

**THE EFFECT OF HOT FOMENTATION ON
THROMBOPHLEBITIS AMONG PATIENTS RECEIVED
INTRAVENOUS THERAPY**



A dissertation submitted to

THE TAMILNADU DR.M.G.R .MEDICAL UNIVERSITY

CHENNAI

IN PARTIAL FULFILLMENT OF THE REQUIREMENT

FOR THE AWARD OF DEGREE OF

MASTER OF SCIENCE IN NURSING

APRIL 2015

**THE EFFECT OF HOT FOMENTATION ON
THROMBOPHLEBITIS AMONG PATIENTS RECEIVED
INTRAVENOUS THERAPY**

Certified that this is the bonafide work of

Reg.No: 301311702

**MEDICAL AND SURGICAL NURSING
THANTHAI ROEVER COLLEGE OF NURSING
PERAMBALUR**

COLLEGE SEAL:

SIGNATURE :

Prof.R.PUNITHAVATHI. M.Sc.,(N),
Principal,
Thanthai Roever College of Nursing,
Perambalur.

A 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 2015

**THE EFFECT OF HOT FOMENTATION ON
THROMBOPHLEBITIS AMONG PATIENTS RECEIVED
INTRAVENOUS THERAPY AT SELECTED HOSPITALS
TITTAGUDI.**

Approved by Dissertation

committee on

:

Research Guide

:

Prof.R.PUNITHAVATHIM.Sc.,(N),

Principal

Thanthai Roever College of Nursing,

Perambalur

Clinical speciality guide

:

Prof. V.J.ELIZABETH M.Sc (N).

Vice Principal,

Thanthai Roever College of Nursing,

Perambalur.

A dissertation submitted to

THE TAMILNADU DR.M.G.R .MEDICAL UNIVERSITY

CHENNAI

IN PARTIAL FULFILLMENT OF REQUIREMENT FOR THE AWARD OF DEGREE OF

MASTER OF SCIENCE IN NURSING

APRIL 2015

INTERNAL EXAMINER

EXTERNAL EXAMINER

DECLARATION

I, **301311702** hereby declare that this dissertation entitled “**A STUDY TO ASSESS THE EFFECTIVENESS OF HOT FOMENTATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY AT SELECTED HOSPITALS TITTAGUDI**” has been prepared by me under the guidance and direct supervision of **Prof.R.PUNITHAVATHI, M.Sc(N)**, Principal, Thanthai Roever College of Nursing, Perambalur, as requirement for partial fulfilment of **M.Sc Nursing** degree course under **The Tamilnadu Dr. M.G.R. Medical University, Chennai – 32**. This dissertation had not been previously formed and this will not be used in future for award of any other degree / diploma. This dissertation represents independent original work on the part of the candidate.

Place : Perambalur

301311702

Date : April – 2015

II Year M.Sc (N) Student

Thanthai Roever College of Nursing
Perambalur.

ACKNOWLEDGEMENT

In a life intimately enmeshed in a web of relationships with huge cosmos, it is difficult for me to leave anyone unacknowledged for their direct or indirect influence on me in shaping up of this thesis to its current existence.

I hereby offer my heartfelt gratitude to the King of kings and the Lord of lords , the Almighty God who makes all things beautiful in His own time. His grace and blessing was my strength throughout this study.

I express my sincere gratitude to **Dr. K. Varadharaajen, BA.,BL., Chairman and Managing Trustee, Thanthai Roever College of Nursing, Perambalur** for providing me an opportunity to pursue this Post Graduate programme in this esteemed institution. I express my thanks to him for his encouragement and support.

I would like to express my gratitude to **Prof.R.Punithavathi M.Sc(N) Principal, Thanthai Roever College of Nursing**, for her valuable guidance, constant encouragement and enlightening ideas which enabled me to accomplish this task.

I am extremely grateful to **Prof. Mrs. V.J. Elizabeth., M.Sc. (N), Vice Principal Thanthai Roever College of Nursing** who gave me valuable suggestions, which helped to modify and enrich my research.

I am grateful to all the **experts** for their sincere efforts in validating my tool.

I express my words of appreciation to **Mr. Venkataraman M.Phil.,** Statistician, for his guidance and suggestions in the statistical analysis of the data.

My gratitude to **Mr. S. Kameswaran, M.L.I.S., M.Phil., librarian of Thanthai Roever College of Nursing and all the library staffs of Tamilnadu Dr. M.G.R. Medical University, Chennai** for their support and guidance in procuring the literature related to the study.

It is my immense pleasure to express my heartiest gratitude to my family members, **Mr.R.Mahendran** my dear Husband for his moral support and priceless encouragement, **Mrs.R.Asalambal** my dear mother in law for her kind unconditional help, love and encouragement. I am extremely thankful to **Mrs.Dhanalakshmi** my sister took care my child during study period.

Last but not the least I m indebted to participants of this study who despite their innumerable sufferings, have whole heartedly participated and co-operated with me in this study, without them this research might not be possible.

As a final note I, the investigator, owe a deep sense of gratitude to all those who have directly or indirectly contributed to the successful completion of this endeavor.

THE EFFECT OF HOT FOMENTATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY AT SELECTED HOSPITALS TITTAGUDI

ABSTRACT

INTRODUCTION:

Thrombophlebitis is viewed as a natural consequence of routine intravenous therapy. Any form of injury to a blood vessel can result in thrombophlebitis. In intravenous thrombophlebitis, the blood clot usually attaches firmly to the wall of the affected vein. Moist heat fomentation is a topical treatment of pain or inflammation .

OBJECTIVE

To assess the effectiveness of hot fomentation on thrombophlebitis among patients received intravenous therapy.

METHOD

Study design was true experimental pre-test and post test control group design. Sixty individuals with thrombophlebitis were recruited by simple random sampling technique in to two groups and pre test was done. Experimental group(n=30) received hot fomentation intervention over the site of thrombophlebitis for 15 minutes, morning and evening 2 times a day for 3 days was done. Post test was done with the modified visual infusion phlebitis scale on the fourth day for both groups.

RESULT

Statistical findings revealed that the post test mean score of thrombophlebitis in experimental group was 5.80 with S.D 0.85 whereas in the control group was 9.37 with S.D 1.52. The mean difference was 3.57 and the calculated unpaired 't' value of $t = 11.229$ was found statistically significant at $p < 0.001$ level.

CONCLUSION

The use of hot fomentation is effective in reduction of thrombophlebitis among patient received intravenous therapy.

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
I	INTRODUCTION	1
	Need for the study	2
	Statement of the problem	4
	Objectives of the study	4
	Research hypothesis	4
	Operational definitions	4
	Assumptions	5
	Delimitations	5
	Projected outcome	5
II	REVIEW OF LITERATURE.	
	Related Studies	6
	Conceptual frame work	11
III	METHODOLOGY	
	Research approach	14
	Research design	14
	Variables	15
	Setting of the study	15
	Population	15
	Sample	15
	Sampling technique	15
	Sample size	15
	Criteria for sample selection	16

CHAPTER NO	TITLE	PAGE NO
	Development and descriptive of the data collection tool	16
	Content validity	17
	Reliability	17
	Pilot study	17
	Collection of data	18
	Plan for data analysis	18
	Ethical consideration	19
	Schematic representation of research	20
IV	DATA ANALYSIS AND INTERPRETATION	21
V	DISCUSSION	42
VI	SUMMARY	44
	Major findings of the study	45
	Implications	47
	Recommendations	49
	Conclusion	49
	REFERENCES	50
	ANNEXURES	I-VII

LIST OF TABLES

TABLE NO	TITLE	PAGE NO
1	Frequency and percentage distribution of Demographic variables of the patients received intravenous therapy in experimental and control group.	22
2a	pre and post test level of thrombophlebitis among patients received intravenous therapy in Experimental group.	29
2b	pre and post test level of thrombophlebitis among patients received intravenous therapy in control group.	31
3a	Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in experimental group.	33
3b	Comparison of pre and post test means score of thrombophlebitis among patients received intravenous therapy in control group.	35
3c	Comparison of mean thrombophlebitis score of post test among patients received intravenous therapy between the experimental and control group.	37
4a	Association of post test level of thrombophlebitis among patients received intravenous therapy with their selected demographic variables in the experimental group.	39

LIST OF ANNEXURES

ANNE XURE NO	TITLE	P AGE NO
I	Letter seeking expert's opinion for content validity	i
II	permission List of expert's opinion for content validity	ii
III	Evaluation criteria checklist for validation	iii
IV	Permission letter for research purpose	iv
V	Informed consent form (English)	v
VI	Informed consent form (Tamil)	vi
VII	Data collection tool	vi

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
1	Conceptual frame work based on General system theory	13
2.1	Percentage distribution of body mass index among the patients in the experimental and control group	26
2.2	Percentage distribution of the size of cannula among patients in the experimental group	27
2.3	Percentage distribution of history of chronic disease among the patients in the experimental and control group	28
3.1	Percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in experimental group	30
3.2	Percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in control group	32
4.1	Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in experimental group	34
4.2	Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in control group	36
4.3	Comparison of post test thrombophlebitis mean score of the experimental and control group	38

ANNEXURE I

LETTER SEEKING EXPERT'S OPINION FOR CONTENT VALIDITY

From

301311702

M.sc (Nursing) II Year,
Thanthai Roever College of Nursing,
Perambalur.

To:

Respected Sir/Madam,

Sub: Requisition for content validity of tool.

I am doing M.sc (Nursing) II Year in Thanthai Roever College of Nursing, Perambalur, under The Tamilnadu, Dr.M.G.R. Medical University, Chennai. As a partial fulfillment of my M.Sc. (Nursing) Degree programme, I am conducting a research on **A study to assess the effectiveness of hot fomentation on thrombophlebitis among patients received intravenous therapy at selected hospitals tittagudi**". A tool has been developed for the research study. I am sending the above stated for your valuable opinion, I will be thankful for your kind consideration. Kindly return it to the Undersigned.

Thanking you

Place:

Yours sincerely,

Date:

301311702

ANNEXURE II
LIST OF EXPERTS OPINION FOR CONTENT VALIDITY OF
RESEARCH TOOL

1. Dr.Kolanchinathan MBBS., Dip.Diab

Reg no: 88062
Medical Officer,
Sai Dhanvanthiri Hospital,
Tittagudi.

2.Dr. S. Rajina Rani M. Sc. (N), Ph.D,

Principal,
Doctor's College of Nursing,
Pudukkottai.

3.Prof .R. Punithavathi M. Sc. (N), Ph.D,

Principal,
Thanthai Roever College of Nursing,
Perambalur.

4.Prof. V.J. Elizabeth M. Sc. (N),

Vice Principal,
Thanthai Roever College of Nursing,
Perambalur.

5.Mrs. Dhanalakshmi M. Sc. (N),

Associate professor,
HOD of Medical Surgical Nursing,
Dhanalakshmi College of Nursing,
Perambalur.

6.MS.Shanthi M.Sc.(N) Reader,

HOD of Medical Surgical Nursing,
Dr.G.Sakunthala College of Nursing,
Murungapettai,
Mutharasunallur, Trichy.

ANNEXURE III
EVALUATION CRITERIA CHECK LIST FOR VALIDATION
INTRODUCTION

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks .Kindly place tick mark in the appropriate column and give remarks.

INTERPRETATION OF COLUMN:

Column I : Meets the criteria

Column II : Partially meet the criteria

Column III : Does not meet the criteria

S.No	Criteria	1	2	3	Remarks
1	Scoring <ul style="list-style-type: none"> • Adequacy • Clarity • Simplicity 				
2	Content <ul style="list-style-type: none"> • Logical sequence • Adequacy • Relevance 				
3	Language <ul style="list-style-type: none"> • Appropriate • Clarity • Simplicity 				
4	Practicability <ul style="list-style-type: none"> • It is easy to score • Does it precisely • Utility 				

Signature :

Any Other Suggestion

Name :

Designation :

Address :

ANNEXURE IV

PERMISSION LETTER FOR RESEARCH PURPOSE

From

301311702

M.Sc., (Nursing) II Year,
Thanthai Roever College of Nursing,
Perambalur.

Through

The Principal,
Thanthai Roever College of Nursing,
Perambalur.

To

The Medical Officer
Tittagudi Sai Thanvanthiri Hospital
Tittagudi.

Respected Madam/Sir,

I am doing M.Sc., (Nursing) II year in Thantha iRoever College of Nursing Perambalur. Under the TAMILNADU Dr.M.G.R.MEDICAL UNIVERSITY, CHENNAI. As a partial fulfillment of my M.Sc., (NURSING) Degree Programme, I am going to conduct **“A Study to assess the effectiveness of hot fomentation on thrombophlebitis among patient received intravenous therapy”** at Selected Hospital Tittagudi. I would like to conduct the data collection at your esteemed institution. Hence, I kindly request you to kindly grant me permission to conduct my study in our Hospital.

Thanking you

Place:

Yours sincerely,

Date:

301311702

ANNEXURE V

CERTIFICATE OF ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Reg No: **301311702**, II- Year M.sc [Nursing] Student of Thanthai Roever college of Nursing has done a dissertation study on “**A Study to assess the effectiveness of hot fomentation on thrombophlebitis among patient received intravenous therapy**” at Selected Hospital Tittagudi. This study was edited for English language appropriateness.

Signature

ANNEXURE VII
DATA COLLECTION TOOL
SECTION-A DEMOGRAPHIC DATA

Notes : Kindly furnish the following details by placing a tick mark in appropriate choice.

1. Age in years

- | | | | |
|------------|--------------------------|------------|--------------------------|
| a. 21 -30 | <input type="checkbox"/> | b. 31 -40 | <input type="checkbox"/> |
| c. 41 - 50 | <input type="checkbox"/> | d. 51 – 60 | <input type="checkbox"/> |

2. Gender

- | | | | |
|---------|--------------------------|-----------|--------------------------|
| a. Male | <input type="checkbox"/> | b. Female | <input type="checkbox"/> |
|---------|--------------------------|-----------|--------------------------|

3. Diet pattern

- | | | | |
|---------------|--------------------------|-------------------|--------------------------|
| a. vegetarian | <input type="checkbox"/> | b. non vegetarian | <input type="checkbox"/> |
|---------------|--------------------------|-------------------|--------------------------|

4. Habits

- | | | | |
|----------------------|--------------------------|------------|--------------------------|
| a. Cigarette smoking | <input type="checkbox"/> | b. Alcohol | <input type="checkbox"/> |
| c. Tobacco | <input type="checkbox"/> | d. None | <input type="checkbox"/> |

5. Body mass index

- | | | | |
|-----------------|--------------------------|-----------|--------------------------|
| a. under weight | <input type="checkbox"/> | b. normal | <input type="checkbox"/> |
| c. Over weight | <input type="checkbox"/> | d. Obese | <input type="checkbox"/> |

6. Ambulation

- | | | | | | |
|--------------|--------------------------|------------------------|--------------------------|----------------|--------------------------|
| a. Mobilized | <input type="checkbox"/> | b. Partially mobilized | <input type="checkbox"/> | c. Immobilized | <input type="checkbox"/> |
|--------------|--------------------------|------------------------|--------------------------|----------------|--------------------------|

7. Size of the cannula

- | | | | |
|--------|--------------------------|--------|--------------------------|
| a. 16G | <input type="checkbox"/> | b. 18G | <input type="checkbox"/> |
| c. 20G | <input type="checkbox"/> | d. 22G | <input type="checkbox"/> |

8. Frequency of medication

- | | | | | | |
|--------|--------------------------|--------|--------------------------|---------------|--------------------------|
| a. od | <input type="checkbox"/> | b. bd | <input type="checkbox"/> | | |
| c. tds | <input type="checkbox"/> | d. qid | <input type="checkbox"/> | e. continuous | <input type="checkbox"/> |

9. Types of drugs administered in affected site

a. Antibiotic b. Anticoagulant

c. inotropes d. Other drugs

10. Types of intravenous fluids administration

a. iv crystalloids b. iv colloids

c. blood

11. History of chronic disease

a. Yes b. No

SECTION – B

MODIFIED VISUAL INFUSION PHLEBITIS SCALE

S NO	CRITERIA	1	2	3	4	OBTAINED SCORE
1	PAIN	Not Experiencing pain	Experiencing pain by touching	Experiencing pain by movement	Experiencing Pain while administering medication	
2	SWELLING	Not present	Up to 1cm around the site of insertion	<2cm in proximal/distal area	<4cm in proximal/distal area	
3	TENDERNESS	Not present	Up to 1cm around the site of insertion	<2cm in proximal/distal area	<4cm in proximal/distal area	
4	WARMTH	Not present	Mild	Moderate	Severe	
5	REDNESS	Not present	Mild	Moderate	Severe	

GRADING

- 0 - 5 No thrombophlebitis.
- 6 – 10 Mild thrombophlebitis.
- 11- 15 Moderate thrombophlebitis.
- 16 – 20 severe thrombophlebitis.

CHAPTER –I

INTRODUCTION

Intravenous therapy is an essential part of clinical care used in wide variety of healthcare settings and thus intravenous catheters have become indispensable to clinical practice. Estimates suggest that 80% of all patients who enter into the health service each year receive Intravenous therapy. Inserting an intravenous cannula is often a precautionary move aimed at providing quick and efficient access in an emergency. Maintaining single indwelling cannula for longer duration is limited by the development of superficial thrombophlebitis.

Thrombophlebitis is viewed as a natural consequence of routine intravenous therapy and presents with fever, pain, erythema and cord like swelling. The incidence of superficial thrombophlebitis is high and usually occurs within 72 hours of intravenous cannula insertion. It is important for the clinician to be aware of the potential for injury as a result of medications or fluid leakage into the tissue and damage to a vein can occur as a consequence of indwelling catheters, trauma or the infection of the irritating substances. Any form of injury to a blood vessel can result in thrombophlebitis. In intravenous thrombophlebitis, the blood clot usually attaches firmly to the wall of the affected vein.

Strategies to prevent thrombophlebitis need to be developed and it should reflect on the advances in technology and delivery of health care. Current guidance recommends a number of strategies to reduce the incidence of catheter related bloodstream infections. These include applying the principle of asepsis, the choice of catheter material, the site of insertion and when to replace the equipment used.

Hot fomentation relaxes muscles and increases their contractility, increases blood flow, softens exudates, relieves pain, possibly by promoting

muscle relaxation, increasing circulation and promoting psychological relaxation and a feeling of comfort, acts as a counterirritant.

Moist heat fomentation is a topical treatment of pain or inflammation. This heat causes dilation of the blood vessels and increases the blood supply to the area, thus stimulating metabolism and the growth of new cells and tissues.

NEED FOR THE STUDY:

A hospital nurse probably spends up two-thirds of her shift on intravenous related responsibilities like venipunctures or inserting cannulas, hanging fluids, calculating and administering intravenous medications, assessing intravenous sites and removing intravenous lines. The frequent use of intravenous catheters carries with it, many potential risks, both mechanical and infections. Not all intravenous complications can be avoided but assessment skills, recognizing their key signs and symptoms, ability to identify problems can minimize risks for patients and will help to avoid life-threatening situations.

Various factors have been attributed to the development of thrombophlebitis which include size of catheter material (steel or venflon,) length of time the catheter is in a vein, type of solution administered and use of small vein or veins of the lower extremities where blood flow is relatively sluggish. It is implicated that all peripheral intravenous catheters should be changed every 72 hours.

Nurses are in unique position to provide the best care to the post operative patients with intravenous infusion during their hospitalization. So she could prepare guidelines for the care of the patients during intravenous infusion or injection, with the aim of reducing complication related to intravenous infusion. Using schedule for observation of patients who are on intravenous

infusion, the nurse should aim for early recognition the signs and symptoms of infection and other intravenous complication.

A standardized prospective survey was conducted for nosocomial infections, to determine the interplay of factors that contribute to the risk of thrombophlebitis in peripheral non-steel, non-butterfly intravenous catheters. They studied 3094 patients with 5161 total episodes of peripheral intravenous cannulation from the day of admission until the day of discharge. The results showed that the overall rate of phlebitis was 2.3% and the rate of intravenous catheter-associated bacteremia was 0.08%. In all other circumstances, 48-72 hours was recommended.

A priority care for patient with IV therapy is to prevent, asses, and detect these complications. In some cases nurses lead to manage these problems. Having a specialized team of infusion nurses to initiate and maintain infusion therapy is recommended by the center for disease control and prevention (CDC) to reduce complications of infusion therapy.

The infusion nurses society (INS) publishes guidelines and tools for to identify early signs of complications. The current standard medical therapy for thrombophlebitis is topical heparin application for 7 days from day 1 of intravenous cannula insertion. Interventions for thrombophlebitis include thrombophob ointment, Icthomal and glycerin paste application and cold application. The researcher is interested to evaluate the effectiveness of hot fomentation on thrombophlebitis.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of hot fomentation on thrombophlebitis among patients received intravenous therapy at selected hospitals Tittagudi.

OBJECTIVES OF THE STUDY

1. To assess the level of thrombophlebitis among patients received intravenous therapy.
2. To assess the effectiveness of hot fomentation on thrombophlebitis among patients received intravenous therapy.
3. To associate the post test level of thrombophlebitis after hot fomentation among patients received intravenous therapy with their selected demographic variables.

RESEARCH HYPOTHESES

- **H1:** There is a significant reduction in thrombophlebitis among patients received intravenous therapy after hot fomentation.
- **H2:** There is a significant association between the post test level of thrombophlebitis with hot fomentation among patients received intravenous therapy and their selected demographic variables.

OPERATIONAL DEFINITIONS

- **Effectiveness:** It refers to determining the extent to which the local moist heat application relieves the signs and symptoms of thrombophlebitis as measured by visual infusion phlebitis scale.
- **Hot fomentation:** A local moist heat application over the site of thrombophlebitis using lint cloth dipped in hot water at a temperature of 105°F – 115°F / 40°C – 45°C, applied for 15 minutes two times a day for three days.

- **Thrombophlebitis:** It refers to inflammation of lining of the vein after intravenous cannulation and continuous exposure to intravenous fluid and medication, characterized by pain, cord like swelling, warmth and tenderness, redness along the course of the vein.
- **Patient:** It refers to the individual who is admitted in the hospital with medical or surgical condition developed thrombophlebitis after intravenous therapy.
- **Intravenous therapy:** it is the treatment by intravenous fluids and medications that the patient is receiving, like intravenous- crystalloids, intravenous– colloids.

ASSUMPTIONS

- Intravenous cannulation and administration of drugs or fluids causes thrombophlebitis.
- Thrombophlebitis produces discomfort at the site of intravenous cannulation.
- Application of hot fomentation may reduce the signs and symptoms caused by thrombophlebitis.

DELIMITATIONS

The study is delimited to

- Patients who are admitted in Medical/Surgical wards only during the study period.
- The sample size of the study is limited to 60.
- Patients between the ages of 21-60 years.
- The setting is limited to only two hospitals

PROJECTED OUTCOME

The findings of the study will help the nurses to implement hot application to reduce the discomfort of patient with thrombophlebitis.

CHAPTER II

PART I

REVIEW OF LITERATURE

A review of literature can help to clarify a problem, justify research for the proposed problem, throw light on appropriate methodology and contribute towards the development of a conceptual framework. The investigator has discussed the literature review in the following sections:

Section a: review of literature related to thrombophlebitis in general

Section b: review of literature related to prevention of thrombophlebitis

Section c: review of literature related to application of hot fomentation in reducing thrombophlebitis

Section a: review of literature related to thrombophlebitis in general

Parker lynn. (2002) reviewed studies on the clinical importance, diagnosis, incidence and pathogenesis of peripheral vein infusion thrombophlebitis including catheter-related and patient-related risk factors. They concluded that peripheral vein infusion thrombophlebitis occurred in 25-35% of hospitalized patients with peripheral intravenous cannulation and it had both patient-related e.g. Sepsis and economic consequences e.g. Extra nursing time, duration of catheterization and catheter-related infection.

Tagalakis V.et.al (2002) did a randomized controlled study in which a standard nutritional solution was infused via 22 gauge polyurethane catheters inserted to a length of either 5cms or 15cms. Catheters were observed twice each day and removed when complications occurred or when intravenous nutrition (IVn) was no longer required. The study indicated that catheters inserted into cephalic veins were more prone to thrombophlebitis than catheters inserted into the basilic veins. They concluded that the risk of thrombophlebitis

was not influenced by the length of the catheter within the vein. However, the vein in which the catheter tip lay appeared to influence the development of thrombophlebitis.

Parker lynn(1999) assessed the possibility that delivery system rather than the intravenous nutrition (IVn) is the main influence of thrombophlebitis. This was examined in a randomized comparison of a fine- bore silicone catheter against a short teflon cannula. Thrombophlebitis developed in all patients in the teflon group but only 7% in the silicone group. The results showed that when a nutrient solution is delivered through a peripheral vein with an ultrafine-bore silicone catheter, the risk of thrombophlebitis is low.

Lanbeck p et.al (2004) reviewed 23 literature references to identify the optimal time for the routine replacement of intravenous administration sets when the infusate or parenteral nutrition (lipid and non-lipid) solutions or infusions (excluding blood and blood products) were administered to people in hospital via central or peripheral venous catheters. They concluded that IV administration set that does not contain lipids, blood or blood products may be left in place for intervals of up to 96 hours without increasing the incidence of infection.

Barnuambarbaras (1998) assessed the occurrence of thrombophlebitis in a coronary care unit in relation to the use of short plastic intravenous cannula. The incidence of thrombophlebitis was 51% in cases where cannula was used for continuous infusion of 5% glucose and 13% for cannula which were locked after the injection of heparin. Cases of thrombophlebitis had a chemical or mechanical etiology. Replacement of 5% glucose by 0.9% sodium chloride solution for continuous infusion reduced the incidence of thrombophlebitis to 33%. They concluded that heparin-locked cannula is a safe alternative to continuous infusion.

Trehan N.et al (2007) conducted a review to determine the relationship between peripheral IV catheter indwell time and phlebitis in hospitalized adults. A retrospective review of quarterly quality assurance data monitoring indwell time, phlebitis rating, and site and tubing labels was performed. Of 1,161 sites, only 679 had documented indwell time. Average indwell time was 1.9 days, and overall phlebitis rate was 3.7%. Analyses of variance revealed a significant association between phlebitis and indwell time.

Section b: literature related to prevention of thrombophlebitis

Tagalakis v.(2002) a clinical audit conducted in peripheral intravenous cannulation using the standards of infusion therapy. The findings of the audit highlighted several areas for improvement in peripheral intravenous cannulation care. They found that the most significant finding was poor documentation of the insertion of the cannula. An additional concern was that the person who performed the cannulation could not be identified in 37.7% of peripheral venous cannula audited.

Everitt NJ(1997) conducted to assess whether IV care conformed to the hospital policy. The study was done on 131 patients with 155 peripheral IV lines in St Luke's hospital, Pennsylvania. The peripheral line assessment revealed those 87 sites (56%) < 72 hours old, 4 sites (3%) > 72 hours old and 64 sites (41%) that were not recorded. The researcher suggested need for improvements which included the need to date all dressings/ infusion tubing, proper labeling of all bottled/bags and efforts to ensure that patients wear an identification bracelet.

Section c: review of literature related to application of hot fomentation in reducing thrombophlebitis

Purungala AA (2009)a quasi experimental study was conducted on “the effectiveness of hot fomentation in reducing the signs and symptoms of thrombophlebitis caused by intravenous infusion and medications” among in-

patients in Medical or Surgical wards at RMMCH, Chidambaram, Tamilnadu. A sample of 30 patients with IV thrombophlebitis (15 in experimental and 15 in control groups) were selected. Experimental group was provided with the moist hot fomentation for 15 mts every 2 hrs up to a total of 8 hours (105-115° F / 40-46°C). Data collection was done using interview and observational method. The average pain level in the experimental group was 2.86 initially. At the end of the intervention, the pain reduced from 2.86 to no pain in the experimental group. This showed the effectiveness of hot fomentation. To assess these variations, two way ANOVA repeated measures analysis was done { $p < 0.001$ }. The average level of swelling in the experimental group was 1.90 initially. At the end of the intervention, the swelling was reduced from 1.90 to no swelling (0.00) in the experimental group. This also showed the effectiveness of hot fomentation.

Anjum S (2007) a quasi-experimental study was conducted on “the effectiveness of hot fomentation v/s cold compress for reducing intravenous infiltration” in a selected hospital in Pune city. Pre-test and post-tests were conducted in a sample of 60. Data collection tools included an observational check list which consisted of standardized infiltration scale and behavioral pain scale. Findings proved that the pre treatment mean score of degree of infiltration was 7.1667 and it was decreased to 0.7071 on the 3rd day of treatment with hot fomentation. The pre-treatment mean score of degree of infiltration was reduced from 6.9333 to 0.7571 on the third day of treatment with cold compress treatment. The intensity of pain was reduced from severe (56.66%) to no pain (93.4%) in hot fomentation group. In cold compress group, the intensity of pain was reduced from moderate (60%) to no pain (86.6%). The mean score of hot fomentation group was 6.5067 in reducing the degree of infiltration while cold compress the mean score was 6.6. It proved that the hot fomentation is better than the cold compress.

Fink, et al (2009) determined the impact of dry versus moist heat on peripheral IV catheter insertion site. A two group randomized controlled

clinical design was adopted in an academic cancer infusion center. Seven minutes prior to cannulation the patients were randomly assigned to dry or moist heat with warmed towels wrapped around the arm. Number of IV insertion attempts patients anxiety levels pre and post heating and patient comfort were measured by using the visual analog scale. The results of the study was that the IV insertion rates were more difficult in participate who had moist heat applied (mean=4,sd=2.8) then in participates who had dry heat (mean=3.1,sd=2.4,+2.01,p=0,046) considering vein status,dry heat was 2.7 times more likely to result in successful IV insertion . The conclusion of the study was that dry heat application decreases multiple insertion attempts, and its comfortable safe and economical.

Beer (2002) carried out a study to determine whether local warming of the hand help in inserting cannulas. The patients were asked to immerse their hands in warm water. But they were not always successful because when the patients had return to their chair and dried their hands, the benefit of local warming was reduced. This lead them to investigator other forms of local warming methods which proprietary wheat filled bags. Each bag measures approximately 150cmx 50cm and is heated in microwave on high for 2minutes. This method also reduced the number of attempt at cannulation.

Kober, et al (2003) did a study on local warming: an effective treatment for pain and anxiety during intravenous cannulation. The purpose of the study was to show that local warming reduces pain and anxiety during intravenous cannulation. The total samples were 100 and they randomly assigned to active warming group and no warming group. The total study was assessed with visual analog scale. Statistical evaluation was perform using the “t” test with $p < 0.05$ which is considered significant. The results of the study was that in group 1 the anxiety significantly decreased before and treatment ($p < 0.01$) and in group 2 a non- significant changes were noted. The conclusion of the local active warming is an effective and easy way to reduce pain and anxiety of the patients during intravenous cannulation.

PART II

CONCEPTUAL FRAME WORK

The conceptual frame work for the study was based on general system theory developed by **ludwig von Bertalanffy's** in 1968. This system theory explains dividing the whole thing in two parts and working together of these parts in system. According to this model, a system set of objects which are related between themselves and their attributes. The object contributing to the system behaves together as a whole. Changes in any part will affect whole system. All living system or open systems which means that they exchange energy matter and information across their boundaries with the environment general system theory consist of scientific explanation whole or wholeness; it has its sub system. The main concepts of sub system are input, through put, output. Input and output are the process by which a system is able to communicate and react with its environment.

Input

Refers to matter, energy and information enters in to the system its boundary. In this study, input consists of demographic variable of age, sex, body built, frequency of intravenous medication, type of ambulation and existing status of thrombophlebitis measured by modified visual infusion phlebitis scale by observation check list.

Through put

Is a process that occurs some point between the input and output process. It enables the input to be transformed in such a way that it can be readily by the system. In this study through put was considered as intervention of hot fomentation for 15 minutes morning and evening for three days over thrombophlebitis site.

Output

Is an energy, information (or) matter that is transformed to the environment. Change in thrombophlebitis signs and symptoms of pain, cord like swelling, tenderness, warmth, and redness after hot fomentation. This output was evaluated by the post test after treatment. This is ultimately resulting in the improvement of quality of care.

THE EFFECT OF HOT FOMENTATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVED INTRAVENOUS THERAPY

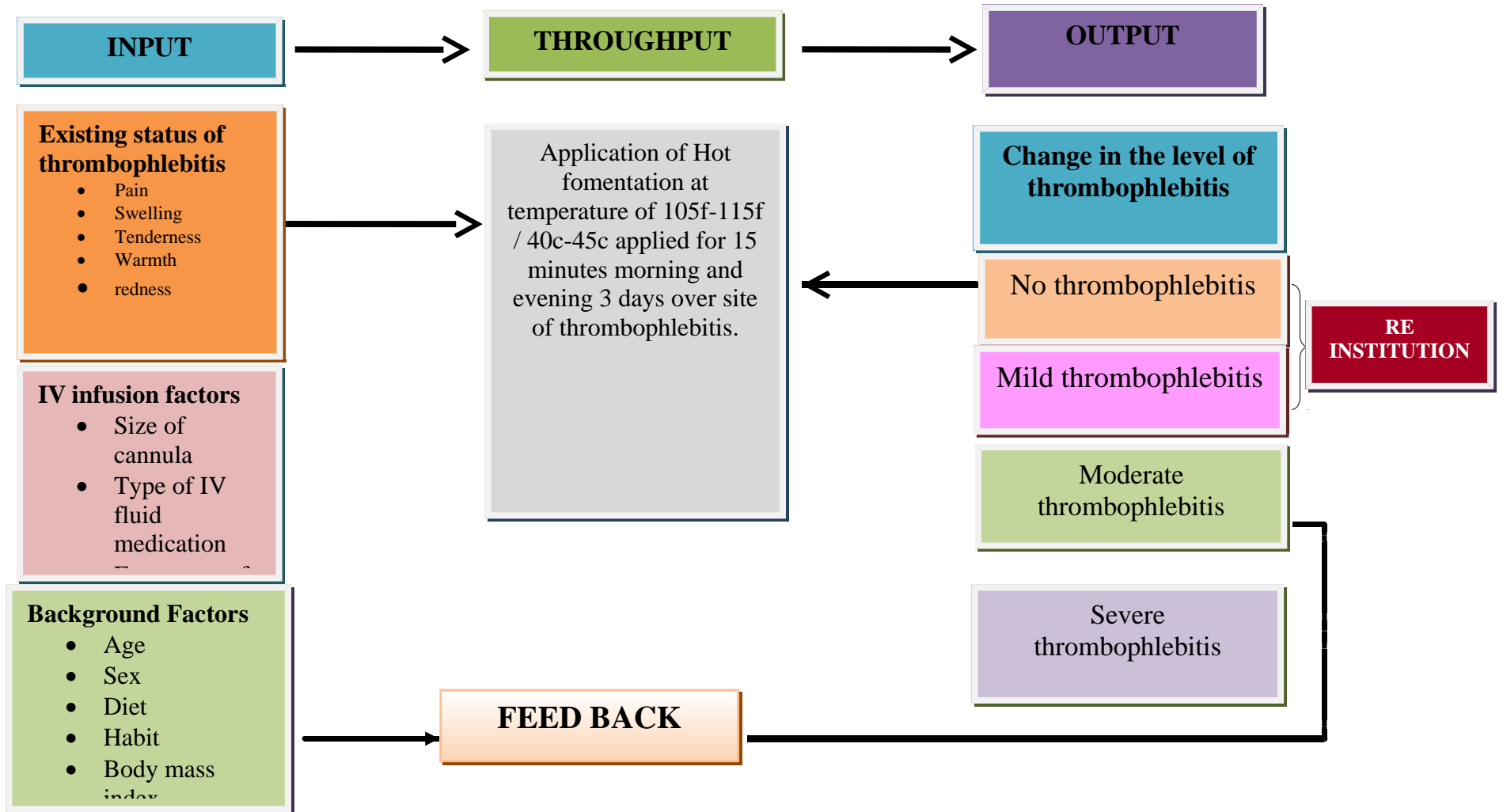


Figure 1. CONCEPTUAL FRAME WORK BASED ON (LUDWIG VON BERTALANFFY'S (1968) GENERAL SYSTEM THEORY

CHAPTER-III

RESEARCH METHODOLOGY

This chapter describes the methodology followed to assess the effectiveness of hot fomentation on the thrombophlebitis among patients received intravenous therapy at selected hospitals. It includes research design, variables, settings, population, and sample, criteria for sample selection, sample size, sampling technique, development and description of tool, content validity, pilot study, data collection procedure and plan for data analysis.

RESEARCH APPROACH

Quantitative Evaluative approach.

RESEARCH DESIGN

True experimental pretest –post test control group design.

	Groups	Pre-test	Intervention	Post-test
R	Experimental Group	O ₁	x	O ₂
	Control group	O ₁	-	O ₂

R –Randomization.

O₁–Pre-test assessment of thrombophlebitis.

X – Hot fomentation on thrombophlebitis.

O₂ – Pos-test assessment of thrombophlebitis.

VARIABLES

Dependent variable: Thrombophlebitis.

Independent variable: Hot fomentation.

SETTING OF THE STUDY

The study was conducted in Medical/Surgical wards in Government & private hospitals (Sai dhanvanthiri hospital) Tittagudi.

POPULATION

Inpatients with thrombophlebitis received intravenous therapy in medical/surgical wards at government and private hospitals Tittagudi.

SAMPLE

Inpatients who have developed thrombophlebitis after intravenous infusion and medications administration.

SAMPLING TECHNIQUE

Simple random sampling technique.

SAMPLE SIZE

60 patients (30 in experimental group and 30 in control group)

DURATION OF THE STUDY

4 Weeks

CRITERIA FOR SAMPLE SELECTION

a. Inclusion criteria

1. Patients who have developed thrombophlebitis due to intravenous infusion and medications.
2. Patients admitted in Medical and Surgical wards.
3. Adult patients between (21 to 60 years).
4. Patients who are willing to participate.

b. Exclusion criteria

1. Adults less than 21 years and above 60 years.
2. Patients receiving cancer chemotherapy drugs, oral contraceptive pills and steroids.
3. Patients who are not willing to participate in this study.
4. Patients attending outpatient department.

DEVELOPMENT AND DESCRIPTIVE OF DATA COLLECTION TOOL

The investigator used a modified visual infusion phlebitis scale to assess the thrombophlebitis.

STRUCTURED QUESTIONNAIRE

The structured questionnaire was developed

Section I: Comprises of questions to elicit demographic data.

Section II: Modified visual infusion phlebitis scale. It consists 5 components of pain, swelling, tenderness, warmth and redness, each divided into 1-4 scores.

SCORING AND GRADING PROCEDURE

SCORING - The observed condition of thrombophlebitis is given score as per description given in the scale. The score obtained by observation is graded as follows:

GRADING PROCEDURE

5	:	No Thrombophlebitis
6-10	:	Mild thrombophlebitis
11-15	:	Moderate thrombophlebitis
16-20	:	Severe thrombophlebitis

CONTENT VALIDITY

For content validity the research experts were requested to give their opinion about the content areas and its relevance and appropriateness of the items. Content validity obtained from five experts in the department of medical and surgical nursing. Items were modified based on their suggestions.

RELIABILITY

The researcher has adapted the standardized visual infusion phlebitis scale with only one modification of one section of pain component and used as modified visual infusion phlebitis scale. The reliability was not assessed as it was already established.

PILOT STUDY

The pilot study was done at government and private hospitals from 19.05.14 to 26.05.14 to test the feasibility, relevance and practicability. Permission was sought from the Managing Director Sai dhanvanthiri hospital, Tittagudi and the Medical Superintendent of Government hospital, Tittagudi.

The consent was obtained from all the samples after explaining the purpose of the study, then role and their doubts were clarified. The pilot study was conducted among 6 patients, 3 in experimental group and 3 in control group, selected by simple random sampling technique. The intervention of hot fomentation over the site of thrombophlebitis for 15 minutes, morning and evening 2 times a day for 3 days was done. Post test done with the same scale on the fourth day. The data analysis showed that the study was found to be feasible and it was decided to continue main study without any modifications.

COLLECTION OF DATA

Data Collection was done from 04.06.14 to 04.07.14 at government and private hospitals, Tittagudi. Patients who received IV therapy were screened for thrombophlebitis and the sample were recruited by simple random sampling technique in the medical and surgical wards. The purpose of the study was explained, written consent was obtained from all patients before the study. Demographic data collected and the thrombophlebitis was assessed with visual infusion phlebitis scale as pre test on the first day. Hot fomentation intervention over the site of thrombophlebitis for 15 minutes, morning and evening 2 times a day for 3 days was done. Post test was done with the same scale on the fourth day. The researcher herself collected the data by using the observation method with help of observation check list.

PLAN FOR DATA ANALYSIS

It was planned to analyse the collected data by using descriptive and inferential statistics.

DESCRIPTIVE STATISTICS

1. Frequency and percentage distribution will be used to analyze the demographic variable and level of thrombophlebitis among hospitalized patients.
2. Mean and Standard deviation to describe the thrombophlebitis.

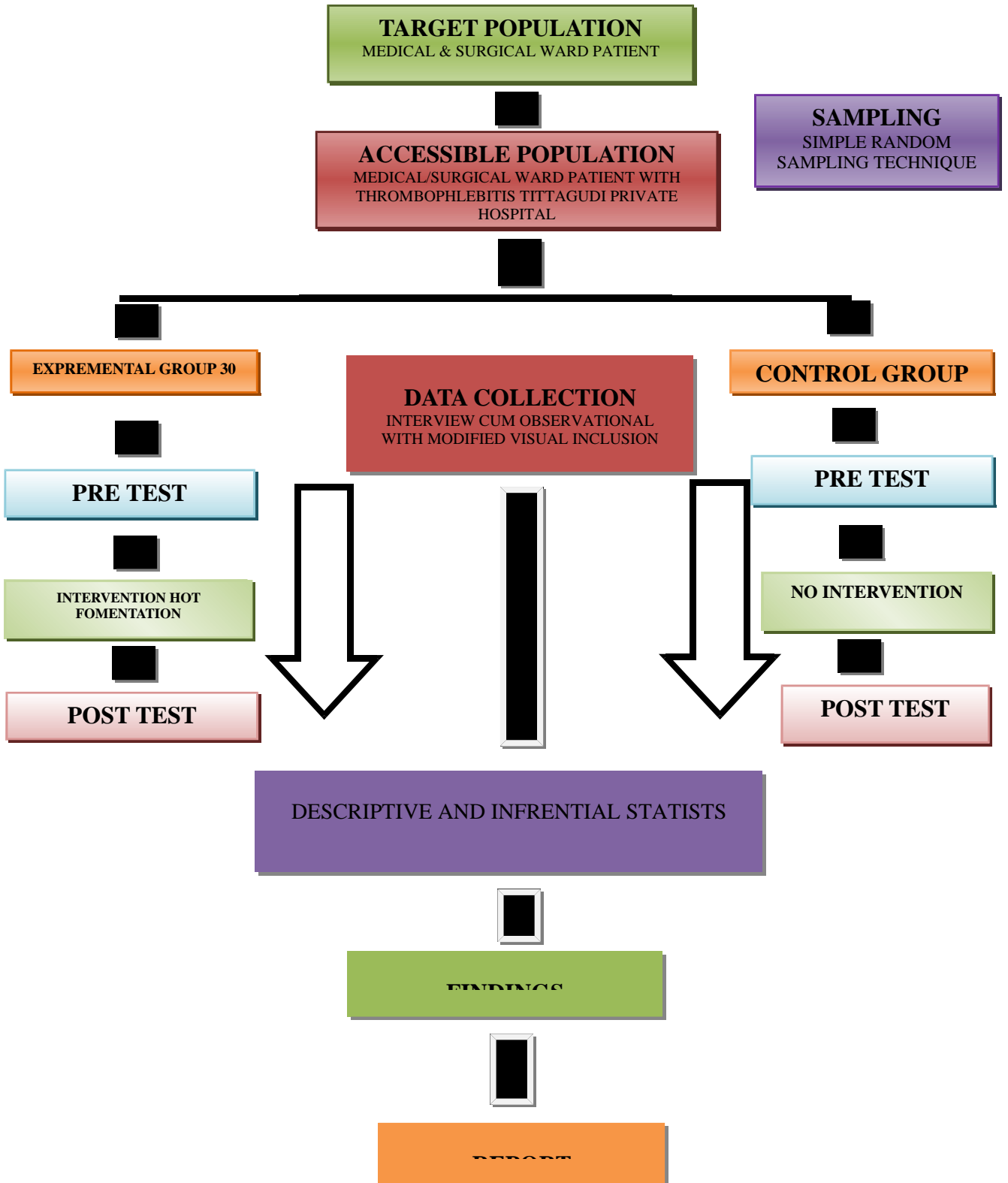
INFERENTIAL STATISTICS

1. The paired 't' test will be used to assess the effectiveness with group and independent 't' test will be used to assess the effectiveness of hot fomentation.
2. Chi square test will be used to find the association of post test scores with their selected demographic variables.

ETHICAL CONSIDERATION

- The study was performed after getting approval from the dissertation Ethical of committee, THANTHAI ROEVER COLLEGE OF NURSING.
- Permission was obtained from the managing director of Saidhanvanthiri hospital and medical superintendent of government hospital, Tittagudi.
- The written consent was obtained from each study participant before collecting the data.
- Confidentiality was maintained throughout the study.

SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY



CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

The analysis is a process of organizing and synthesizing the data in such a way that the research question can be answered and hypothesis tested (Polit and Hungler, 2011).

This chapter deals with analysis and interpretation of the data collected from 60 patients received intravenous therapy. The data was organized, tabulated and analyzed according to the objectives. The findings are presented under the following sections.

ORGANIZATION OF THE DATA

SECTION I: Description of the demographic variables of the patients with thrombophlebitis received intravenous therapy in experimental and control group.

SECTION II: Pre and post test level of thrombophlebitis among patients received intravenous therapy in experimental and control group.

SECTION III: Comparison of pre and post test mean score of Thrombophlebitis among patients received Intravenous therapy in experimental group and control group.

SECTION IV: Association of post test level of thrombophlebitis among patients received intravenous therapy with their selected demographic variables in the experimental group.

SECTION- I

Table 1: Frequency and percentage distribution of demographic variables of the patients with thrombophlebitis received intravenous therapy in experimental and control group.

N = 60(30+30)

Demographic Variables	Experimental Group		Control Group	
	F	%	F	%
Age in years				
21 – 30	9	30.00	16	53.33
31 – 40	12	40.00	4	13.33
41 – 50	9	30.00	8	26.67
51 – 60	0	0.00	2	6.67
Gender				
Male	12	40.00	16	53.33
Female	18	60.00	14	46.67
Diet pattern				
Vegetarian	5	16.67	5	16.67
Non-vegetarian	25	83.33	25	83.33
Habits				
Cigarette smoking	2	6.67	6	20.00
Alcohol	7	23.33	5	16.67
Tobacco	4	13.33	2	6.67
None	17	56.67	17	56.67
Body Mass Index				
Underweight	2	6.67	9	30.00
Normal	25	83.33	15	50.00
Overweight	3	10.00	6	20.00
Obese	0	0.00	0	0.00
Ambulation				
Mobilized	29	96.67	29	96.67
Partially mobilized	1	3.33	1	3.33
Immobilized	0	0.00	0	0.00

Demographic Variables	Experimental Group		Control Group	
	F	%	F	%
Size of cannula				
16 G	0	0.00	0	0.00
18 G	11	36.67	7	23.33
20 G	16	53.33	23	76.67
22 G	3	10.00	0	0.00
Frequency of medication				
Od	10	33.33	9	30.00
Bd	20	66.67	21	70.00
Tds	0	0.00	0	0.00
Qid	0	0.00	0	0.00
Continuous	0	0.00	0	0.00
Type of drugs				
Antibiotic	16	53.33	19	63.33
Anticoagulant	1	3.33	0	0.00
Inotropes	0	0.00	0	0.00
Other drugs	13	43.33	11	36.67
Types of intravenous fluids				
IV crystalloids	29	96.67	27	90.00
IV colloids	1	3.33	3	10.00
Blood	0	0.00	0	0.00
History of chronic disease				
Yes	3	10.00	7	23.33
No	27	90.00	23	76.67

The table 1 depicts that in experimental group majority 12(40%) of patients were in the age group of 31 – 40 years, and equal representation of 9(30%) to groups of 21-30 and 41-50 years. The Majority 18(60%) were female, and 12(40%) were male. The Majority 25(83.33%) were non-vegetarian, and 5(16.67%) were vegetarian. The Majority 17(56.67%) had no bad habits, 7(23.33%) were alcoholic, 4(13.33%) were of tobacco users, 2(6.66%) were smokers. The Majority of patients 25(83.33%) had Normal BMI, 3(10%) had overweight, 2(6.66%) had underweight. The majority of patients 29(96.67%) had been mobilized ambulated. Majority of patients 16(53.33%) were cannulated with 20G size of cannula, 11(36.67%) had 18G size of cannula, and 3(10%) had 22G size of cannula. The Majority of patients 20(66.67%) received bd

medication and 10(33.33%) received od medication. The Majority of patients 16(53.33%) received antibiotic, 13(43.33%) received other drugs. the majority of patients 29(96.67%) were administered with IV crystalloids. The Majority of patients 27(90%) had no history of chronic disease, and 3(10%) had the chronic disease.

In control group majority 16(53.33%) of patients were in the age group of 21 – 30 years, next majority 8(26.67%) in the age group of 41-50years, the least number of age group 2(6.67) 51-60 years. The equalent gender representation with 16(53.33%) male, and 14(46.67%) female. The Majority 25(83.33%) were non-vegetarian,5(16.67%) were vegetarian. The Majority 17(56.67%) had no bad habits, and 6(20.00%) were cigarette smokers, 5(16.67%) were alcoholic, 2(6.67%) were tobacco users. The Majority of patients 15(50%) had Normal BMI, 9(30%) were underweight, and 6(20%) were overweight. The Majority of patients 29(96.67%) had been mobilized ambulated and 1(3.33%) is partially mobilized ambulated. The Majority of patients 23(76.67%) were cannulated with 20G size cannula, 7(23.33) had 18G size of cannula. the majority of patients 21(70.%) received bd medication, 9(30%) received od medication. The Majority of patients 19(63.33%) received antibiotic, 11(36.67) received other drugs. The Majority of patients 27(90.00%) received crystalloids and 3(10%) were colloids. The Majority of patients 23(76.66%) had no history of chronic disease, and 7(23.33%) had the chronic disease.

Figure 2.1 Percentage distribution of body mass index among the patients in the experimental and control group

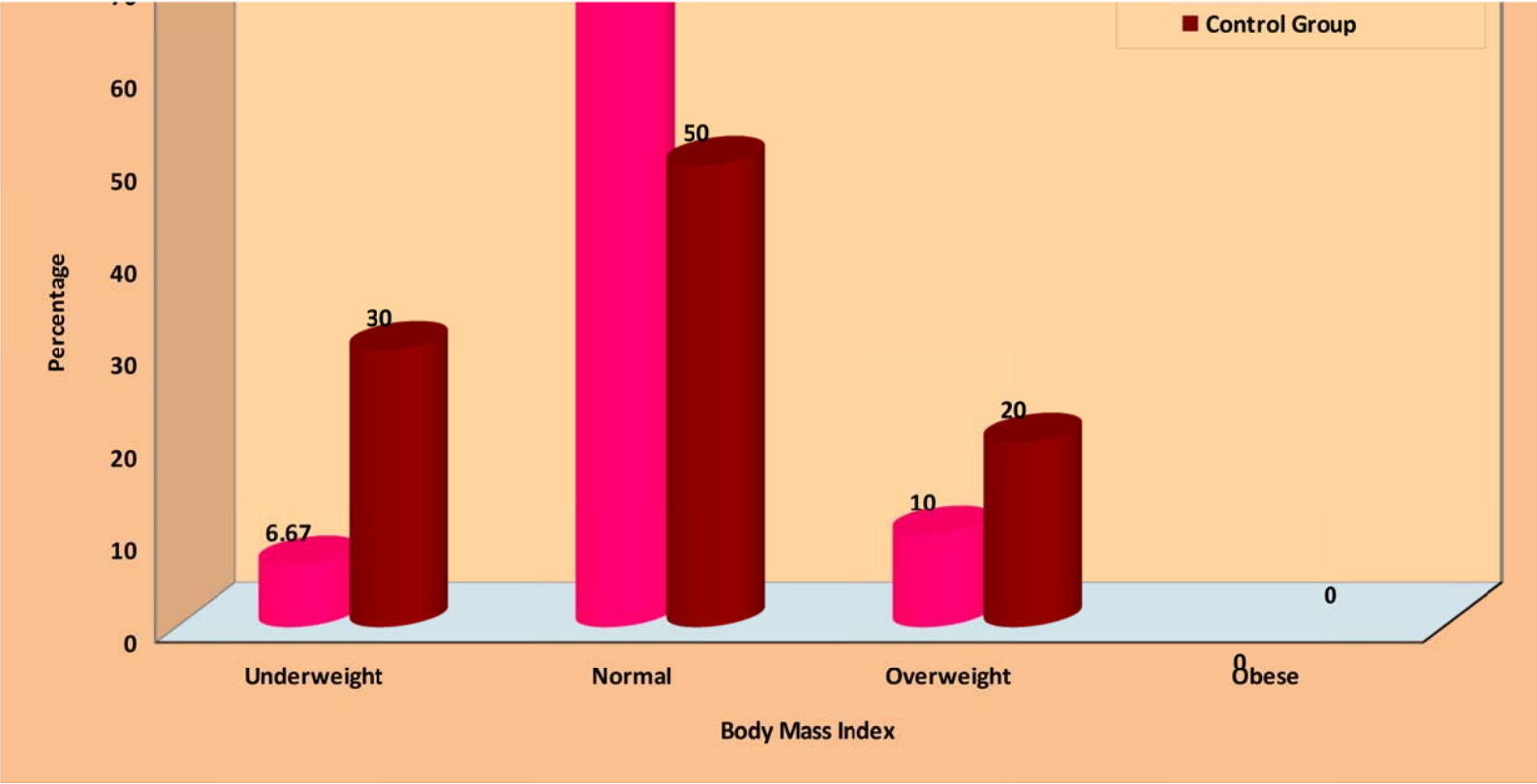


Figure 2.2Percentage distribution of size of cannula among the patients in the experimental and control group

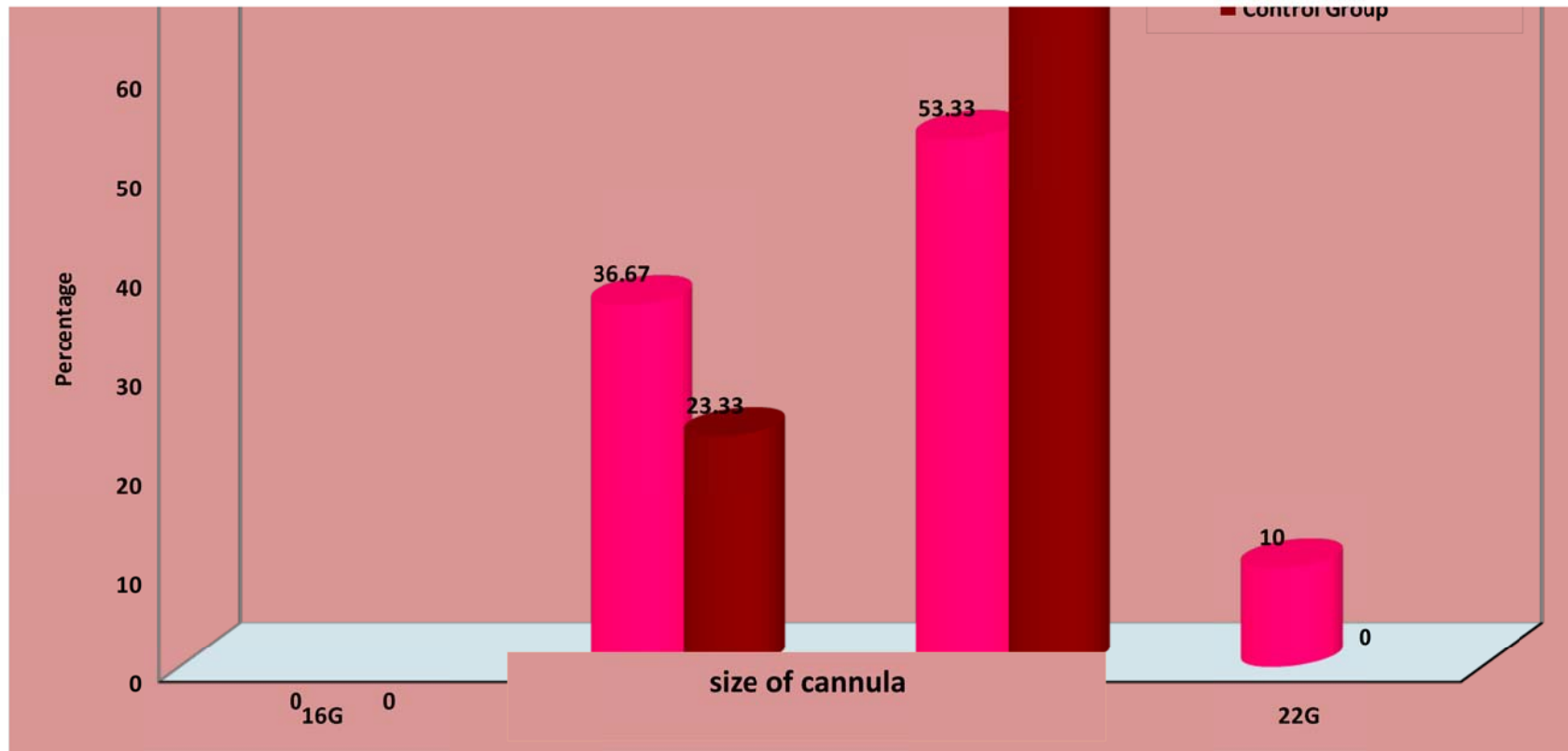
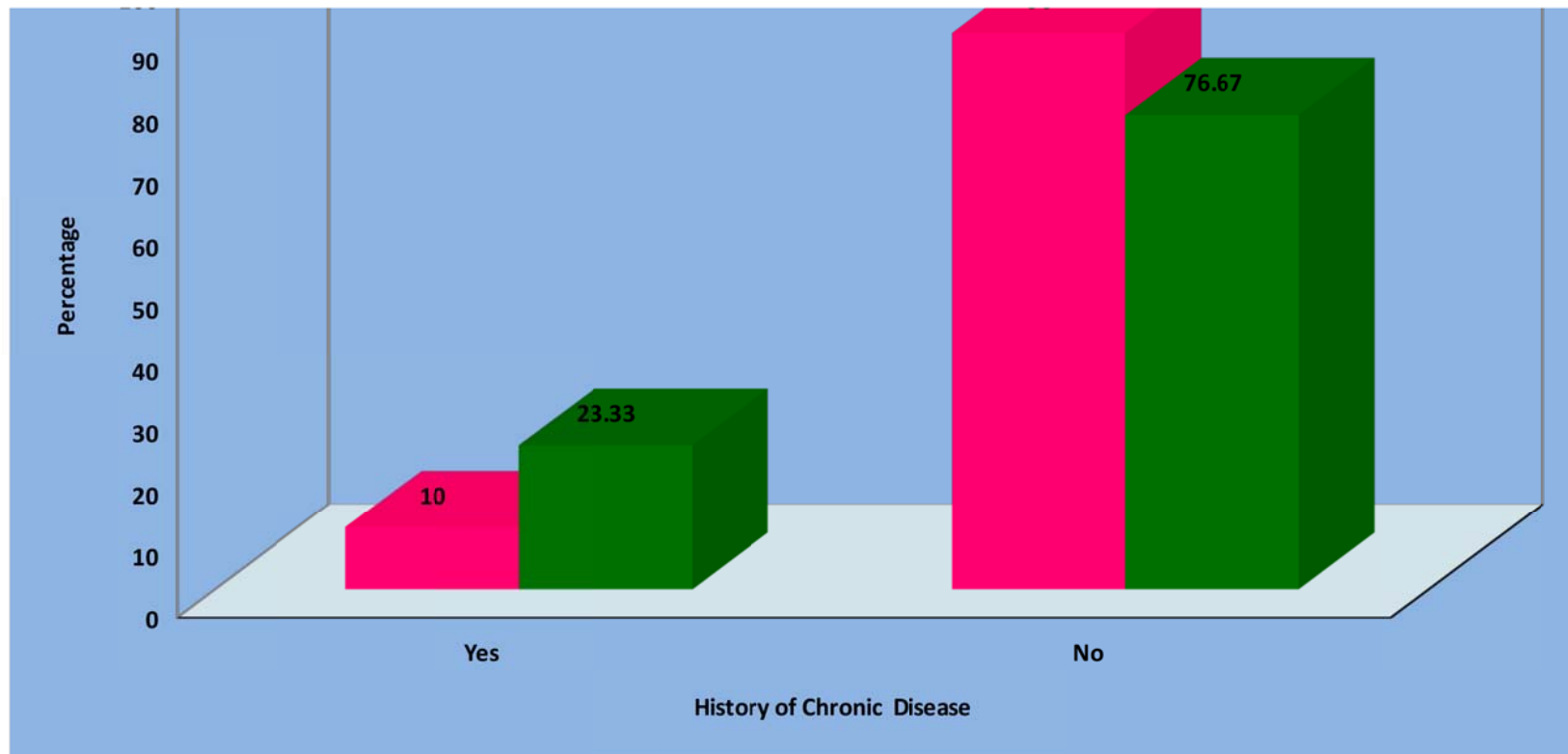


Figure 2.3 Percentage distribution of history of chronic disease among the patients in the experimental and control group



SECTION II

Table 2a: Frequency and percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in experimental group.

n=30

Level of thrombophlebitis	Pre test		Post test	
	F	%	F	%
No	0	0	13	43.33
Mild	0	0	17	56.67
Moderate	23	76.67	0	0
Severe	7	23.33	0	0

The table 2 shows that in pretest majority of the patients in the experimental group 23(76.67%) had moderate level of thrombophlebitis, 7(23.33%) had severe level of thrombophlebitis.

In the post test, majority 17(56.67%) had mild level of thrombophlebitis, 13(43.33%) had no thrombophlebitis.

Figure 3.1 Percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in experimental group

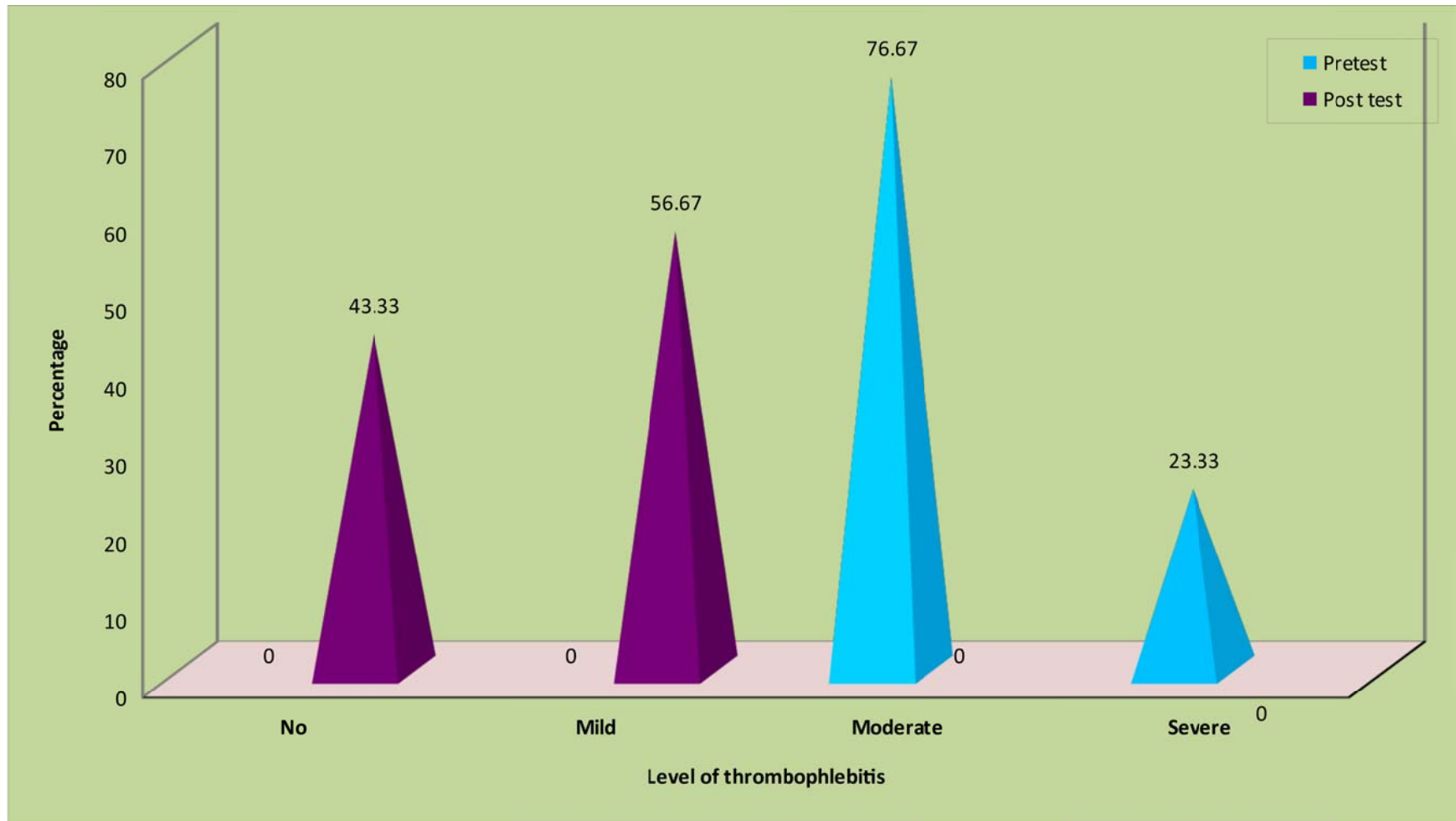


Table 2b: Frequency and percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in control group.

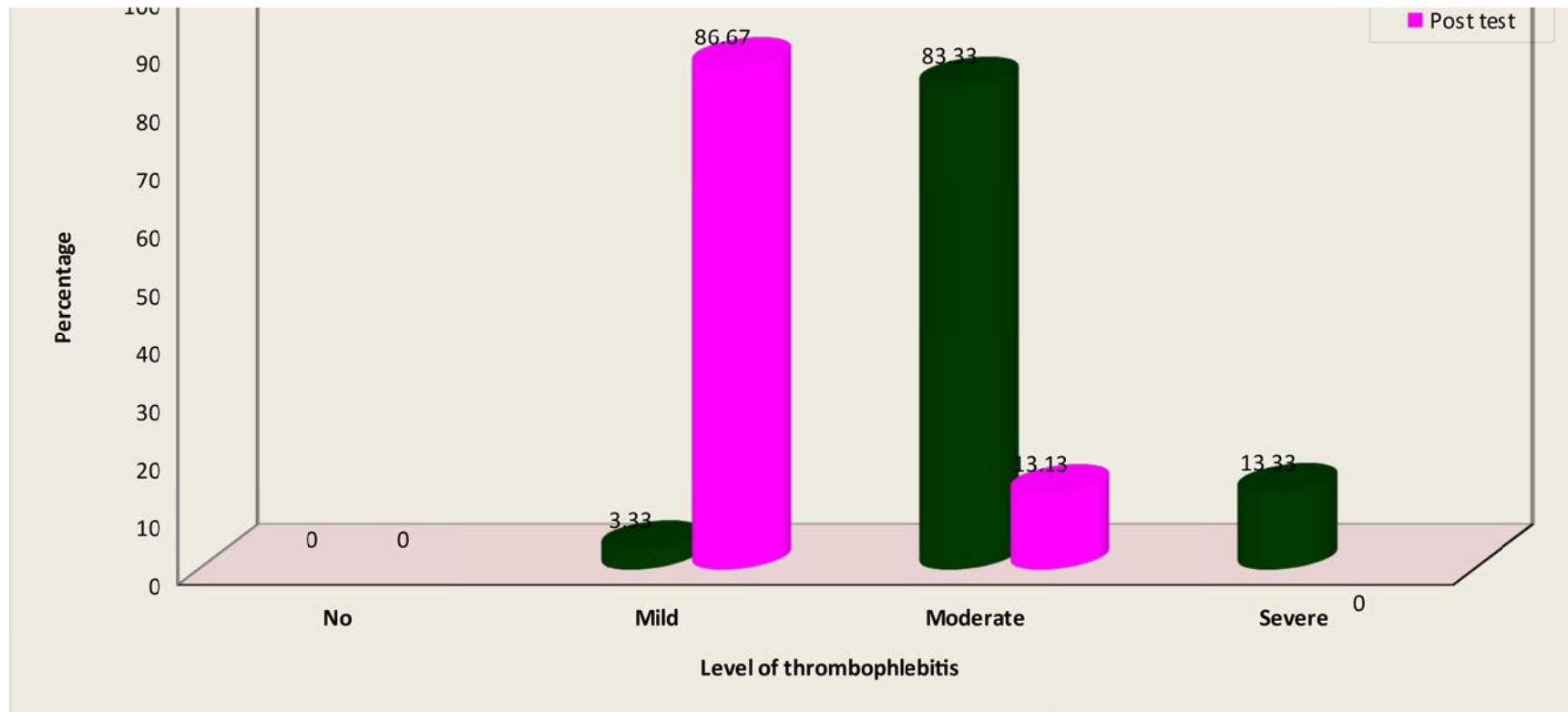
n = 30

Level of Thrombophlebitis	Pre test		Post test	
	F	%	F	%
No	0	0	0	0
Mild	1	3.33	26	86.67
Moderate	25	83.33	4	13.13
Severe	4	13.33	0	0

The table 3 shows that in pretest majority of the patients in the control group 25(83.33%) had moderate level of thrombophlebitis, 4(13.33%) had severe level of thrombophlebitis, 1(3.33%) had mild level of thrombophlebitis.

In post test, majority 26(86.67%) had mild level of thrombophlebitis, 4(13.13%) had moderate level of thrombophlebitis.

Figure 3.2 Percentage distribution of pre and post test level of thrombophlebitis among patients received intravenous therapy in control group



SECTION III

Table 3a: Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in experimental group.

n = 30

Experimental Group	Max Score	Mean	S.D	Mean Diff.	Paired 't' Value
Pretest	20	13.90	1.88	8.10	t = 24.551*** p = 0.000, S
Post Test	20	5.80	0.85		

***p<0.001, S – Significant

The table 3a shows that the pretest mean score of thrombophlebitis in experimental group was 13.90 with S.D 1.88 and the post test mean score was 5.80 with S.D 0.85. The mean difference was 8.10 and the calculated paired 't' value of t = 24.551 was found to be statistically significant at p<0.001 level.

Figure 4.1 Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in experimental group

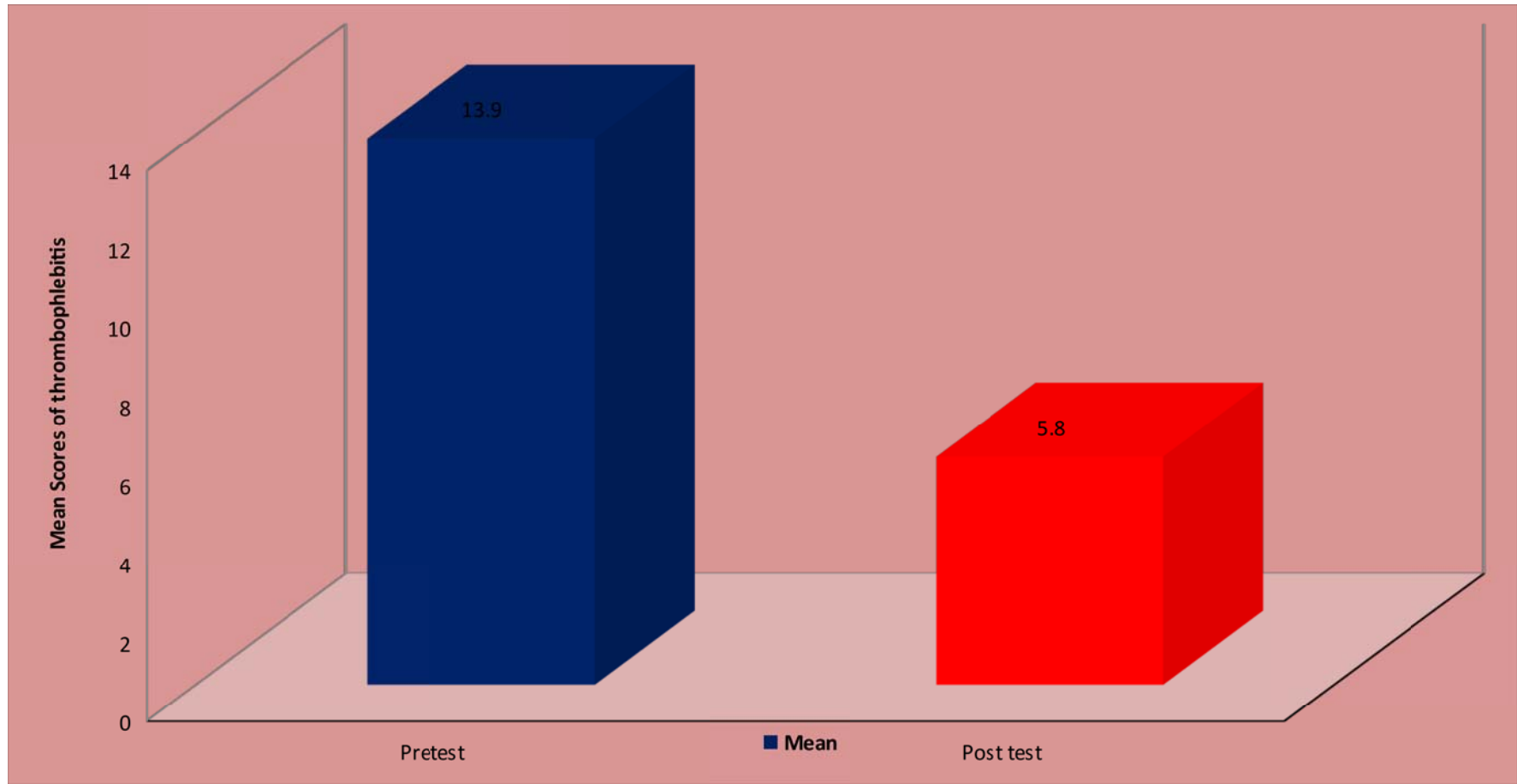


Table 3b: Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in control group.

n = 30

Control Group	M S	Mean	S.D	Mean Diff.	Paired 't' Value
Pretest	20	13.73	1.62	4.36	t = 15.509*** p = 0.000, S
Post Test	20	9.37	1.52		

***p<0.001, S – Significant

The table 3b shows that the pretest mean score of thrombophlebitis in control group was 13.73 with S.D 1.62 and the post test mean score was 9.37 with S.D 1.52. The mean difference was 4.36 and the calculated paired 't' value of t = 15.509 was found to be statistically significant at p<0.001 level.

Figure 4.2 Comparison of pre and post test mean score of thrombophlebitis among patients received intravenous therapy in control group

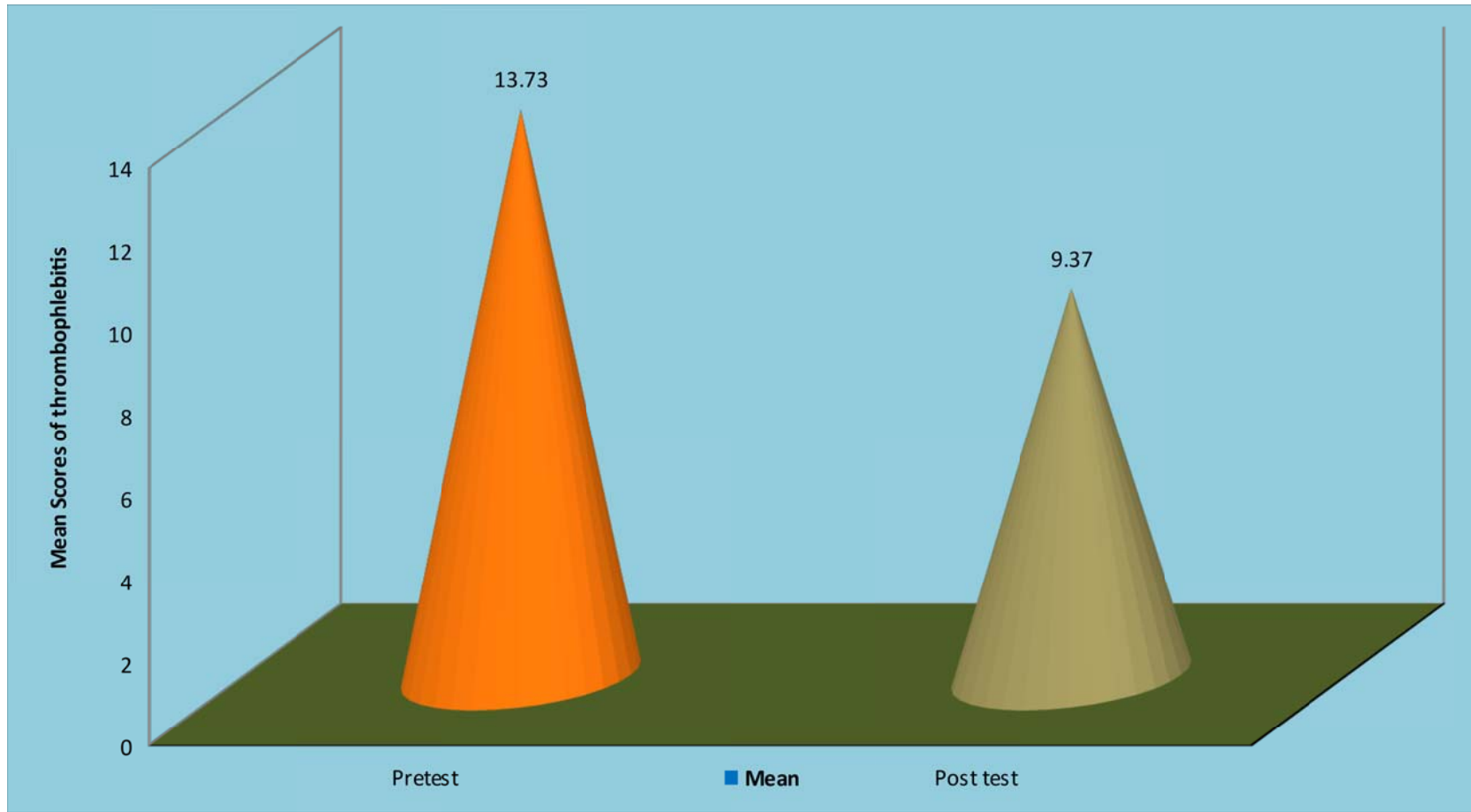


Table 3c: Comparison of post test mean score of thrombophlebitis among patients received intravenous therapy between the experimental and control group.

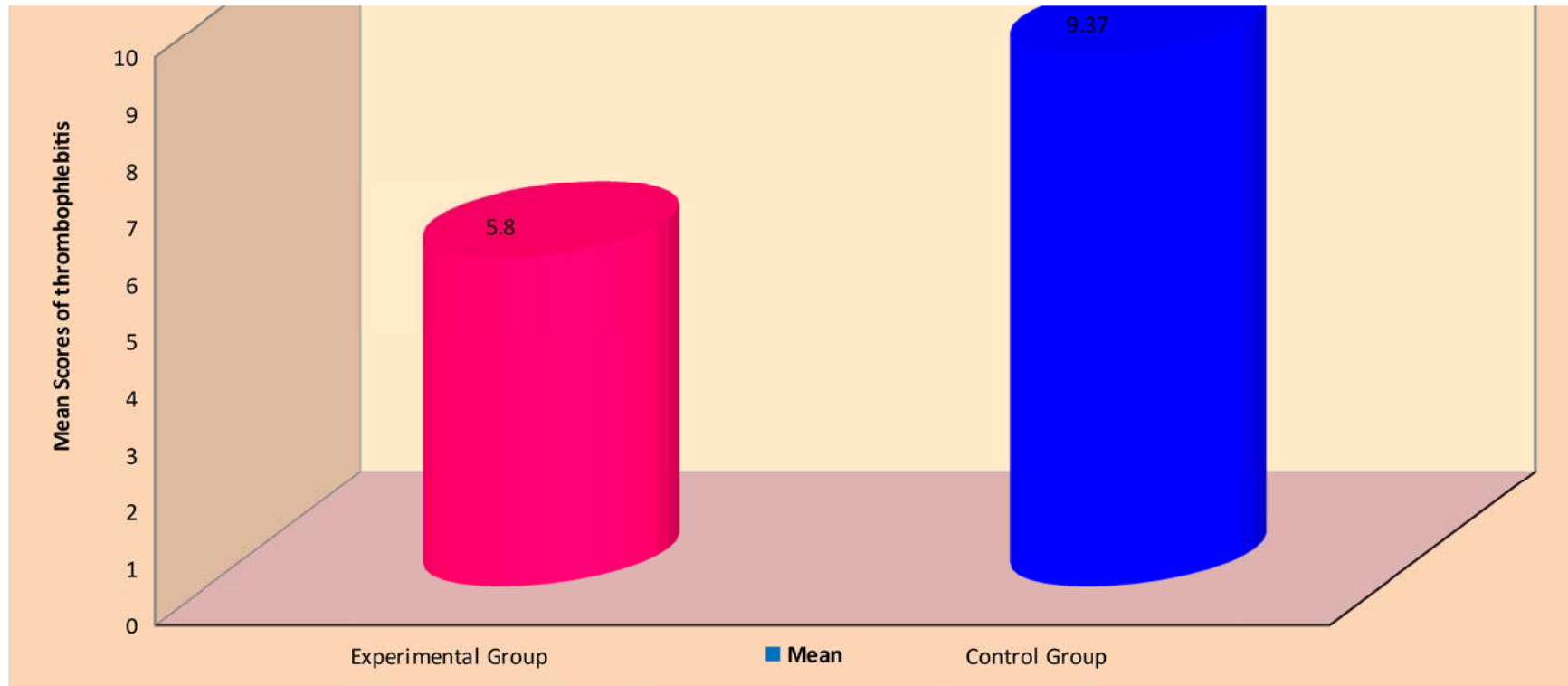
N = 60(30+30)

Group	Mean	S.D	Mean Diff.	Unpaired 't' Value
Experimental Group	5.80	0.85	3.57	t = 11.229*** p = 0.000, S
Control Group	9.37	1.52		

*p<0.05, S – Significant

The table 3c shows that the post test mean score of thrombophlebitis in experimental group was 5.80 with S.D 0.85 whereas in the control group the post test means score was 9.37 with S.D 1.52. The mean difference was 3.57 and the calculated unpaired 't' value of $t = 11.229$ was found to statistically significant at $p < 0.05$ level.

Figure 4.3 Comparison of post test mean score of thrombophlebitis among patients received intravenous therapy between the experimental and control group



SECTION IV

Table 4a: Association of post test level of thrombophlebitis among patients received intravenous therapy with their selected demographic variables in the experimental group.

n = 30

Demographic Variables	No		Mild		Chi-Square Value
	No.	%	No.	%	
Age in years					$\chi^2 = 0.928$ d.f = 2 p = 0.629 N.S
21 – 30	5	16.7	4	13.3	
31 – 40	5	16.7	7	23.3	
41 – 50	3	10.0	6	20.0	
51 – 60	-	-	-	-	
Gender					$\chi^2 = 0.362$ d.f = 1 p = 0.547 N.S
Male	6	20.0	6	20.0	
Female	7	23.3	11	36.7	
Diet pattern					$\chi^2 = 0.027$ d.f = 1 p = 0.869 N.S
Vegetarian	2	6.7	3	10.0	
Non-vegetarian	11	36.7	14	46.7	
Habits					$\chi^2 = 0.141$ d.f = 3 p = 0.986 N.S
Cigarette smoking	1	3.3	1	3.3	
Alcohol	3	10.0	4	13.3	
Tobacco	2	6.7	2	6.7	
None	7	23.3	10	33.3	
Body Mass Index					$\chi^2 = 7.846$

Demographic Variables	No		Mild		Chi-Square Value
	No.	%	No.	%	
Underweight	2	6.7	0	0	d.f = 2 p = 0.029 S*
Normal	8	26.7	17	56.7	
Overweight	3	10.0	0	0	
Obese	-	-	-	-	
Ambulation					$\chi^2 = 0.791$
Mobilized	13	43.3	16	53.3	d.f = 1
Partially mobilized	0	0	1	3.3	p = 0.374
Immobilized	-	-	-	-	N.S
Size of cannula					$\chi^2 = 0.907$
16 G	-	-	-	-	d.f = 2
18 G	5	16.7	6	20.0	p = 0.635
20 G	6	20.0	10	33.3	N.S
22 G	2	6.7	1	3.3	
Frequency of medication					$\chi^2 = 3.326$
Od	2	6.7	8	26.7	d.f = 1
Bd	11	36.7	9	30.0	p = 0.068
Tds	-	-	-	-	N.S
Qid	-	-	-	-	
Continuous	-	-	-	-	
Type of drugs					$\chi^2 = 1.434$
Antibiotic	7	23.3	9	30.0	d.f = 2
Anticoagulant	1	3.3	0	0	p = 0.488
Inotropes	-	-	-	-	N.S
Other drugs	5	16.7	8	26.7	
Types of intravenous fluids					$\chi^2 = 1.353$
IV crystalloids	12	40.0	17	56.7	d.f = 1

Demographic Variables	No		Mild		Chi-Square Value
	No.	%	No.	%	
IV colloids	1	3.3	0	0	p = 0.245
Blood	-	-	-	-	
History of chronic disease					
Yes	3	10.0	0	0	$\chi^2 = 4.359$ N.S d.f = 1 p = 0.037 S*
No	10	33.3	17	56.7	

*p<0.05, S – Significant, N.S – Not Significant

The table 4a shows that the demographic variables body mass index and history of chronic disease have shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy at p<0.05 level in the experimental group. The other demographic variables had not shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy.

CHAPTER V

DISCUSSION

The main aim of the study was to assess the effectiveness of hot fomentation on thrombophlebitis among patient received IV therapy at Government and Private Hospitals, Tittagudi. The research design adopted for this study was pre test and post test control group design. The setting of the study was Government and Private Hospitals, Tittagudi. The sample size consists of 60 sample in which 30 sample were in the Experimental group [hot fomentation] and 30 in the control group.

The First objective of the study was to assess the level of thrombophlebitis among patients received IV therapy.

In pretest the majority of the patients in the experimental group 23(76.67%) had moderate level of thrombophlebitis whereas in the post test, majority 17(56.67%) had mild level of thrombophlebitis 13% had no thrombophlebitis.

In pretest the majority 25(83.33%) had moderate level of thrombophlebitis whereas in the post test, majority 26(86.67%) had mild level of thrombophlebitis among patients in the control group.

The second objective of the study was to assess the effectiveness of hot fomentation on the thrombophlebitis among patient received IV therapy.

The pretest mean score of thrombophlebitis of experimental group was 13.90 with S.D 1.88 and the post test mean score was 5.80 with S.D 0.85. The mean difference score was 8.10 and the calculated paired 't' value of $t = 24.551$ was found to be statistically significant at $p < 0.001$ level.

The pretest mean score of thrombophlebitis in control group was 13.73 with S.D 1.62 and the post test mean score was 9.37 with S.D 1.52. The mean difference was 4.36 and the calculated paired 't' value of $t = 15.509$ was found to be statistically significant at $p < 0.001$ level.

The post test mean score of thrombophlebitis in experimental group was 5.80 with S.D 0.85 whereas in the control group the post test means score was 9.37 with S.D 1.52. The mean difference was 3.57 and the calculated unpaired 't' value of $t = 11.229$ was found to be statistically significant at $p < 0.001$ level.

Based on the study findings the stated hypothesis **H₁ there is a significant reduction in thrombophlebitis after hot fomentation among patient received intravenous therapy** was accepted.

The third objectives to associate the post test level of thrombophlebitis among patient received IV therapy with their selected demographic variables.

The demographic variables body mass index and history of chronic disease had shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy at $p < 0.05$ level in the experimental group.

There was no significant association found between variables of age, gender, diet, habits, ambulation, size of cannula, frequency of medication, types of drugs, types of intravenous fluids and the post test level of thrombophlebitis.

Hence the stated hypothesis **H₂ There is a significant association between the post test level of thrombophlebitis and selected demographic variables among patients received intravenous therapy** was not accepted.

CHAPTER VI

SUMMARY, MAJOR FINDINGS, IMPLICATIONS, RECOMENDATION AND CONCLUSION

This chapter was divided into two sections In the first section. summary of the study, findings and conclusions were presented. In the second section, the implication in various areas of nursing practice, nursing education, nursing administration, nursing research, limitation and recommendation for further study were presented.

SUMMARY OF THE STUDY

The main objective of the study was to assess the effectiveness of hot fomentation on the thrombophlebitis among patients received intravenous therapy in government and private hospital Tittagudi.

A Quantitative Evaluative approach, True experimental pre test- posttest control group design were adopted for this study. Simple random sampling technique was used to select the sample and the sample size was 60. Conceptual frame work-ludwig von Bertalanffy's general system model was used for this study.

The tool selected for the present study included structure questionnaire for demographic variables, modified visual infusion phlebitis scale to assess the thrombophlebitis among patient received intravenous therapy.

The intervention of moist heat fomentation over the site of thrombophlebitis for 15 minutes, morning and evening 2 times a day for 3 days was done. Post test was done with the same scale on fourth day. The researcher herself collected the data by using the observation visual infusion phlebitis scale.

The collected data were analyzed by the descriptive and inferential statistics, interpreted in terms of objectives and hypotheses of the study. The study revealed the hot fomentation is found effective reduction of the thrombophlebitis among patient received intravenous therapy.

I MAJOR FINDINGS OF THE STUDY

- Majority (40%) of the patients in experimental group belongs to 31-40 years and (53.33%)in control group belongs to age group of 21 – 30 years.
- Majority (60%) of the patients were female in experimental group and (53%) were male in control group.
- Majority (83.33%) of patients were non-vegetarian in both the groups.
- Majority (56.67%) of patients had no bad habits in both groups.
- Majority (83.33) of patients in experimental group and (50%) in control group had normal BMI.
- Majority (96.67%) of patients had been mobilized ambulated in both groups.
- Majority (53.33%) of the patients in experimental group and (76.67%) in control group were cannulated with 20G cannula.
- Majority (66.67%) of the patients in experimental group and (70%) in control group received bd medication.
- Majority (53.33%) of the patients in experimental group and (66.33%) in control group were administered antibiotic.

- Majority (96.67%) of the patients in experimental group and (90%) in control group were us on intravenous crystalloids infusion.
- Majority (90%) of the patients in experimental group and (76.66%) in control group had no history of chronic disease.

II FINDINGS RELATED TO STUDY INTERVENTION

1. In the pretest, majority of the patients in the experimental group 76.67% had moderate level of thrombophlebitis whereas in the post test, majority 56.67% had mild level of thrombophlebitis among patients in the experimental group with 13% no thrombophlebitis.
2. In the pretest, majority of the patients in the control group 83.33% had moderate level of thrombophlebitis whereas in the post test, majority 86.67% had mild level of thrombophlebitis among patients in the control group.
3. In the pretest, mean score of thrombophlebitis in experimental group was 13.90 with S.D 1.88 and the post test mean score was 5.80 with S.D 0.85. The mean difference score was 8.10 and the calculated paired 't' value of $t = 24.551$ was found to be statistically significant at $p < 0.001$ level.
4. In the pretest, mean score of thrombophlebitis in control group was 13.73 with S.D 1.62 and the post test mean score was 9.37 with S.D 1.52. The mean difference score was 4.36 and the calculated paired 't' value of $t = 15.509$ was found to be statistically significant at $p < 0.001$ level.

5. The demographic variables body mass index and history of chronic disease had shown statistically significant association with the post test level of thrombophlebitis among patients received intravenous therapy at $p < 0.05$ level in the experimental group.

IMPLICATIONS

The findings of the study have implication in various areas of nursing practice, nursing education, nursing administration and nursing research.

IMPLICATION FOR NURSING PRACTICE

- ❖ The practice nurse uses the hot fomentation for thrombophlebitis to reduce it.
- ❖ The nurse should contribute to the evidence based practice through the experience gained from hot fomentation to reduction in the thrombophlebitis.

IMPLICATIONS FOR NURSING EDUCATION

- ❖ The nurse educator should be oriented, guided and trained in hot fomentation on thrombophlebitis among patients received intravenous therapy.
- ❖ The student can be educated to hot fomentation to reduce the thrombophlebitis among patients received intravenous therapy is to be practiced.
- ❖ Encourage the students for effective utilization of research based practice.

IMPLICATION FOR NURSING ADMINISTRATION:

- ❖ Nursing administrator can formulate protocols and organize continuing nursing education programme on in-service education programme for

health professional regarding the effectiveness of hot fomentation on thrombophlebitis among patient received intravenous therapy.

- ❖ Update their knowledge about current practices and to effectiveness of hot fomentation to reduce the thrombophlebitis through the journals, conference and seminar.

IMPLICATION FOR NURSING RESEARCH:

- ❖ As researches promote more research on to assess the management for thrombophlebitis reduction among patient received intravenous therapy.
- ❖ Promote effective utilization of research findings on patient who have thrombophlebitis.
- ❖ Disseminate the findings of the research through conferences seminars and publishing in nursing journals.
- ❖ The study can be conducted in a larger population to generalize the findings.

LIMITATIONS

- ❖ Sample size only 60
- ❖ Data collection period is 4 weeks only
- ❖ Study setting is limited to only two hospitals

RECOMMENDATIONS

The study recommends the following future research:

- ❖ The similar study can be conducted in with larger samples for better generalizations.
- ❖ The study can be conducted two different settings with similar facilities.
- ❖ The study can be conducted in different age group of people.

CONCLUSION:

The purpose of this study was used to assess the effectiveness of hot fomentation on reducing thrombophlebitis among patient received intravenous therapy in government and private hospital in Tittagudi. From the above findings, it evident that hot fomentation is effective in reducing thrombophlebitis among patients received intravenous therapy.

On the whole, carrying out the present study was really an enriching experience to the investigator. It also helped a great deal to explore and improve the knowledge of the researcher and the respondents..

REFERENCES

BOOKS

Basavanthappa B.T (2007) Nursing Research (3rded.).Banglore:Jaypee Brothers Publications.P:1 30-140.

Black M.j.et al (2005) Medical Surgical Nursing. (8th ed). Vol(1)Philapeiphia: W.B Saunders. P:981

Brunner et al (2012) Text Book of Medical Surgical Nursing. (10th ed). Lippincott Williams Wilkins.P:707 –708.

Carol Et Al (2000), “Fundamentals of nursing “.Philadelphia lippencott. P: 1153-1170.

HumphrisD . Achieving Evidience – Based Practice: A hand Book for Practioners BailliereTindall, Edinburg In: Hamer S, Collinson G (eds).2004. P: 13 –19.

Kozier&Erb`s (2008). Fundamentals of Nursing (8thed), Dorling Kindersley publishers. New delhi.P:963

Krozec C. Nursing procedures. Pennsylvania: Springhouse Corporation. 1992. P: 269 -273.

Lppincott. Manual of nursing practice 8th ed.2006. jaypee Brothers publications. India. P:98–99.

Lewis L.S (2011) Medical Surgical Nursing (7thed)), Missouri:Mosby Publishers.P: 912–914.

Linda D Urden–(2011). Critical care Nursing. 6th ed. Mosby elsevier Publications.P: 336-337.

Potter A Patrica, Perry Griffin Anne, Fundamentals of Nursing, 6th edition New delhi. Elsevier Publisher; 2008. P: 799–822.

Philp's (2007). Medical Surgical Nursing, 8th edn, Mosby Publisher st.Louis. P-798

Polit & Hungler. (1999). Nursing Research Principles and Methods Lippicott Publishers. Philadelphia.

Potter & Perry (1997). Fundamentals of Nursing, 4th edn. Mosby Publishers St.Louis.P: 1022–1024.

Polt Beck. Essentials of nursing Research 7th ed. 2010. woltersKluwer Publications Newdelhi. P: 337-369.

Roasundar. (1996). An introduction to Biostatistics. New Hall of India Publishers. New delhi.

Suresh K Sharma. Nursing research and Statistics. 2012. Elsevier Publications. India. P: 93-143.

JOURNAL REFERENCE

Anjum S. The effectiveness of hot fomentation v/s cold compress for Reducing intravenous infiltration Nursing Journal of India. 2007; November XCVII(11):253-254.

Barnum, Barbara.S. Nursing theory. 5th Edition, Philadelphia, Lippincott Company, 1998.

Everitt, N.J. et al. Fine bore silicone rubber and polyurethane catheters for the delivery of complete nutrition via the peripheral line. Journal of hospital infection, 1989;13(1)

Everitt, N.J. and McMohan, M.J. Influence of fine-bore catheter length on infusion thrombophlebitis in peripheral Intravenous nutritional support services, 1997. Leeds; 79(3)

Lanbeck, P. et al. Perception of risk factors for infusion phlebitis among Swedish nurses: a questionnaire study. Journal of Infusion Nursing, 2004; 27(1)

Kennlyside, D. Infection control in IV therapy. Professional Nurse, 1992;7(4).

Madan, M., Alexander, D.J. and McMohan, M.J. Influence of catheter Type on occurrence of thrombophlebitis during peripheral intravenous nutrition. Lancet, 1992; 339(8785)

Parker, Lynn. Management of intravascular devices to prevent infection. British Journal of Nursing, 2002;11(4)

Parker, Lynn. IV device and related infections: causes and complications. British Journal of Nursing, 1999;8(22)

Trehan,N. et al. The effect of cannula material on the incidence of peripheral venous thrombophlebitis. *Anesthesia*, 2007; 62(11)

Tagalakis,V. The epidemiology of peripheral vein infusion thrombophlebitis. *American Journal of Medicine*,2002;113(2)

Wilson,J.A. Preventing infection during IV therapy. *Professional Nurse*, 199; 9(6).

NET REFERENCES

<http://www.nature.com/hr/>

<http://www.ashjournals.com/>

<http://www.ncbi.nlm.nih.gov/pubmed/6509875>.

<http://www.ncbi.nlm.nih.gov/pubmed/2643500>.

<http://www.ncbi.nlm.nih.gov/pubmed/21730915>.

<http://www.gosh.nhs.uk/health-professional/clinical-guidelines/peripheral-venous-cannulation>.

<http://www.ncbi.nlm.nih.gov/pubmed/16930104>.

<http://www.ncbi.nlm.nih.gov/pubmed/9379571>.

http://www.nursingcentre.com/prodev/ce_article.

<http://www.ncbi.nlm.nih.gov/pubmed/17244243>.