statistics (mean and standard deviation). The effectiveness of hot compress analyzed by using inferential statistics (paired 't' test). The association between the score of signs and symptoms of phlebitis among toddlers with their selected demographic variables are analyzed by using chi-square test.

### Protection of Human Rights

The study conducted after the approval of research committee of the college. The nature and purpose of this study was explained to the health care personnel involved. The written consent was obtained from the study participant's parents.

## CHAPTER IV

### DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation action of data collected from toddlers those in the possible first signs, mild and moderate stage of phlebitis in selected hospital.

The present study was designed to evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.

According to Polit and Hungler, (2005) analysis is the method of organizing, sorting and scrutinizing data in such a way that research question can be answered.

The analysis and interpretation of data of this study are based on data collected through observation and interview schedule among toddlers.

The study findings are presented in sections as follows:

Section I      Data on Demographic variables of signs and symptoms of phlebitis among toddlers with IV infusion therapy.

Section II:    Data on level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.

Section III:   Data on effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.

Section IV:    Data on association between the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

**SECTION-1: DATA ON DEMOGRAPHIC VARIABLES OF  
SIGNS AND SYMPTOMS OF PHLEBITIS AMONG  
TODDLERS WITH IV INFUSION THERAPY**

Table: 1

Frequency and Percentage Distribution of Signs and Symptoms of Phlebitis among  
Toddlers according to Demographic Variables.

N = 30

S. No	Demographic Variables	Frequency (n)	Percentage (%)
1	Age (in months)		
	a) 25-30	19	63
	b) 31-36	11	37
2	Sex		
	a) Male	25	83
	b) Female	5	17
3	Duration of IV cannulation ( in day)		
	a) 1	0	0
	b) 2	16	53
	c) 3	14	47
	d) > 3	0	0
4	Size of venflon		
	a) 24 G	0	0
	b) 22 G	30	100
5	Site of Cannulation		
	a) Upper extremities	30	100
	b) Lower extremities	0	0
6	Type of IV fluid		
	a) Isotonic	0	0
	b) Hypertonic	30	100
	c) Hypotonic	0	0

(Contd.,)



S. No	Demographic Variables	Frequency (n)	Percentage (%)
7	Amount of fluid per day through IV cannulation		
	a) 200 ml	0	0
	b) 200 ml – 500 ml	21	70
	c) > 500 ml	9	30
8	IV fluid flow/ hr		
	a) < 8	0	0
	b) 8-16	9	30
	c) >16	21	70
9	Type of illness		
	a) Acute	30	100
	b) Chronic	0	0

Table 1 reveals that the demographic variable of signs and symptoms of phlebitis among toddlers with infusion therapy regarding age distribution 19 (63%) were in 25-30 months and 31 -36 months 11 (37%).

Regarding sex, about male 25 (83%), female 5 (17%).

Regarding duration of IV cannulation in 2nd day 16 (53%), 14 (47%) in 3<sup>rd</sup> day.

Regarding size of venflon 22G about 30 (100%).

Regarding site of cannula in forearm, were 30(100%).

Regarding type of IV fluid administration were hypertonic 30(100%).

Regarding amount of fluid per day through IV cannulation about 200-500 ml 21 (70%) > 500 ml was in 9 (30%).

Regarding the IV fluid flow / hr in 8-16 hours 9 (30%), above 16 hours 21 (70%).

Regarding type of illness, 30(100%) of them were admitted for acute illness.

SECTION II: DATA ON LEVEL OF SIGNS AND SYMPTOMS  
OF PHLEBITIS AMONG TODDLERS WITH IV  
INFUSION THERAPY

Table: 2

Frequency and Percentage Distribution of Pre-test Level of Signs and  
Symptoms of Phlebitis among Toddlers.

N=30

S. No.	Level of Signs and Symptoms of Phlebitis	Respondents	
		Frequency (n)	Percentage (%)
1.	Possible first signs	0	0
2.	Mild stage of phlebitis	6	20
3.	Moderate stage of phlebitis	24	80

Table 2 reveals that out of 30 samples shows the pre-test score on signs and symptoms of phlebitis among toddlers with infusion therapy in pre-test majority 24 (80%) were moderate score and 6 (20%) of samples were under mild category.

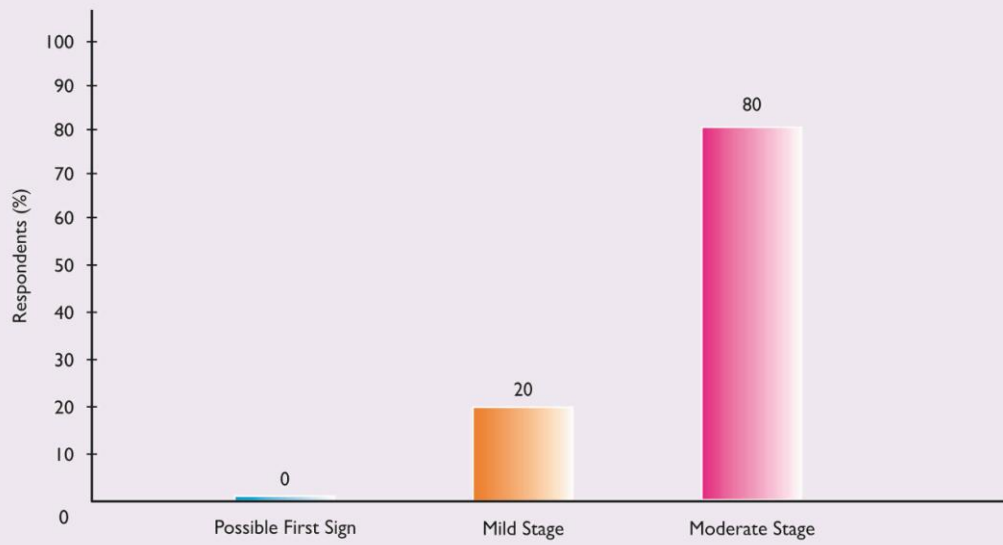


Figure 3 : Percentage Distribution of Pre-test Level of Signs and Symptoms of Phlebitis among Toddlers.

**SECTION III: DATA ON EFFECTIVENESS OF HOT COMPRESS  
IN REDUCING THE SIGNS AND SYMPTOMS OF  
PHLEBITIS AMONG TODDLERS WITH IV  
INFUSION THERAPY**

Table: 3.1

Frequency and Percentage Distribution of Pre and Post-test level of Signs and  
Symptoms of Phlebitis among Toddlers.

N=30

S. No.	Level of Signs and Symptoms of Phlebitis	Respondents			
		Pre-test		Post-test	
		n	%	n	%
1.	Possible first signs	0	0	12	40
2.	Mild stage of phlebitis	6	20	18	60
3.	Moderate stage of phlebitis	24	80	0	0

Table 3.1 shows the pre-test score on signs and symptoms of phlebitis among toddlers with infusion therapy in pre-test majority 24 (80%) were moderate score and 6 (20%) of samples were under mild category. In post-test majority 18 (60%) were mild category and 12 (40%) were under possible first signs category.

Thus, it is inferred that none of them in pre-test had no symptoms of phlebitis and possible first signs of phlebitis. But most of them had moderate phlebitis.

In post-test none of them had no symptoms of phlebitis and moderate signs of phlebitis. But most of them had mild phlebitis.

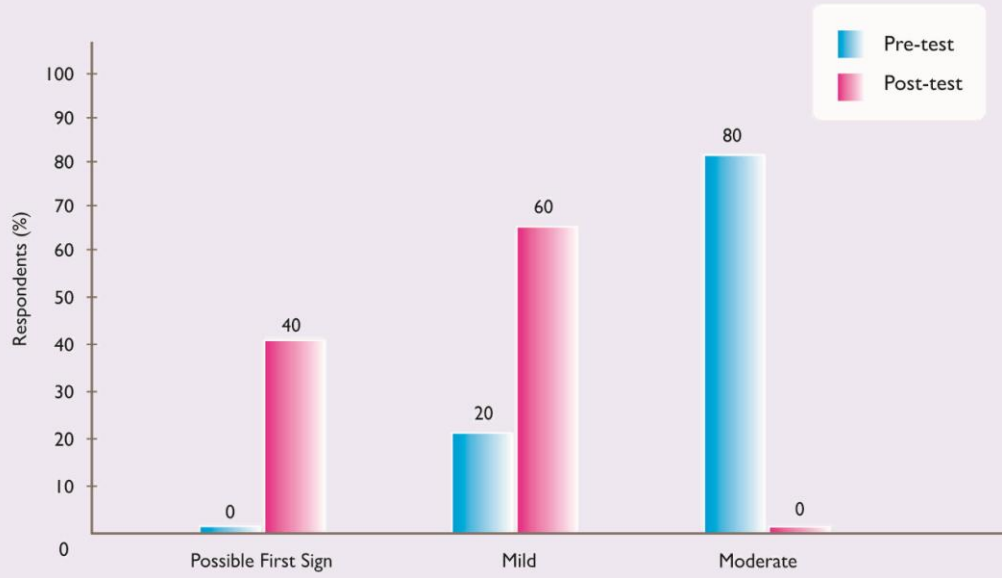


Figure 4 : Percentage Distribution of Pre-test and Post-test Level of Signs and Symptoms of Phlebitis among Toddlers.

Table: 3.2

Mean, Standard Deviation, Mean Deviation and 't' Value of Hot Compress in Reducing the Signs and Symptoms of Phlebitis among Toddlers.

N=30

S. No.	Aspects	Mean	SD	MD	't' Value
1	Pre-test	2.8	0.66	0.17	8.86*
2	Post-test	1.6	0.49		

\*Significant at  $p < 0.05$  level

The above 3.1 table shows that the effectiveness of hot compress. The pre-test score of phlebitis mean was 2.8, standard deviation was 0.66, and post-test mean score was 1.6, standard deviation was 0.49 and the mean difference was 0.17. The 't' value was 8.86 \* which is statistically significant at 0.05 level. Hence the stated hypothesis ( $H_1$ ) is accepted.  $H_1$ : There will be a significant difference between pre and post-test level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.

It is inferred that hot compress is effective in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.

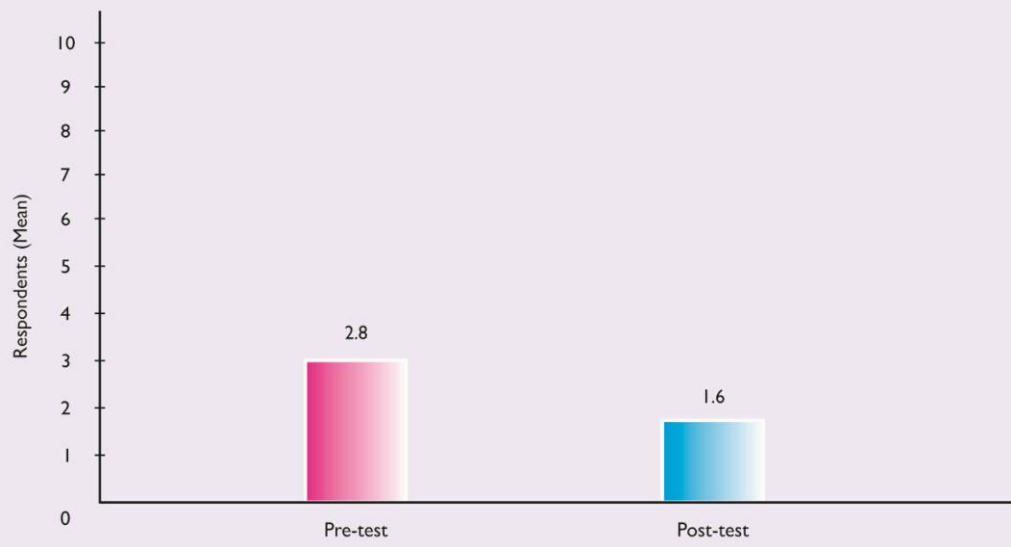


Figure 5 : Mean Pre-test and Post-test Level of Signs and Symptoms of Phlebitis among Toddlers.



**SECTION IV: DATA ON ASSOCIATION BETWEEN THE SIGNS AND SYMPTOMS OF PHLEBITIS AMONG TODDLERS WITH IV INFUSION THERAPY WITH THEIR SELECTED DEMOGRAPHIC VARIABLES**

Table: 4.1

Frequency, Percentage and Chi-Square value of Pre-test Level of Signs and Symptoms of Phlebitis among Toddlers with IV Infusion Therapy with their selected Demographic Variables.

N=30

S. No.	Demographic Variables	Level of Signs and Symptoms of Phlebitis				$\chi^2$ Value
		Mild		Moderate		
		n	%	n	%	
1	Age (in months)					0.35 df=2
	a) 25-30	4	13	15	50	
	b) 31-36	2	7	9	30	
2	Sex					1.5 df=2
	a) Male	6	20	19	63	
	b) Female	0	0	5	17	
3	Duration of IV cannulation in (days)					2.71 df=2
	a) 2	5	17	11	37	
	b) 3	1	3	13	43	
4	Amount of IV fluid flow/ day					4.94* df=2
	a) 200-500 ml	2	7	19	63	
	b) > 500 ml	4	13	5	17	
5	IV fluid flow / hr					0.036 df=2
	a) 8-16 Hrs	2	7	7	23	
	b) > 16 Hrs	4	13	17	57	

\*Significant at  $p < 0.05$  level.

Table 4.1 reveals that association between the signs and symptoms with their selected demographic variables on pre-test.

With regard to age, majority of toddlers among 25-30 months, 4 (13%) were mild category, 15 (50%) had moderate category and 31-36 months 2 (7%) were mild category, 9 (30%) were moderate category. The obtained  $\chi^2$  value 0.35 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) is not accepted.

$H_2$ : There will be a significant association between the level of signs and symptoms of Phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

Regarding sex status of the toddler, majority of the male, among them 6 (20%) were mild category, 19 (63%) was moderate category, and female none of them in mild, moderate 5 (17%). The obtained  $\chi^2$  value 1.5 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence the stated hypothesis ( $H_2$ ) was not accepted.

Regarding duration of IV cannulation, toddlers on 2 days of IV cannulation 5 (17%) were mild category, 11 (37%) was moderate category. Those on 3 days of IV cannulation, 1 (33%) were mild category, 13 (43%) were moderate category. The

obtained  $\chi^2$  value 2.7 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

Regarding amount of IV fluid flow/ hr, 200 – 500 ml, 2 (67%) were mild category, 19 (63%) was moderate category. Above 500 ml 4 (13%) were mild category, 5 (17%) were moderate category. The obtained  $\chi^2$  value 4.94\* was statistically significant at  $p > 0.05$  level and thus it is inferred that there is significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was accepted.

Regarding IV fluid flow hrs /day, 8-16 hours, 2 (7%) were mild category, 7 (23%) were moderate category. Above 16 hours 4 (13%) were mild category. 17 (57%) were moderate category. The obtained  $\chi^2$  value 0.036 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

Table: 4.2

Frequency, Percentage and Chi-square value of Post- test Level of Signs and Symptoms of Phlebitis among Toddlers with IV Infusion Therapy with their Selected Demographic Variables.

N=30

S. No.	Demographic Variables	Level of Signs and Symptoms of Phlebitis				$\chi^2$ Value
		Possible First Sign		Mild		
		n	%	n	%	
1	Age (in months)					1.5 df=2
	a) 25-30	10	33	10	33	
	b) 31-36	2	7	8	27	
2	Sex					3.08 df=2
	a) Male	12	40	14	47	
	b) Female	0	0	14	13	
3	Duration of IV cannulation (in days)					3.77 df=2
	a) 2	9	30	7	23	
	b) 3	3	10	11	37	
4	Amount of IV fluid flow/ day					5.56* df=2
	a) 200-500 ml	6	20	16	53	
	b) > 500 ml	6	20	2	7	
5	IV fluid flow / hr					1.29 df=2
	a) 8-16 Hrs	5	17	4	13	
	b) > 16 Hrs	7	23	14	47	

\*Significant at  $p < 0.05$  level.

Table 4.2 reveals that association between the signs and symptoms with their selected demographic variables in post test.

With regard to age, majority of toddlers among 25-30 months, 10 (33%) were possible first sign category, 10 (33%) had mild category and 31-36 months 2 (7%) were possible first sign category, 8 (27%) were mild category. The obtained  $\chi^2$  value 1.5 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

$H_2$ : There will be a significant association between the level of signs and symptoms of Phlebitis among toddlers with IV infusion therapy with their selected demographic variables.

Regarding sex status of the toddler, majority of the male, among them 12(40%) were possible first sign category, 14 (47%) were mild category, and female none of them in possible first sign category, mild 4(13%). The obtained  $\chi^2$  value 3.08 was not statistically significant at  $p > 0.05$  and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

Regarding duration of IV cannulation, toddlers on 2 days of IV cannulation 9 (30%) were possible first sign category, 7 (23%) was mild category. Those on 3 days of IV cannulation, 3 (10%) were possible first sign category, 11 (37%) were mild

category. The obtained  $\chi^2$  value 3.77 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is no significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

Regarding amount of IV fluid flow/ hr, 200 – 500 ml, 6(20%) were possible first category, 16 (53%) was mild category. Above 500 ml 6 (20%) were possible first sign category, 2 (7%) were mild category. The obtained  $\chi^2$  value 5.56\* was statistically significant at  $p > 0.05$  level and thus it is inferred that there is a significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was accepted.

Regarding IV fluid flow hrs /day, 8-16 hours, 5 (17%) were possible first sign category, 4 (13%) were mild category. Above 16 hours 7 (23%) were possible first sign category. 14 (47%) were mild category. The obtained  $\chi^2$  value 1.29 was not statistically significant at  $p > 0.05$  level and thus it is inferred that there is a significant association between age and level of signs and symptoms of phlebitis among toddlers with infusion therapy. Hence stated hypothesis ( $H_2$ ) was not accepted.

# CHAPTER V

## DISCUSSION

The aim of the present study was to evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy. The study was conducted by using pre experimental one group pre-test and post-test design, among toddlers with IV infusion therapy at child trust Hospital, Coimbatore which is situated approximately 12 kms away from Annai Meenakshi College of Nursing. The sample size was 30.

The standardized visual infusion phlebitis scale, observation and interview schedule were used to assess the signs and symptoms of phlebitis among toddlers with IV infusion therapy. The responses were analyzed through descriptive statistics (mean, frequency, percentage and standard deviation) and inferential statistics ('t' test, chi-square). Discussion on the findings was arranged, based on the objectives of the study.

The first objective of the study was to assess the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy. The study findings revealed that among 30 samples of toddlers with IV infusion therapy, pre-test score on signs and symptoms of phlebitis among toddlers with IV infusion therapy, majority 24 (80%) were moderate score, 6 (20%) of samples were under mild category. Table (2.1).

These findings were supported by a study done by Annamaria et al., (2003) conducted a descriptive study of a plan for the prevention of phlebitis in paediatric inpatients at Canada. The peripheral venous catheters used for the sample of few hours were included in the study, they were in total 42. They concluded that in 33.3% of cases the first potential signs appeared after 24 hours and in 66.6% of the cases after 72 hours from the insertion of the PVC.

The second objective was to determine the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy. The study findings revealed that among 30 samples of toddlers with IV infusion therapy, in post-test majority 18 (60%) were mild category, 12 (40%) were under possible first signs category. Table (3.1). The pre-test score of phlebitis mean was 2.8, standard deviation was 0.66, and post-test mean score was 1.6, standard deviation was 0.49 and the mean difference is 0.17, the 't' value was 8.86\* which is statistically significant at  $p > 0.05$  level. Hence the stated hypothesis ( $H_1$ ) There was significant difference between pre and post-test score on signs and symptoms of phlebitis among toddlers with IV infusion therapy is accepted. Table (3.2).

These findings were supported by a study done by Yang. (2006) conducted a randomized control trial of heat wraps effective phlebitis treatment in children in Children's hospital medical centre at Cincinnati. Heat wraps applied continuously, low level heat over 20 min at an interval of 2hrs for 2 times. The result showed that complete and rapid resolution of symptoms occurred in 90% of subjects with no complications. It was concluded that heat wraps is effective in reducing phlebitis.



A. Purnungla Aier (2009) conducted an experimental study on effectiveness of hot fomentation in reducing the signs and symptoms of thrombophlebitis caused by intravenous infusion and medication among in patients in medical / surgical wards at RMMCH, Chidambaram, Tamilnadu. The sample size was 30 patients with IV thrombophlebitis. The average pain level in the experimental group was 2.86 initially. At the end of the intervention, the pain was reduced from 2.86 to no pain (0.05) in the experimental group. At the end of the intervention, the swelling was reduced from 1.90 to no swelling (0.05) in the experimental group. However, in the control group, the average swelling level was initially 2.06 and it remained constant throughout the study. It was concluded that hot compress was effective in reducing the signs and symptoms of phlebitis.

The third objective was to determine the association between the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy with their selected demographic variables. The study results revealed that in pre test there was significant relationship between the demographic variables of amount of IV fluid flow (4.94\*) among toddlers with IV infusion therapy. In post test there was significant relationship between the demographic variables of amount of IV fluid flow (5.56\*) among toddlers with IV infusion therapy. Hence the stated hypothesis (H<sub>2</sub>) There was a significant association between the signs and symptoms of Phlebitis among toddlers with IV infusion therapy with their selected demographic variable is accepted.

Table (4.1, 4.2)

The findings were supported a study done by Steven et al., (2004) conducted a Meta analysis of randomized controlled trials study of Oral rehydration versus

intravenous therapy for treating dehydration due to gastroenteritis in children at Canada. The quality of the 14 included trials ranged from 0 to 3. Length of stay was significantly shorter for the ORT group. The result showed that Phlebitis occurred significantly more often with IV therapy. They concluded that there was a significant relationship ( $P < 0.05$ ) between the amount of IV fluid infusion and the occurrence of phlebitis in patients who had an intravenous catheter.

# CHAPTER VI

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents a brief account of the present study, conclusions were drawn from the findings and the implications of the results were stated. It also includes recommendations for future research in this area.

### Summary

The present study was to evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy in child trust Hospital at Coimbatore.

The objectives of the study were:

- To assess the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy.
- To determine the association between the level of signs and symptoms of phlebitis score among toddlers with IV infusion therapy with their selected demographic variables.

It was a pre-experimental study conducted in child trust Hospital at Coimbatore, among toddlers with infusion therapy. The research design used in this study was pre experimental one group pre-test and post-test design.

The samples were selected by using non probability purposive sampling technique. The sample size was 30. The instrument used for the data collection was visual infusion phlebitis Scale by using observation and interview method, to assess the level of signs and symptoms of phlebitis among toddlers with IV infusion therapy.

The instrument used to collect the data comprises of two sections. Part – I dealt with the demographic data, part II consists of visual infusion phlebitis scale. The interventional strategy consists of hot compress.

The content validity was checked by experts in the field of Nursing and Paediatricians. Reliability was obtained by inter rater reliability. Data was collected for a period of 6 weeks among toddlers with IV infusion therapy.

The collected data were analyzed by using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (paired 't' test and chi-square).

#### Major Findings of the study:

- Among age of toddlers with IV infusion therapy majority belongs to 25-30 months.
- Regarding sex of toddlers with IV infusion therapy majority belongs to male.
- Among duration of IV cannulation in day's majority belongs to 2 category.

- Among size of venflon majority belongs to 22G category.
- Regarding site of cannulation majority belongs to upper extremities category.
- Regarding types of IV fluid flow majority belongs to hypertonic.
- Regarding amount of fluid per day through IV cannulation majority belongs to about 200-500 ml category.
- Regarding the IV fluid flow in above 16 hours was belonging to majority.
- Regarding type of illness most of them were under acute stage.

The pre-test score on signs and symptoms of phlebitis among toddlers with IV infusion therapy in majority 24 (80%) were moderate score, 6 (20%) of samples were under mild category.

The post-test score on signs and symptoms of phlebitis among toddlers with IV infusion therapy in majority 18 (60%) were mild category 12 (40%) were under possible first signs category.

In assessing the effectiveness of hot compress the pre-test score of phlebitis mean was 2.8, standard deviation was 0.66, and post-test mean score was 1.6, standard deviation was 0.49 and the mean difference is 0.17, the 't' value was 8.86\* which is statistically significant at  $p > 0.05$  level. Hence the stated hypothesis ( $H_1$ ) is accepted.

Regarding amount IV fluid flow of hrs / day 200 – 500 ml, 2 (6.67%) were mild category, 19 (63.33%) were moderate category. Above 500 ml 4 (13.33%) were mild category, 5 (16.67%) were moderate category. The obtained  $\chi^2$  value 4.94\* was

statistically significant at  $p > 0.05$  level and thus it is inferred that there is significant association between amounts of IV fluid in per test. Hence stated hypothesis ( $H_2$ ) was accepted.

Regarding amount of IV fluid flow of hr/ day, 200 – 500 ml, 6(20%) were possible first category, 16 (53%) was mild category. Above 500 ml 6 (20%) were possible first sign category, 2 (7%) were mild category. The obtained  $\chi^2$  value 5.56\* was statistically significant at  $p > 0.05$  level and thus it is inferred that there is significant association between amount of IV fluid in post test. Hence stated hypothesis ( $H_2$ ) was accepted.

## Conclusion

The main conclusion drawn from this present study was that most toddlers with IV infusion therapy had mild and moderate stage of phlebitis. After practicing hot compress, the signs and symptoms of phlebitis level was reduced significantly. The present study revealed that there was the development of infusion phlebitis is a common complication in the clinical course of treatment, sometimes to higher concentrations of irritating substances into the veins, medication like antibiotics, and amount of IV fluid flow. Nursing assessment is needed after the IV insertion until 72 hours to prevent the development of infusion phlebitis. Intervention of hot application is safe and effective management of phlebitis. So it can be encouraged among the health care practitioners in practicing the hot application on infusion phlebitis.

## Implications of the Study

According to Tolsma (1995), the section of the research report that focuses on nursing implications usually includes specific suggestions for nursing practice, education, administration and nursing research.

### Nursing Practice

- ▲ Teach the accurate assessment of signs and symptoms of phlebitis with the use of visual infusion phlebitis Scale.
- ▲ Develop sensitivity to the effects of the hot compress in reducing phlebitis.
- ▲ Understand the importance of hot compress as an adjunct to pharmacological therapy.
- ▲ Teach the benefits of hot compress in reducing signs and symptoms of phlebitis among children with infusion therapy.
- ▲ Encourage the use of hot compress as a management of phlebitis, among parents of children in the paediatric ward.
- ▲ Promote the use of hot compress in reducing phlebitis.

### Nursing Education

- ▲ Ensure that students learn the assessment of phlebitis and the effectiveness of hot compress in the reduction of phlebitis, as an independent nursing intervention.

- ▲ Arrange for student's participation in workshops which demonstrate effectiveness of hot compress through demonstration with audio visual aids and group discussions.
- ▲ Make available literature related to hot compress in reducing phlebitis.

## Nursing Research

- ▲ Encourage further research studies on the effectiveness of hot compress in reducing phlebitis among children with infusion therapy.
- ▲ As an evident from the review of literature, more research needs to be conducted on the effectiveness of hot compress, along with other nursing measures in reducing phlebitis.
- ▲ Disseminate the findings through conferences, seminars, publication in professional, national and international journals and worldwide web.
- ▲ The finding of the study helps to expand the scientific body of professional knowledge upon which further researches can be conducted.

## Nursing Administration

- ▲ Provide opportunity for nurses to attend training programmes on preventive measures of phlebitis. Patient education services are an integral part of high quality, cost-effective care. The nursing administration should see that the health promotion aspect is included in the nursing care.
- ▲ Educational pamphlets containing information on prevention of phlebitis should be given to the nursing staff. It helps to broaden the understanding and motivate them to develop healthy practice.



## Limitation

- ▲ The investigator felt difficult to applying the second time sequence of intervention since the subjects occupy with other activities such as playing, conversation with others.

## Recommendations

- ▲ Similar kind of study can be conducted with a larger group.
- ▲ The same study can be conducted in different setting such as community centre.
- ▲ The study can be conducted on children of different age groups.
- ▲ The study can be conducted as a true experimental group.
- ▲ Comparative study to assess the effectiveness of hot compress on individuals and in combination with other therapies.
- ▲ Study can be conducted to assess the practice of nurses with regard to the effect of hot compress in reducing phlebitis.

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APPENDIX A  
LETTER SEEKING AND GRANTING PERMISSION  
TO CONDUCT STUDY IN CHILD TRUST HOSPITAL, COIMBATORE

## ANNAI MEENAKSHI COLLEGE OF NURSING

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To  
Dr. Neminathan MBBS.DCH.  
Consultant Paediatrician  
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Lakshmi Mills,  
Ramanathapuram,  
Coimbatore.

Respected Sir/Madam

Ms. Blessy Pramila S.P., is a student of II Year M.Sc., (Nursing) in Annai Meenakshi college of Nursing, Coimbatore. She is conducting a study on "EFFECTIVENESS OF HOT COMPRESS ON PHLEBITIS AMONG TODDLERS IN SELECTED HOSPITAL AT COIMBATORE"

This is for her research work to be submitted to the Tamil Nadu Dr. M.G.R. Medical University in partial fulfillment of the university requirement for the award of M.Sc.,(Nursing) Degree.

As a part of her study she would like to conduct a Pilot study in your esteemed Institution. The student will furnish project personally. The student will follow the norms, ethics and policies practiced in the Institution.

Thanking you,

Yours faithfully,

*Permit*  
*D. N. N. S.*  
DR. NEMINATHAN  
MBBS, DCH  
Paediatrician  
Reg. No: 42984

*Principals*  
PRINCIPAL  
Annai Meenakshi College of Nursing  
COIMBATORE-641 021.

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Administrative Office : College Campus, Madukkarai Market Road, Coimbatore - 641 021.



APPENDIX B  
LETTER REQUESTING THE OPINION OF EXPERTS ON  
CONTENT VALIDITY OF THE TOOL

## ANNAI MEENAKSHI COLLEGE OF NURSING

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Approved by the Indian Nursing Council, New Delhi &

Tamil Nadu Nurses and Midwives Council, Chennai.

Madukkarai Market Road,  
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ceandct@gmail.com

Website: www.annaimeenakshi.in

Ref. No. **Requisition for Content Validity** Date : .....

From

**Ms. Blessly Pramila. S.P.,**  
I - Year M.Sc(N)  
Annai Meenakshi College of Nursing,  
Coimbatore - 21.

Through

The Principal,  
Annai Meenakshi College of Nursing,  
Coimbatore - 21.

To

  
PRINCIPAL,  
Annai Meenakshi College of Nursing,  
COIMBATORE-641 021.

Respected Sir/Madam,

Sub: Requisition for expert opinion and suggestion for content  
validity of the tools - Reg.

I am a student of M.Sc., Nursing I year of Annai Meenakshi College of Nursing, Coimbatore, affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai. As a partial fulfillment of the M.Sc., Nursing programme. I am conducting "A Study to Evaluate the Effectiveness of Hot Compress in Reducing the Signs And Symptoms of Phlebitis among Toddlers in Selected Hospital at Coimbatore". I am hereby enclosing the following:

1. Statement and objectives of the study
2. Hypotheses
3. Methodology
4. Tool
5. Intervention
6. Content Validity certificate.

Herewith I am submitting the developed tool for content validity and for expert opinion and possible suggestion. It will be grateful to you and request you to return the same to the undersigned at the earliest possible.

Thanking you,

Yours faithfully,

Place: Coimbatore

Date:

Managed by : CHEMISTS EDUCATIONAL & CHARITABLE TRUST

Administrative Office : College Campus, Madukkarai Market Road, Coimbatore - 641 021.

## APPENDIX C

### LIST OF EXPERTS CONSULTED FOR CONTENT VALIDITY

DR. NEMINATHAN, MBBS, DCH.,

Consultant Paediatrician,

Child Trust Hospital,

Coimbatore.

DR. VENKATESAN MBBS MD.,

Consultant Pediatrician,

Pondicherry Institute of Medical Sciences,

Pondicherry.

PROF. MARIAMMAL PAPPU, M.Sc., (N)

Department of Paediatric Nursing,

KMCH College of Nursing,

Coimbatore.

MRS. VIJAYALAKSHMI M.Sc., (N)

Professor,

KG College of Nursing,

Coimbatore.

PROF. MRS. SUGANTHI M.Sc., (N)

HOD – Child Health Nursing,

SRIPMS College of Nursing,

Coimbatore.

PROF. MRS. KALAISELVI M.Sc., (N)

Department of Child Health Nursing,

SRIPMS College of Nursing,

Coimbatore.

MRS. SHANTHI M.Sc., (N)

Vice Principal,

GKNM Institute of Nursing,

Coimbatore.

APPENDIX D

STRUCTURE QUESTIONNAIRE TO ASSESS THE SIGNS AND  
SYMPTOMS OF PHLEBITIS.

PART I: FOR THE CHILDREN

SECTION A: DEMOGRAPHIC VARIABLES

Sample no:

Date:

1. Age (in months)

- a) 24-30
- b) 31-36

2. Sex

- a) Male
- b) Female

3. Duration of IV cannulation (in days)

- a) 1
- b) 2
- c) 3
- d) >3

4. Size of the cannula

- a) 24 G
- b) 22 G

5. Site of cannula

- a) Upper extremities
- b) Lower extremities

6. Type of IV fluid

- a) Isotonic
- b) Hypertonic
- c) Hypotonic

7. Amount of fluid per day through IV cannulation

- a) <200ml
- b) 200ml-500ml
- c) >500ml

8. The IV fluid flow----- hrs/ day

- a) Below 8
- b) 8-16
- c) Above 16

9. Type of illness

- a) Acute
- b) Chronic

## PART II: FOR THE RESEARCHER

### SECTION B: Standardized Visual Infusion Phlebitis Scale to assess the symptoms of phlebitis.

Instructions: listed below are 6 statements. Researcher has to read each one carefully and select the most appropriate statement by tick (✓) mark.

#### SECTION II

#### STANDARDIZED VISUAL INFUSION PHLEBITIS SCALE

S.NO.	FINDINGS	SCORE
1	IV site appears healthy.	0
2	One of the following is evident. <ul style="list-style-type: none"><li>• Slight pain near IV site or</li><li>• Slight redness near IV site</li></ul>	1
3	Two of the following are evident <ul style="list-style-type: none"><li>• Pain at IV site</li><li>• Erythema</li><li>• Swelling</li></ul>	2
4	All of the following signs are evident <ul style="list-style-type: none"><li>• Pain along path of cannula</li><li>• Erythema</li><li>• Induration</li></ul>	3
5	All of the following signs are evident and extensive <ul style="list-style-type: none"><li>• Pain along path of cannula</li><li>• Erythema</li><li>• Induration</li><li>• Palpable venous cord</li></ul>	4
6	All of the following signs are evident and extensive <ul style="list-style-type: none"><li>• Pain along path of cannula</li><li>• Erythema</li><li>• Induration</li><li>• Palpable venous cord</li><li>• Pyrexia</li></ul>	5

**SCORING KEY:**

- 6- No symptoms of phlebitis.
- 7- Possible first signs.
- 8- Mild stage of phlebitis.
- 9- Moderate stage of phlebitis.
- 10- Severe stage of phlebitis.
- 11- Advanced stage of thrombophlebitis.

**SCORE INTERPRETATION:**

Minimum Score	-	0
Maximum Score	-	5

சேகை E

## பகுதி I

தகவலாளியுள்ள பரரி

குழகத்தின் பரரி

1. வயது (மாதக்காலம்)

அ) 25-30 ( )

ஆ) 31-36 ( )

2. பாலினம்

அ) ஆண் ( )

ஆ) பெண் ( )

3. நரரினம் போடப்பட்ட கால அளவு (நாட்கள்)

அ) 1 ( )

ஆ) 2 ( )

இ) 3 ( )

4. நரரினம் நின்றுள்ள

அ) 24 காள் ( )

ஆ) 22 காள் ( )

5. நரரினம் நின்றுள்ள செயல்திறப்படுகிறது

அளவு (ஒரு நாளைக்கு)

அ) 200 க்கு குறைவாக ( )

ஆ) 200 - 500 க்கு ( )

இ) 500 க்கு அகமாக ( )



6. நாம் ஒன்றுக்கு ரவ அள செலுத்தப்படுகிற நேரி

அ) 8 மவீ நேரமீக்குரி குறைவாக ( )

ஆ) 8 – 16 மவீ நேரி ( )

இ) 16 மவீ நேரமீக்குமேல் ( )

7. நரிஊ செலுத்தப்படுகிற உட்பகுகம்

அ) கை ( )

ஆ) கால் ( )

8. நரிஊர் ணியாக செலுத்தப்படுகிற ரவமீணியகை

அ) ஐசோடோ ( )

ஆ) ஹைபோடோ ( )

இ) ஹைபடோ ( )

9. நோர் ணியகை

அ) கடுமையான ( )

ஆ) நாம் பட்ட ( )

புரவமேபுறமீதால் ஏபுடுரி புரை அழபுயைபு

காண்பதபுகான தரஸ்புடுமீதஸ்பட்ட அளபுகோல்

வ.எண்.	கண்டபுதல்	மபுள்பெண்
1	நரரிபுஊபு போடஸ்பட்ட இடரி நணூக இருபுலிறது.	0
2	புபுபுகண்டவபுறும் ஏதேனூரி ஓபுஅபுகுபு காணஸ்புடுலிறது.	1
3	<ul style="list-style-type: none"><li>• நரரிபுஊபு போடஸ்பட்ட இடமீபுல் லேசான வபு</li><li>• நரரிபுஊபு போடஸ்பட்ட இடமீபுல் லேசாக புவகிபுருமீதல்</li></ul> புபுபுகண்டவபுறும் ஏதேனூரி இரு அபுகுபுகம் காணஸ்புடுலிறது.	2
4	<ul style="list-style-type: none"><li>• நரரிபுஊபு போடஸ்பட்ட இடமீபுல் வபு</li><li>• நரரிபுஊபு போடஸ்பட்ட இடரி புவகிபுருமீதல்</li><li>• நரரிபுஊபு போடஸ்பட்ட இடமீபுல் புபுகரி</li></ul> புபுபுகண்ட அனைமீது அபுகுபுகளுரி காணஸ்புடுலிறது.	3
5	<ul style="list-style-type: none"><li>• நரரிபுஊபு போடஸ்பட்ட தடமீபுல் வபு</li><li>• நரரிபுஊபு போடஸ்பட்ட இடரி புவகிபுருமீதல்</li><li>• நரரிபுஊபு போடஸ்பட்ட இடமீபுல் புபுகரி</li></ul> புபுபுகண்ட அனைமீது அபுகுபுகளுரி தொடபுகுது காணஸ்புடுலிறது.	4



## APPENDIX F

### CRITERIA RATING SCALE FOR VALIDATING THE TOOL

Respected Madam/Sir,

Instructions :

Kindly review the items in the tool. If you are agree with the criteria, please place a tick mark in “RELEVANT” column otherwise place the tick mark in “NEED MODIFICATION” column or “NOT RELEVANT” and give your comments in the remarks column.

#### SECTION A: DEMOGRAPHIC VARIABLES

SL.NO	ITEM	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1	Age				
2	Sex				
3	Mother's education				
4	Family Income				
5	Duration of IV cannulation				
6	Size of the cannula				
7	Amount of fluid per day through IV cannula				
8	Hours of IV fluid flow				
9	Type of illness				

SECTION B: STANDARDIZED VISUAL INFUSION PHLEBITIS  
SCALE TO

ASSESS THE SYMPTOMS OF PHLEBITIS

SL. NO.	ITEM	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1	IV site appears healthy				
2	One of the following is evident				
3	Two of the following are evident				
4	All of the following signs are evident				
5	All of the following signs are evident and extensive				
6	All of the following signs are evident and extensive				

Suggestions if any:

## APPENDIX G

# INTERVENTION ON HOT COMPRESS

## Hot Compress

It is small light moist application of folded gauze material firmly applied over an inflammatory area.

## Effect of Hot Application

### Primary effects

1. Peripheral vasodilatations.
2. Increased capillary permeability.
3. Increased local metabolism.
4. Increased oxygen consumption.
5. Decreased blood viscosity.
6. Increased blood flow.
7. Increased lymph flow.

### Secondary effects

After giving local heat applications the circulation and tissue temperature increases to its maximum after 15 to 20 min.

## Uses of Local Heat Application

1. Heat promotes suppuration, increase blood flow to that particular area, so phagocytosis is increased.

2. Heat increases blood supply to an injured area and there by increases the oxygen supply, supply leucocytes, antibodies and nutrients to that area and promote healing process.
3. Heat increases exchange of oxygen and hastens absorption of exudates.
4. Heat relaxes muscles and relieves fatigue and stiffness.
5. Heat stimulates blood circulation, which relieves local congestion and relieves pain of the congested area.
6. If pain is due to ischemia, application of heat increases blood flow to that area and relieves pain by supplying oxygen to the tissues.
7. Heat provides warmth by conduction, convection, and radiation to the tissues.

### Contra indication

- Acute appendicitis
- Tooth abscess
- Children with paralysis
- Malignancies
- Children with high fever
- Burns

### Articles needed for hot compress

A clean tray containing

1. Clean bowl
2. Kettle with hot water

3. Folded gauze piece
4. Mackintosh and towel
5. Cotton pad
6. Forceps
7. Kidney tray

### Preliminary assessment

- Assess the area with use of standardized visual infusion phlebitis scale.
- Check the water temperature with use of back of the hand.
- Arrange all articles near the bedside.

### Procedure

- Explain the procedure to the child and parent.
- Wash hands and collect the required articles at bed side.
- Give comfortable position to the children.
- Place mackintosh and towel under the area to be treated.
- Water temperature was checked by the back of hand.
- Soak compress in hot water and apply to the area.
- Apply soak compress over the area.
- Hot compress will be given for 20 min and the procedure is repeated after 2 hours.

### After Care

- After removing, gently dry part.



- Observe the skin for any side effects.
- Advise the mother to inform any abnormal symptoms after the hot compress.

## APPENDIX H

### EVALUATION CRITERIA CHECKLIST FOR VALIDATION OF INTERVENTION ON HOT COMPRESS

#### INSTRUCTION

The expert is requested to go through following evaluation criteria checklist prepared for validating the intervention on hot compression and topical application.

There are three columns given for responses and a column and facilitate your remarks in the remarks column given

#### INTERPRETATION COLUMNS

- Meets the criteria - Column I
- Partially meets the criteria - Column II
- Does not meet the criteria - Column III

SL.NO	CRITERIA	I	II	III	REMARKS
I.	CONTENT				
1.	SELECTION OF CONTENT				
1.1	Content reflects the objectives				
1.2	Content has up to date knowledge				
1.3	Content is comprehensive for the learning need of phlebitis children				
1.4	Content provides correct and accurate				

	information				
1.5	Content coverage				
2.	ORGANIZATION OF CONTENT				
2.1	Logical sequences				
2.2	Continuity				
2.3	Integration				
II.	LANGUAGE				
1.	Local language is used in simple and in understandable dialogues				
2.	Technical terms are explained at the level of learners ability				
III.	FEASIBILITY/PRACTICABILITY				
1.	Is suitable to the clients				
2.	Permit self learning				
3.	Acceptable to clients				
4.	Interesting and useful to clients				
5.	Suitable for setting				
IV.	ANY OTHER SUGGESTIONS				

	•				
	•				
	•				

APPENDIX I  
CERTIFICATE OF VALIDATION

**ANNAI MEENAKSHI COLLEGE OF NURSING**

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Email : ceandct@dataone.in

ceandct@gmail.com

Website: www.annaimeenakshi.in

Ref. No.

Date : .....

**Certificate of Validation**

This is to certify that the tools developed by **Ms. Blessy Pramila. S.P., M.Sc (N) I - Year student of Annai Meenakshi College of Nursing, Coimbatore, Tamil Nadu (Affiliated to The Tamil Nadu Dr.M.G.R. Medical University, Chennai)** is validated by undersigned and can proceed with this tool and conduct the main study for dissertation entitled "**A Study to Evaluate the Effectiveness of Hot Compress in Reducing the Signs And Symptoms of Phlebitis among Toddlers in Selected Hospital at Coimbatore**".

Place: Coimbatore

Signature

Date:

Name and Designation

---

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Administrative Office : College Campus, Madukkarai Market Road, Coimbatore - 641 021.

APPENDIX J  
LETTER SEEKING CONSENT OF PARENTS OF CHILDREN  
PARTICIPANTS IN THE STUDY

Respected sir\madam

I am Ms. Blessly Pramila.S.P. I am doing my 2<sup>nd</sup> year M.Sc., (Nursing) in Annai Meenakshi College of Nursing, Coimbatore. I am doing a research on, a study to evaluate the effectiveness of hot compress in reducing the signs and symptoms of phlebitis among toddlers with IV infusion therapy in a selected hospital at coimbatore. I kindly request your co operation to complete my research. I assure you that your baby will not get any harm due to my research.

I am Mr. /Mrs. .... I heard about on, a study to evaluate the effectiveness of hot compress on reducing the signs and symptoms of phlebitis among toddlers from Ms.Blessly pramila.S.P. She explained me about all the effect of the hot compress. So I'm giving consent whole heartedly to include my baby as participate in this research.

Parent's Signature

Place:

Date :

