

**EFFECTIVENESS OF *ALOE VERA* GEL APPLICATION VERSUS  
MAGNESIUM SULPHATE APPLICATION ON REDUCTION OF  
INTRAVENOUS PHLEBITIS AMONG ADULT PATIENTS IN  
ANNAMMAL HOSPITAL, KUZHITHURAI**



By

301512202

**A DISSERTATION SUBMITTED TO THE TAMIL NADU  
Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF SCIENCE  
IN NURSING**

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HOSPITAL, KUZHITHURAI**

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*Certified that this is the bonafide work of*

*301512202*

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*Submitted in partial fulfillment of the requirements for  
the degree of Master of Science in Nursing from  
The Tamilnadu Dr. M.G.R. Medical University, Chennai.*

**EXAMINERS**

1. ....

2. ....

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**Principal**

**OCTOBER -2017**

## DECLARATION

I hereby declare that the present dissertation titled as “**A comparative study to assess the effectiveness of *Aloe vera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammmal Hospital,Kuzhithurai**” is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. J.M JerlinPriyaM.Sc(N), Ph.D, Principal cum professor** in the Department of Medical Surgical Nursing, and **Mrs. Starina FlowerM.Sc(N), AssistantProfessor**, In the department of Medical Surgical Nursing. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in the university or any other university.

**301512202**  
**M.Sc (N) II year**

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## **ABSTRACT**

**A comparative study to assess the effectiveness of *Aloe vera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai.**

## **INTRODUCTION**

Today in hospital setting, intravenous (IV) therapy has become a major component of patient care. Intravascular lines are used for monitoring pressures, administering drugs and fluids. A common problem encountered during IV therapy is the phlebitis, ie the inflammation of the venous wall near the point of entry of the cannula into the veins. It is often due to patient movement and disruption of vein at the site of insertion of the cannula. The patients who are on cytotoxic drugs, hyper osmolar agents and vaso active drugs are more prone to phlebitis. Intravenous infusion has become an indispensable component in the medical therapy. It is used to correct electrolyte imbalances; to deliver medications; blood transfusions or as fluid replacement. In spite of its therapeutic effects the most encountered problems are phlebitis, infiltration, extravasations etc.

The Infusion Nurses Society, National standards of practice (Australia) stated that a nurse who administers IV medication or fluid must know its adverse effects and appropriate interventions to be taken before starting the infusion. Hence nurses need to be aware of and consider certain interventions to reduce phlebitis when managing IV therapy in patients.

## **STATEMENT OF THE PROBLEM**

A comparative study to assess the effectiveness of *Aloevera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai.

## **OBJECTIVES OF THE STUDY ARE**

- To assess the degree of Intravenous phlebitis in before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in experimental group I and II
- To assess the effectiveness by comparing the post-test degree of Intravenous phlebitis among adult patients in experimental group I and II.
- To associate the degree of phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II.

## **HYPOTHESES**

H1: There will be a significant difference in the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in group I and II.

H2: There will be a significant difference in the post-test degree of phlebitis among adult patients in group I and II.

H3: There will be a significant association between the degree of phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II.

## **RESEARCH METHODOLOGY**

The study was conducted in order to assess the effectiveness of application of *Aloe vera* gel and magnesium sulphate in reduction of Intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai. The degree of phlebitis was assessed by a modified phlebitis Scale and also the socio demographic and clinical variables of adult patients were gathered from the participant's profile. After the conduction of pre-test, the data was analyzed for presence of phlebitis. They were 60 in number who met the inclusion criteria. 30 adult patients were allotted for experimental group I and 30 adult patients were allotted for experimental group II by using the non Probability Convenient

sampling technique. The intervention of *Aloe vera* gel was applied to experimental group I and magnesium sulphate was applied to experimental group II (each patient 2 days care). The patients cooperated well during data collection periods. On 2<sup>nd</sup> day after the intervention post-test was conducted using the same tool by the investigator.

### **DATA ANALYSIS**

Paired t-test was used to assess the effectiveness of application of *Aloe vera* and magnesium sulphate on reduction of phlebitis among adult patients in Experimental group I and II. Chi square test was used to find out the association between the post-test degree of Intravenous phlebitis among adult patients with selected socio demographic and clinical variables in experimental group I and II.

### **RESULT AND SUMMARY**

In experimental group I, the mean post-test score was 1.656 with standard deviation of 0.570 where as in experimental group II, the mean post-test was 1.432 with standard deviation of 1.145. The obtained t-test value was 4.388 and the P value was 0.01. Also the table value was 0.002 which was less than calculated value. This shows that magnesium sulphate was more effective than *Aloe vera* gel in treating phlebitis. Therefore, the research hypothesis H<sub>2</sub> was accepted.

### **CONCLUSION**

The study concluded that magnesium sulphate was more effective than *Aloe vera* gel application in reducing the degree of intravenous phlebitis among adult patients

## **CHAPTER –I**

“If you focus on results  
Things will not be changed;  
If you focus on change  
You will see results”

**Jack Dixon**

### **INTRODUCTION**

Health is a dynamic process and it is always changing. All have times of good health, times of sickness, and may be even times of serious illness. As lifestyles change, so does the level of health. Health is the level of functional and (or) metabolic efficiency of a living being. It is the general condition of a person in the mind, body and spirit, usually meaning to be free from illness, injury or pain.

An impairment of the normal state of a human being that interrupts or modifies its vital functions is known as disease. Medical treatment can be defined as the therapies such as prescription of medications or others that are specifically ordered and supervised by a physician. Intravenous devices are commonly used among hospitalized patients in the modern practice of medicine.

Today in hospital setting, intravenous (IV) therapy has become a major component of patient care. Intravascular lines are used for monitoring pressures, administering drugs and fluids. A common problem encountered during IV therapy is the phlebitis, ie the inflammation of the venous wall near the point of entry of the cannula into the veins. It is often due to patient movement and disruption of vein at the site of insertion of the cannula. The patients who are on cytotoxic drugs, hyper osmolar agents and vaso active drugs are more prone to phlebitis.

Intravenous infusion has become an indispensable component in the medical therapy. It is used to convert electrolyte imbalances; to deliver medications; blood transfusions or as fluid replacement. In spite of its therapeutic effects the most encountered problems are phlebitis, infiltration, extravasations etc. Unfortunately,



they are so common that they are sometimes overlooked or not addressed as soon as they produce debilitating effects.

The Infusion Nurses Society, National standards of practice (Australia) stated that a nurse who administers IV medication or fluid must know its adverse effects and appropriate interventions to be taken before starting the infusion. Hence nurses need to be aware of and consider certain interventions to reduce phlebitis when managing IV therapy in patients.

Phlebitis is an inflammation of a vein that may be caused by infection, the presence of a foreign body or the fluids or medication being given. Symptoms are warmth, swelling, pain, and redness around the vein. The intravenous device must be removed and if necessary re-inserted into another extremity. The treatment of phlebitis consists of self-care steps that include applying warm compress to the affected area, elevating the affected area etc. Phlebitis is classified according to the phlebitis assessment scale as Grade 0 - no symptoms; Grade 1 - erythema with or without local pain; Grade 2 - erythema with pain and or local edema; Grade 3 - in addition to the clinical signs of grade 2, the presence of a palpable fibrous cord along the vein; and Grade 4 - in addition to grade 3, presents a long palpable venous cord, with purulent drainage.

*Aloe vera* has been known and used for centuries for its health, beauty and skin care. It has long history of use as an inflammatory herbal application for burns and for a variety of conditions in traditional medicine. *Aloe Vera* used either internally or externally in humans has some medicinal effects which have been supported by scientific and medical research. *Aloe vera* contains carboxy peptidase that activates bradykinin, salicylates and substances with local vasoconstriction. The anti-inflammatory compound called c-glucosylchromone has been isolated from gel extracts.

Magnesium sulphate is an inorganic salt containing magnesium, sulphur and oxygen with the formula of  $MgSO_4$ . It moisturizes and cleanses the skin. It instantly kills all the bacteria as soon as it comes in contact with the bacteria. Magnesium sulphate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. Additionally, Magnesium inhibits  $Ca^{2+}$  influx through hydroxydipyrone-sensitive,

voltage-dependent channels. This accounts for much of its relaxant action on vascular smooth muscle.

As a bath salt, Magnesium sulphate is often used to help in reducing the appearance of skin pruned, soothing the pain of sore feet, and as a method of reducing inflammation often through soaking the compound in through the skin. As a natural anti-inflammatory, this salt can help ease a painful body when inflammation is the primary element. Because of the natural anti-inflammatory element magnesium sulphate can be found in topical application which will soak through the skin's pores and then reduces pain. Usually, this is done for mild pain brought on by inflammation. It seems to be very effective for cleaning heavily infected ulcers and wounds. Therefore it is beneficial for the treatment of Intravenous phlebitis.

## **BACK GROUND OF THE STUDY**

### **Global Scenario**

Phlebitis was first described by the Scottish surgeon **John Hunter** in 1784. It is estimated that 150 million peripheral intravenous devices are placed each year in North America alone. One of the most complications of intravenous therapy includes infiltration and pain that may occur in up to 75% of hospitalized patients. It remains a problem in clinical practice and causes patient discomfort, catheter replacement, prolonged hospital stay and health care costs. Maintenance of the patency of these catheters and prevention of phlebitis is an important problem. It is estimated that 200,000 cases of catheter related infections are occurring worldwide each year.

One in 125,000 cases a year has been reported in the United States, but actual incidence of spontaneous thrombophlebitis is unknown. There is increased incidence in men than women of approximately 55-70%. The average age of developing thrombophlebitis, based on analyzed incidence, is 54 for men and 58 for women. Thrombophlebitis can develop along the arm, back, or neck veins, and the leg is by far the most common site.

The approximate annual incidence of thrombophlebitis in Western society is 1 case per 1000 individuals. The annual incidence of phlebitis was decreased compared with asymptomatic, at approximately 0.5 to 1.6 per 1000 individuals. In US, most studies reported that 4 to 6 fold increased predominance of the condition in women compared with men. The incidence of Thrombophlebitis increases with age and is reported from 0.05 to 0.31 per 1000 persons a year during the third decade to 1.8 to 2.2 per 1000 persons a year in the eighth decade.

Infusion phlebitis is in almost all cases. Studies have shown that 20% to 70% of patients receiving peripheral intravenous therapy develop phlebitis, According to statistics; about 80% of the patients with intravenous therapy develop varying degrees of infusion phlebitis in China.

### **Indian Scenario**

In National hospital services, Phlebitis appears as an adverse event of persistent epidemiological importance. The high incidence found in recent studies, which indicate values ranging from 25.8% to 55.6%, both considered high. In addition, this event has the potential to cause organizational burden, such as increased costs related to prolongation of hospital stay as well as the consequences to users and their families because of the characteristic clinical complications, thus, in targeting the safety and quality of care. Nurses should seek to maintain phlebitis rates steadily fall, as well as establishing prevention measures for this event, actions which most certainly involve the work of nursing professionals.

**Subramanian, Indian journal of medical science (1989)** mentioned that the incidence of Thrombophlebitis was more (24%) when short teflon cannula was used as intravenous placement device. Under similar infusion conditions with stainless steel needle, scalp vein needle and long teflon cannula, the incidence was 16.6%, 13.3% and 16.6% respectively. Thrombophlebitis bears a direct relationship to the duration of infusion. The incidence was negligible at the end of 8 hours; whereas 14 patients developed thrombophlebitis by the end of 24 hours (63.7%). The incidence of thrombophlebitis in India is 18.3%. It was of mild grade in all the cases.

In the year 2004, the annual hospital report of Kerala, stated that the incidence of Thrombophlebitis was (78%) in ICU as compared to (30%) in general wards. The study highlighted the cause as lack of physicians, nurses and poor standard of care provided by health care personnel.

### **NEED FOR THE STUDY**

Phlebitis is an inflammation of a vein that may be caused by infection, the presence of a foreign body or the fluids or medication being given. Symptoms are warmth, swelling, pain, and redness around the vein. The intravenous device must be removed and if necessary re-inserted into another extremity.

It is estimated that approximately half of all patients admitted to the hospital require the insertion of an intravenous cannula into a peripheral vein, usually in the hand or arm, for the administration of intravenous fluids, medications, and blood

products. It is the most common invasive clinical procedure performed in hospitals worldwide.

One of the most common complications of peripheral intravenous catheter is Phlebitis that upto 75% of hospitalized patients. It remains a significant problem in clinical practice and causes patient discomfort, catheter replacement, prolonged hospital stay and health care costs. Maintenance of the patency of these catheters and prevention of phlebitis is an important problem.

*Aloe vera* gel has been used to heal wounds, skin infections and minor burns for centuries. It contains 99% water and 1% glycoprotein, polysaccharides like glucomannan and acemannan, tannins, sterols, lipids, amino acids, enzymes and vitamins C, E, B<sub>12</sub> and A, magnesium, zinc, calcium, essential fatty acids and protein.

*Aloe vera* gel contains plant sterols which reduces inflammation caused by croton oil-induced edema by up to 37%. Of the 3 plant sterols found in *Aloe vera* gel, lupeol was found to be the most active in reducing inflammation. This was dependent on the dosage.

**Ahlqvist et al. (2010)** stated that Phlebitis depends upon the placement site of intravenous cannula. Chemical phlebitis may occur when they infuse the fluid or intravenous medication as too concentrated, too acidic or too alkaline. Untreated phlebitis may compromise future venous access and bacterial phlebitis may lead to bloodstream infection a preventable adverse event that contributes significantly to extra health care costs through longer hospitalization, potential intensive care admission and expensive antibiotics to treat the blood stream infection. Hospital acquired infection has been linked as a major cause of morbidity with nearly 10% of hospitalized patients developing infection that was not the reason for original admission.

A study was conducted to investigate various risk factors responsible for the infiltration and phlebitis in the emergency department of **Nehru Hospital, PGIMER, Chandigarh**. Total of 168 patients with peripheral intravenous cannula were included in the study using purposive sampling technique and were studied prospectively for the after effects of the intravenous therapy and related incidents. The study revealed that incidence of infiltration and phlebitis as 31.5% and 29.8% respectively. It was found that the peripheral intravenous cannula insertions have been inserted with inappropriate aseptic technique during insertion and handling of cannula. The

important risk factors are use of forearm as the site of insertion, longer duration of cannula placement and medications such as antibiotics and electrolytes through the cannula.

A study was conducted to assess the occurrence of intravenous catheter complication in the hand and forearm in Orthopedic Surgery Department, **University of Oklahoma and Integris Baptist Medical Centre**. The records of 67 patients who developed intravenous catheter related complications were reviewed. The most common sites for developing complications in order of frequency were the forearm, hand, wrist, and antecubital fossa. There were 56 minor and 11 major complications. Minor complications comprised 26 intravenous infiltrations, 23 cases of thrombophlebitis, and 7 cases of cellulites. 90% percent of major complication patients were aged 50 years or older and 82% were women. Results shows that the hand is a common site for minor and major intravenous catheter complications.

**Dr. Harold Ayetey (2010)** stated that Peripheral intravenous (IV) cannulas provide relatively easy and comfortable venous access for hospitalized patients allowing for sampling of blood as well as administration of fluids, medications, and parenteral nutrition, chemotherapy, and blood products. Although cannulas provide necessary vascular access, there are some associated complications such as phlebitis, local site infection, occlusion, extravasations and bloodstream infection. These complications lead to patient discomfort, increased medical treatment, length of hospital stay and cost of treatment, as well as increased morbidity and mortality. Phlebitis or vein inflammation is a common complication of IV therapy between 2.3% and 60% of patients developing phlebitis, depending on the populations studied. When accompanied by thrombus formation it is referred to as thrombophlebitis. The more serious complication of IV therapy is bacteraemia that occurs in about 0.8% of cases.

**Yulugao et al. (2016)**, conducted a study to evaluate the clinical value of *Aloe vera* for the prevention and treatment of chemotherapy induced phlebitis. Ten clinical trials related to prevention of chemotherapy induced phlebitis and six trails about the treatment of chemotherapy induced phlebitis involving 4530 patients were included in the study. Meta-analysis showed that *Aloe vera* was effective for the prevention of chemotherapy induced phlebitis. Compared with the control group (50% MgSO<sub>4</sub>) the total efficacy rate and the cure rate of *Aloe vera* for chemotherapy induced phlebitis

have been increased. Results suggest that aloe vera could be used for the treatment of phlebitis.

Magnesium sulphate is non-organic salt containing magnesium, sulphur and oxygen with the formula of  $MgSO_4$ . It moisturizes the skin and cleanses. It instantly kills all the bacteria as soon as it comes into contact with the bacteria. It seems to be very effective for cleaning heavily infected ulcers and wounds. Therefore, it is beneficial for the treatment of infusion phlebitis. Bradykinin is a part of the body complex mechanism that causes painful inflammation. In studies, *Aloe vera* has been shown to possess anti-bradykinin activities which have an anti-inflammatory effect.

The registered nurse is the only member of the health team, on a continuous basis who can assume the responsibility for regular monitoring of intravenous therapy and prevention of complications. An understanding of the factors leading to complications following intravenous therapy, under existing condition of patient care would increase the possibility of planning appropriate nursing care activities that would reduce the occurrence of superficial thrombophlebitis

Both *Aloe vera* and magnesium sulphate are less expensive and easily available. It is very useful for reducing intravenous phlebitis. Considering this factor, researcher designed a study to assess effectiveness.

So the researcher felt that the phlebitis is one of the major concerns in the admitted patient in the hospital and it is responsibility of the nurse to find out intervention for the condition. Researchers showed that the *Aloe vera* gel and Magnesium sulphate were effective in the treatment of phlebitis. Most research is needed to find out effectiveness of *Aloe vera* and Magnesium sulphate. Hence the student researcher decided to select this topic.

#### **STATEMENT OF PROBLEM**

A comparative study to assess the effectiveness of *Aloe vera* gel application versus Magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai

## **OBJECTIVES**

The objectives of the study are,

- To assess the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and Magnesium sulphate among adult patients in experimental group I and II
- To assess the effectiveness by comparing the post-test degrees of Intravenous phlebitis among adult patients in experimental group I and II.
- To associate the degree of Intravenous phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II.

## **HYPOTHESES**

**H1:** There will be a significant difference in the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and Magnesium sulphate among adult patients in experimental groups I and II.

**H2:** There will be a significant difference in the post-test degree of Intravenous phlebitis among adult patients in experimental group I and II.

**H3:** There will be a significant association between the degree of Intravenous phlebitis with selected socio demographic and clinical variable.

## **OPERATIONAL DEFINITION**

### **Effectiveness**

In this study, effectiveness refers to the significant reduction in degree of Intravenous phlebitis after the application of *Aloe vera* gel and magnesium sulphate. It is elicited through Modified Phlebitis Scale.

### ***Aloe vera* gel application**

In this study, *Aloe vera* gel refers to the fresh extract taken from the middle shaft of the *Aloe Vera*. 1 ml of *Aloe vera* extract paste will be applied topically over the affected area and a gauze dressing will be applied over that. This has to be done twice a day for 2 subsequent days.

### **Magnesium sulphate application**

In this study, it refers to application of Magnesium sulphate ointment (30mg) topically over the intravenous site following by the gauze dressing. This has to be done twice a day for 2 subsequent days.

### **Intravenous Phlebitis**

In this study, it refers to the inflammation of vein that may be caused by infection. In the present study, it shows that the samples are having symptoms of warmth, swelling, and pain, redness around the vein used for Intravenous infusion

### **Adult Patients**

In this study, it refers to patients with the age group between 40-60 years of both male and female having phlebitis.

### **ASSUMPTIONS**

The study assumes that

- the *Aloe vera* gel contains bradykinin, salicylates and substances that may reduce the phlebitis.
- the Magnesium sulphate contains magnesium, sulphur and oxygen with the formula of  $MgSO_4$ . It cleanses and moisturizes the inflamed vein. It instantly kills all the bacteria as here by reduces infection.
- patients with intravenous catheter may develop phlebitis in the cannula site.
- *Aloe vera* gel and Magnesium sulphate may not produce any harmful effects.

### **DELIMITATION**

The study is delimited to

- patients with intravenous phlebitis.
- patients with age group between 40 and 60 years.
- the sample size of 60 adult patients.
- patient who are willing to participate.
- data collection period of one month.

### **CONCEPTUAL FRAMEWORK**

Conceptual frame work is interrelated concepts or abstractions that are assembled together in some rational schemes by virtue of their relevance to a common theme.

**(Polit & Beck, 2004)**

Theories are linked to the real world through definition that specifies how concepts will be known, experienced, observed and measured. Theories guide decision-making by providing the supporting conceptualization for the study such as



significance of the problem, background and problem definition or statement of the problem. Thus theory is an abstract generalization that presents a systematic explanation about the relationships among phenomena.

Conceptual framework is interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to common and sometimes referred to as conceptual scheme.

### **The comfort theory**

This nursing theory was developed in 1990's by **Katherine Kolcaba**. Comfort is the immediate experience of being strengthened by having needs for relief, social and environment.

The study is based on the concept that application of *Aloe vera* gel and magnesium sulphate may reduce Intravenous phlebitis. The concept include comfort theory and health care need comforting interventions, intervening variables enhanced comfort, comforting health and seeking behaviors' and institutional integrity.

### **Health care need**

The health care needs are those identified by the patient in particular practice setting. In this study, health care need is to improve the phlebitis grading.

### **Comforting interventions**

Comforting interventions are designed to address specific comfort needs of recipients. The comforting interventions used in this study are application of *Aloe vera* gel and magnesium sulphate. It is the intervention accepted by the institution for the patient with the specific problem after collecting evidence. In this study, it refers to application of *Aloe vera* and magnesium sulphate (MgSO<sub>4</sub>) for adult patients with Intravenous phlebitis.

### **Intervening variable**

They are interacting forces that influence recipient's perception towards total comfort. This includes past experiences, age, attitude, emotional status.

The intervening variables of the present study are demographic variables such as age, gender, marital status, and religion, area of residence, educational status, and monthly income.

### **Enhanced comfort**

It is an immediate desirable outcome of nursing care, according to the comfort theory. In this study, it refers to the reduction of intravenous phlebitis.

### **Health seeking behavior**

According to the theory, health seeking behavior is the internal or external reaction exhibited by the patient. In this study, it refers to the reduction of intravenous phlebitis by assessing with modified phlebitis scale.

### **Institutional integrity**

It is defined as the values, financial stability, and wholeness of health care organizations at local, regional, state, and national levels.

**Best Policies** are protocols and procedures developed by an institution for overall use after collecting evidence.

**Best Practices** are those protocols and procedures developed by an institution for specific patient/family applications (or types of patients) after collecting evidence.

In this study, it refers to the procedure to be developed by the institution related to the evidence based practice for reduction of Intravenous phlebitis.

## **SUMMARY**

This chapter has dealt with the objectives, the operational definitions, variables, assumptions and hypotheses which are predictive statements of the relationship between the independent and dependent variables, and delimitations of the study. The conceptual framework of the present study was based on the comfort theory

## **CHAPTER- II**

### **REVIEW OF LITERATURE**

Review of literature is a key step in research process. It refers to an extensive, exhaustive and systematic examination of publications relevant to the research project. Nursing research may be considered as a continuing process in which knowledge gained from earlier studies is an integral part of research in general.

**(Basavanthappa, 1998)**

Literature review refers to the activities involved in searching for information on a topic and developing a comprehensive picture of the state as knowledge on that topic.

**(Polit and Hungler, 1993)**

The present study is undertaken to evaluate the effectiveness of *Aloe vera* extract application & Magnesium sulphate application in reducing Phlebitis. Research on the similar topic would be done many ways to be very informative and useful to carry out the study on alternate methods in reducing the phlebitis. During this study, review of literature has been classified into four sections:

- I. Empirical studies related to incidence and prevalence of intravenous phlebitis.**
  - II. Empirical studies related to *Aloe vera* gel application on reduction of intravenous phlebitis among adult patients.**
  - III. Empirical Studies related to Magnesium sulphate application on reduction of intravenous phlebitis among adult patients.**
  - IV. Empirical Studies related to comparison of *Aloe vera* and Magnesium sulphate application on reduction of intravenous phlebitis among adult patients.**
- I. Empirical studies related to incidence and prevalence of Intravenous phlebitis among adult patients.**

**Luis carlos do Rego Furtadon (2011)** conducted a quantitative study to determine the incidence of Phlebitis related to cannulae, and its predisposing factors in a general surgical department. A data collection tool was developed based on the previous literature and completed within a month. A total of 171 patients and 282 peripheral cannula were monitored. The average incidence of Phlebitis was 61.5%.

Factors such as dwell time of the peripheral cannula, and the anatomical location of the cannula were identified.

**Wilkinson Yoong Jian *et al.* (2011)**, conducted an observational study on adult patients admitted to surgical and medical ward of a tertiary hospital in **Negeri Sembilan Malaysia**. Risk factors that were studied in this research were patient's age, gender, and duration of catheterization, use of catheter for infusion, size of catheter, site of catheter insertion and types of infusion. Among 428 patients recruited 35.2% developed Thrombophlebitis. This study shows that females are at more risk for developing Thrombophlebitis. The other factors identified were increased duration of catheterization, use of the peripheral venous catheter for infusion etc. The researcher recommended that healthcare personnel for elective replacement of catheter every 72 hours and daily examination of catheters for signs of thrombophlebitis.

**Prabhjot Kaur *et al.* (2010)**, conducted a study to assess the risk factors leading to Phlebitis among the peripheral intravenous cannulated patients. Using the consecutive sampling technique, 200 patients were studied who were scheduled for intravenous cannulation. The various risk factors studied were age, sex, size of cannula, site of insertion, hand washing and use of gloves etc. The IV site was studied prospectively for the presence and absence of phlebitis till the cannula remained in site. Visual infusion phlebitis scale was used to assess the grade of phlebitis. The result revealed that intravenous therapy is the one of the most common procedure and it is associated with phlebitis rate of between 2.3% and 60%.

**Giancarlo Cicolini (2009)**, conducted an observational study to investigate the most suitable location of peripheral venous cannula to reduce the incidence of Thrombophlebitis. Peripheral intravenous cannulae are used for vascular access, but the site of insertion and size of the cannula could expose patients to local and systemic infections complications. A structured observation protocol was used for the survey. The results revealed that the frequency of peripheral intravenous cannulae thrombophlebitis was higher in females ( $p < 0.006$ ). The highest incidence was found in patients with cannulae inserted in the dorsal side of the hand veins ( $p < 0.001$ ). The use of cubital fossa veins rather than forearm and hand veins should be encouraged to reduce the risk of thrombophlebitis in patients with peripheral intravenous cannula.

A study was conducted at **Dhulikhel hospital, Kathmandu university teaching hospital, Nepal** to determine the occurrence of peripheral intravenous catheter related phlebitis and to define possible factors associated to its development.

The samples consist of 230 clients who were under first time peripheral infusion therapy. The duration of the study was two months period. The findings showed that phlebitis developed in 136/230 clients (59.1%) and increased rates of infusion related phlebitis were associated with male sex, small catheter size (20G), insertion at the sites of forearm, intravenous drug administration and blood product transfusions.

## **II. Empirical studies related to *Aloe vera* gel application on reduction of Intravenous phlebitis among adult patients.**

**Guo Hua Zheng *et al.* (2012)**, conducted a study to systematically assess the effects of external application of *Aloe vera* for the reduction of pain, prevention and treatment of infusion phlebitis associated with the presence of an intravenous access device. It was a quasi-randomized controlled trail. A total of 43 trails with 7465 participants were identified. 22 trails with 5546 participants were involved in application of *Aloe vera* for phlebitis, and a further 21 trails with 1919 participants involved in the treatment of phlebitis. *Aloe vera* reduced the occurrences of third degree phlebitis and second degree phlebitis.

**Hu Huali *et al.* (2010)**, conducted a study to assess the effectiveness of fresh *Aloe vera* to prevent phlebitis in malignant patients receiving chemotherapy in the department of Tumor Jinguha Guagfu Hospital in China. 1510 cases of malignancy were randomized to observation group. 1000 patients undergoing transvenous chemotherapy were subjected to the application of fresh *Aloe vera* on the veins. The aloe was fixed with plaster and replaced every 6 hours until healing of phlebitis. In the control group nothing was applied on 510 cases of patients undergoing transvenous chemotherapy modes. The incidence of Phlebitis showed significant difference between 2 groups ( $p < 0.05$ ,  $p < 0.01$ ). The incidence of Phlebitis in  $\leq 30$  min, 24 hours and 72 hours had significant difference between 2 groups. Applying fresh *Aloe vera* was effective in prevention of phlebitis induced by chemotherapeutic drugs, and convenient, inexpensive and practical.

**Quatrin (2010)**, conducted a double blind evaluation of an *Aloe vera* gel topical effect to reduce pain and inflammatory conditions. In this study, 56 patients were selected receiving intravenous infusions. Assessment was done with the visual infusion phlebitis scale. The duration of data collection is 30 days. 1ml of *Aloe vera* was taken and applied to the experimental group, for the period of 3 days. Then, the post test score was taken. The result showed that pain, edema, and severity of

inflammation was ( $p = 0.01$ ) reduced for the experimental group. It was statistically significant.

### **III. Empirical studies related to Magnesium sulphate application on reduction of Intravenous phlebitis among adult patients.**

**LJ Bujura et al. (2010)**, conducted a study to assess the efficacy of glycerin magnesium sulphate emulsion and glycerin magnesium sulphate solution in treating peripheral phlebitis. 57 cases of peripheral phlebitis caused by IV indwelling needle were randomly divided into observing group ( $n=29$ ) and control group ( $n=28$ ). The patients in control group were treated with glycerin magnesium sulphate solution, while those in the observing group were treated by glycerin magnesium sulphate emulsion. Treatment time in both groups was studied. It is suggested that glycerin magnesium sulphate emulsion can be effectively reduce the phlebitis and it is a safe, simple and effective method with many advantage.

**Junia et al. (2010)**, conducted a study to assess the efficacy of glycerine magnesium sulphate emulsion and glycerine magnesium sulphate solution in treating peripheral phlebitis. 57 cases of peripheral phlebitis caused by IV indwelling needle were randomly divided into observing group ( $n=29$ ) and control group ( $n=28$ ). The patients in control group were treated with glycerine magnesium sulphate solution, while those in the observing group were treated by glycerine magnesium sulphate emulsion and treatment time in both groups was studied. It is suggested that glycerine magnesium sulphate emulsion can be effectively reduce the treatment time of peripheral phlebitis and it is a safe, simple and effective method with many advantages.

### **IV. Empirical Studies related to comparison of *Aloe vera* versus Magnesium sulphate application on reduction of Intravenous phlebitis among adult patients.**

**Bijuan et. al (2009)**, conducted a comparative study to investigate the clinical effectiveness of aloe vera versus magnesium sulphate on phlebitis patients. 64 patients were randomized into 2 groups, 32 were treated with *Aloe vera* (aloe group) and another 32 with wet packing of routine magnesium sulphate ( $MgSO_4$  group). The duration of data collection is 30 days. Result shows that in aloe group, 20 cases got healed and 10 feels better and in magnesium sulphate group 12 got healed and 11 feels

better (P<0.05). This study concluded that aloe vera is superior to the magnesium sulphate in treating ph.

**Junia D Susanna (2014)** conducted a study to assess and compare the effectiveness of fresh *Aloe vera* and glycerin magnesium sulphate application on phlebitis. Two group pre-test and post-test time series design was used for the study. The sample consisted of 60 children who were purposively assigned to fresh *Aloe vera* group (N=30) and glycerin magnesium sulphate group (n=30). An observation checklist was used as tool for assessing the severity of phlebitis. There was a significant difference in mild phlebitis (Z=2.16, P<0.05), in moderate phlebitis (Z=2.11, P<0.05), in severe phlebitis (Z=2.68, P<0.05) in fresh *Aloe vera* and glycerin magnesium sulphate application based on the level of severity of phlebitis. Thus the study concludes that there was a significant difference in both fresh aloe vera and glycerin magnesium sulphate group on the severity of phlebitis

**Zheng et al. (2000)**, conducted a study to systematically assess the effects of external application of *Aloe vera* for the prevention and treatment of infusion phlebitis associated with the presence of an intravenous access device. A total of 43 trials (35 RCTs and eight qRCTs) with 7465 participants were identified. Twenty-two trials with 5546 participants were involved in prevention of *Aloe vera* for phlebitis, and a further 21 trials with 1919 participants were involved in the treatment of phlebitis. The included studies compared external application of *Aloe vera* alone or plus non-*Aloe vera* interventions with no treatment or the same non-*Aloe vera* interventions. The duration of the intervention lasted from one day to 15 days. Two review authors independently extracted the data on the study characteristics, description of methodology and outcomes of the eligible trials, and assessed study quality. Data were analyzed using RevMan 5.1. The results reveal that compared with external application of 75% alcohol, or 33% MgSO<sub>4</sub> alone, *Aloe vera* reduced the total incidence of phlebitis. *Aloe vera*, either alone or in combination with routine treatment, was more effective than routine treatment alone for improving the symptoms of phlebitis.

## **SUMMARY**

This chapter has dealt with the reviews related to intravenous phlebitis and application of *Aloe vera* and magnesium sulphate reduction of intravenous phlebitis

## **CHAPTER- III**

### **RESEARCH METHODOLOGY**

Research methodology is a way of systematically solving the research problem. It comprises of statement of the problem, objectives of the study, the hypothesis that have been formulated, the variables under study, methods used for the data collection and plan for data analysis, presentation of findings.

**(Denise F Polit, 2011)**

This chapter includes research approach, research design, setting of the study, population, sample, sample size, sampling technique, sampling criteria, and selection and development of tools and description of tools. It further deals with validity, reliability, pilot study, data collection procedure, method of analysis and ethical clearance.

#### **RESEARCH APPROACH**

A research approach tells the researcher what to collect and how to analyze it. It also suggest possible conclusion to be drawn from the data, in view of the nature of the problem under study and to accomplish the objectives of the study.

**(Denise F Polit, 2011)**

Quantitative research approach was used as an appropriate research approach for the present study to evaluate the effectiveness of *Aloe vera* and magnesium sulphate in reducing Intravenous phlebitis among adult patients in Annammal Hospital, at Kuzhithurai.

#### **RESEARCH DESIGN**

Research design provides the clue that holds the research project together. A Design is used to structure the research to show how all the major parts of the research project works together to try to address the initial research question.

**(Denise F Polit, 2011)**

Comparative experimental design was adopted for the present study to evaluate the effectiveness of *Aloe vera* gel application versus magnesium sulphate in reduction of Intravenous phlebitis.



|                      |                      |                      |
|----------------------|----------------------|----------------------|
| <b>O<sub>1</sub></b> | <b>X<sub>1</sub></b> | <b>O<sub>2</sub></b> |
| <b>O<sub>3</sub></b> | <b>X<sub>2</sub></b> | <b>O<sub>4</sub></b> |

**KEY**

- O<sub>1</sub> and O<sub>3</sub> = Pre- test assessment of intravenous phlebitis.
- O<sub>2</sub> and O<sub>4</sub> = Post-test assessment of intravenous phlebitis.
- X<sub>1</sub> and X<sub>2</sub> = Application of *Aloe vera* gel and magnesium sulphate (MgSO<sub>4</sub>)

**VARIABLES**

Variables are defined as “An attribute that varies, that it, takes on different values”

**(Denise F Polit, 2011)**

**DEPENDENT VARIABLE**

Dependent variable is defined as “The variables hypothesized to depend on or be caused by another variable of interest”

**(Denise F Polit, 2011)**

In this study, the dependent variable is Intravenous phlebitis among adult patients.

**INDEPENDENT VARIABLE**

Independent variable is defined as “The variable that believed to cause or influence the dependent variable”

**(Denise F Polit, 2011)**

In this study, independent variable includes application of *Aloe vera* gel and Magnesium sulphate on adult patients with Intravenous phlebitis.

**EXTRANEIOUS VARIABLE**

A variable that confounds the relationship between the independent and dependent variables and that needs to be controlled either statistically or in research design.

**(Denise F Polit, 2011)**

In this study, it refers to age, gender, marital status, religion, place of living, educational status, income, duration of hospital stay, site of IV cannulation, and size of IV cannula, frequency of changing IV cannula.

## **SETTING**

Setting refers to the physical location and condition in which data collection takes place.

**(Denis F Polit, 2011)**

The setting was chosen on the basis of the availability of samples and the cooperation extended by the management. This present study was conducted in Annammal Hospital, Kuzhithurai. This hospital is highly equipped with all specialties in organized manner.

## **POPULATION**

A population is defined as “the entire set of individuals or objects having some common characteristics.

**(Denis F Polit, 2011)**

The population under study constituted all the adult patients between the age group of 40-60 years who are receiving intravenous therapy in selected hospital.

## **TARGET POPULATION**

Target population is the group of population that the researcher aim to study and to whom the study findings will be generalized.

**(Denise F Polit, 2011)**

In this study, target population represents adult patients with Intravenous phlebitis in Annammal Hospital, Kuzhithurai.

## **SAMPLE**

Sample is defined as “a subset of a population comprising those selected to participate in the study”.

**(Denise F Polit, 2011)**

In this study, the sample comprises of adult patients with Intravenous phlebitis in Annammal Hospital, Kuzhithurai.

## **SAMPLE SIZE**

Sample size is defined as, “the number of people who participate in the study”.

**(Denise F Polit, 2011)**

The sample size for study comprises of 60 patients with moderate and severe symptoms of phlebitis in Annammal Hospital, Kuzhithurai. Among them 30 samples were selected for group I and 30 samples for group II.

## **SAMPLING TECHNIQUES**

Sampling technique is defined as “the process of selecting a portion of the population to represent the entire population”.

**(Denise F Polit, 2011)**

Participants of the study are selected by non-probability convenient sampling technique.

## **SAMPLING CRITERIA**

Sampling criteria involves selecting cases that meet some predetermined criterion of importance. The criteria for sample selection are mainly depicted under two headings.

### **INCLUSION CRITERIA**

The study included,

- patients with intravenous phlebitis.
- patients who can understand Tamil and English.
- patients with age group of 40-60 years.
- both males and females.
- patients who are willing to participate in the study.
- patients who are available during the time of data collection.

### **EXCLUSION CRITERIA**

The study excluded,

- non co-operate patients
- patients who are having surgical incision or ulcer in the affected side
- patients with open burn wounds
- patients who develop hypersensitivity reaction to intervention

## **SELECTION AND DEVELOPMENT OF THE TOOL**

Tool development is a complex and time consuming process. It consists of defining the construct to be measured, formulating the items, assessing the items for content validity, developing instructions for respondents, pre-testing, estimating the reliability and conducting pilot study.

**(Polit and Hungler)**

The tool was prepared on the basis of objectives of the study. The following methods were used for the development of the tool by the investigator after reviewed the literature from books, journals, other publications and web-site.

## DESCRIPTION OF THE TOOL

The tool used in this study has 3 sections.

### TOOL I

It consists of items for obtaining information about selected socio demographic data such as age, gender, religion, residential area, marital status, educational status, income.

### TOOL II

It consists of 5 items for obtaining information about the clinical variables such as site of intravenous cannula, duration of hospital stay, size of intravenous cannula, allergy to any medication, history of bleeding disorder, frequency of changing intravenous cannula.

### TOOL III

Modified Phlebitis Assessment Scale

| S.NO | INTERPRETATION   | GRADING OF PHLEBITIS |
|------|--|----------------------|
| 1.   | None (No symptoms)                                     | 0                    |
| 2.   | Mild (Slight pain, redness)                            | 1                    |
| 3.   | Moderate (Pain, Redness, Swelling)                     | 2 -3                 |
| 4.   | Severe (Pain, Redness, Swelling, Palpable venous cord) | 4-5                  |

## VALIDITY

Content validity is defined the extent to which an instrument accurately reflects the abstract constructs being examined.

(Suresh K Sharma, 2007)

The content validity refers to the adequacy of the sampling of the domain being studied. Content validity of the tool was obtained after consulting with research guide and getting opinion from eight experts in the field of Medical surgical nursing. One of the experts was a Doctor, and other Biostatistician. The validations have suggested some specific modifications in the clinical variable proforma. The modification and suggestions of experts were incorporated in the final preparation of the tool for assessing Intravenous phlebitis.

## **RELIABILITY**

Reliability refers to the accuracy and consistency of measuring the tool. The reliability of the tool was elicited by using Inter-rater reliability technique

## **PILOT STUDY**

Pilot study is defined as, “a small- scale version or trial run, done in preparation of a major study.”

**(Denise F Polit, 2011)**

Pilot study was conducted in Annammal Hospital, Kuzhithurai, after getting initial permission from the institution and formal permission from the study setting for conducting the study. The pilot study was conducted in the month of February 2017 for a period of one week. Consent was obtained from the participants. The sample size was 10 patients with Intravenous phlebitis. The researcher applied *Aloe vera* gel to 5 patients and magnesium sulphate to 5 patients twice a day for 2 days. Results of pilot study, gave the evidence that the tool was reliable. Finding of pilot study also revealed that it was feasible and practicable to conduct the study at selected settings.

## **DATA COLLECTION PROCEDURE**

Data collection is the gathering of population needed to address a research problem. Data was collected from the patients, who are admitted in the Annammal Hospital with Intravenous phlebitis in the month of May and June, 2017.

At first, a rapport was established with the patient, and the purpose of the study was explained to them. It was assured to them that all data would be kept strictly confidential and will be used only for study purpose. After obtaining the verbal and written consent of the patient to participate in the study, demographic data were collected by investigator. The intervention was carried out by the investigator in the experimental group I and II. For experimental group I, the investigator applied fresh *Aloe vera* gel extract of 1ml topically and gauze dressing over it. For experimental group II, magnesium sulphate ointment 30 gm was applied topically and after that covered with gauze dressing. The dressings were changed twice a day. Finally investigator assessed the post-test degree of phlebitis among experimental group I and II.

## **PLAN FOR DATA ANALYSIS**

The data analysis is the systemic organization and synthesis of research data and testing of research hypothesis by using the obtained data. Data was analyzed by both descriptive and inferential statistics such as mean, standard deviation, chi square, paired 't' test.

### **Descriptive Statistics**

- Frequency and percentage distribution was used to assess the socio demographic variables and clinical variables of patients with Intravenous phlebitis.
- Mean and standard deviation was used to assess the effectiveness of application of *Aloe vera* gel and magnesium sulphate among patients with Intravenous phlebitis.

### **INFERENTIAL STATISTICS**

- Paired 't' test was used to evaluate and compare post-test degree of Intravenous phlebitis between Experimental groups I and II.
- Chi-square test was used to find out the association between the post-test degrees of Intravenous phlebitis between Experimental groups I and II with the selected socio demographic and clinical variables in Experimental group I and II.

### **ETHICAL CONSIDERATION**

- Pilot study and main study were conducted after the approval of research committee of Annammal College of Nursing, Kuzhithurai.
- Permission was obtained from the ethical committee of Annammal Hospital in Kanyakumari district.
- Written consent was obtained from each patient before starting the data collection.
- Assurance was given to each patient regarding the confidentiality of the data collection.

### **SUMMARY**

The chapter deals with the selection about the research approach, research design, variables, setting of the study population, selection criteria, development of tool, validity, reliability, pilot study, data collection, plan for data analysis and ethical considerations

## **CHAPTER IV**

### **DATA ANALYSIS AND INTERPRETATION**

The analysis is defined as the method of organizing data in such a way that the research question can be answered.

**(Polit and Beck, 2004)**

Interpretation is the process of the result and of examining the simplification of findings with in a boarder context.

**(Polit and Beck, 2004)**

Analysis and interpretation of data of this study was done using descriptive and inferential statistics.

#### **OBJECTIVES OF THE STUDY**

The objectives of the study are,

- To assess the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and Magnesium sulphate among adult patients in experimental group I and II
- To assess the effectiveness by comparing the post-test degrees of Intravenous phlebitis among adult patients in experimental group I and II.
- To associate the degree of Intravenous phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II.

#### **ORGANIZATION OF DATA**

Data collected were edited, tabulated, analyzed, interpreted and findings obtained were presented in the form of tables and diagrams represented on the following.

##### **Section I**

- Data pertaining to frequency and percentage distribution of selected socio demographic and clinical variables among adult patients in Experimental group I and II.

##### **Section II**

- Data pertaining to frequency and percentage distribution of pre and post-test degree of Intravenous phlebitis among adult patients in Experimental group I.

- Data pertaining to frequency and percentage distribution of pre and post-test degree of Intravenous phlebitis among adult patients in Experimental group II.

### **Section III**

- Data pertaining to comparison of post-test degree of Intravenous phlebitis among adult patients with intravenous phlebitis in Experimental group I and II.
- Data pertaining to the effectiveness of application on *Aloe vera* and Magnesium sulphate in reducing Intravenous phlebitis among adult patients in Experimental group I and II.

### **Section IV**

- Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected socio demographic variables of adult patients in experimental group I.
- Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected clinical variables of adult patients in experimental group I.
- Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected socio demographic variables of adult patients in experimental group II.
- Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected clinical variables of adult patients in experimental group II.



**SECTION I**

**Table:1** Data pertaining to frequency and percentage distribution of selected socio demographic variables among adult patients in Experimental group I and II.

**N= 60**

| S.No | Socio demographic variables | Experimental group I |      | Experimental group II |      | $\chi^2$ | P value               |
|------|-----------------------------|----------------------|------|-----------------------|------|----------|-----------------------|
|      |                             | F                    | %    | F                     | %    |          |                       |
| 1.   | <b>Age (in years)</b>       |                      |      |                       |      |          |                       |
|      | a) 40-45 (years)            | 13                   | 43.3 | 10                    | 33.3 | 0.577    | df =1<br>0.44         |
|      | b) 46-50 (years)            | 7                    | 23.3 | 5                     | 16.7 |          |                       |
|      | c) 51-55 (years)            | 5                    | 16.7 | 12                    | 40   |          |                       |
|      | d) 56-60 (years)            | 5                    | 16.7 | 3                     | 10   |          |                       |
| 2.   | <b>Gender</b>               |                      |      |                       |      |          |                       |
|      | a) Male                     | 16                   | 53.3 | 20                    | 66.8 | 1.11     | df =1<br>0.29         |
|      | b) Female                   | 14                   | 46.8 | 10                    | 33.4 |          |                       |
| 3.   | <b>Marital status</b>       |                      |      |                       |      |          |                       |
|      | a) Married                  | 24                   | 80   | 20                    | 66.7 | 2.783    | df= 1<br>0.0952       |
|      | b) Unmarried                | 0                    | 0    | 2                     | 6.7  |          |                       |
|      | c) Single                   | 0                    | 0    | 0                     | 0    |          |                       |
|      | d) Widow                    | 6                    | 20   | 8                     | 26.7 |          |                       |
| 4.   | <b>Residential area</b>     |                      |      |                       |      |          |                       |
|      | a) Rural                    | 0                    | 0    | 0                     | 0    | 24.98    | df=1<br>0.00375<br>** |
|      | b) Semi-rural               | 15                   | 50   | 13                    | 43.3 |          |                       |
|      | c) Urban                    | 2                    | 6.7  | 17                    | 56.7 |          |                       |
|      | d) Semi-urban               | 13                   | 43.3 | 0                     | 0    |          |                       |

|           |                                |    |      |    |      |       |                  |
|-----------|--------------------------------|----|------|----|------|-------|------------------|
| <b>5.</b> | <b>Religion</b>                |    |      |    |      |       |                  |
|           | a) Christian                   | 16 | 53.3 | 17 | 56.7 | 4.422 | df= 2<br>P=0.109 |
|           | b) Muslim                      | 4  | 13.3 | 0  | 0    |       |                  |
|           | c) Hindu                       | 10 | 33.3 | 13 | 43.3 |       |                  |
|           | d) Others                      | 0  | 0    | 0  | 0    |       |                  |
|           |                                |    |      |    |      |       |                  |
| <b>6.</b> | <b>Educational status</b>      |    |      |    |      |       |                  |
|           | a) Profession                  | 0  | 0    | 3  | 10   | 0.577 | df =1<br>0.44    |
|           | b) Graduate or post graduate   | 9  | 30   | 7  | 23.3 |       |                  |
|           | d) Intermediate or high school | 10 | 33.3 | 12 | 40   |       |                  |
|           | e) High school                 | 1  | 3.3  | 2  | 6.7  |       |                  |
|           | f) Middle school               | 0  | 0    | 0  | 0    |       |                  |
|           | g) Primary school              | 5  | 16.7 | 4  | 13.3 |       |                  |
|           | h) Illiterate                  | 5  | 16.7 | 2  | 6.7  |       |                  |
|           | i) Others                      | 0  | 0    | 0  | 0    |       |                  |
|           |                                |    |      |    |      |       |                  |
|           |                                |    |      |    |      |       |                  |
| <b>7.</b> | <b>Income</b>                  |    |      |    |      |       |                  |
|           | a) $\geq 25000$                | 0  | 0    | 2  | 6.7  | 3.043 | df =5<br>0.693   |
|           | b) 20000-24999                 | 12 | 40   | 8  | 26.7 |       |                  |
|           | c) 15000-19999                 | 11 | 36.7 | 12 | 40   |       |                  |
|           | d) 10000-1499                  | 5  | 16.7 | 5  | 16.7 |       |                  |
|           | e) 5000-9999                   | 2  | 6.7  | 3  | 10   |       |                  |
|           | f) <50000                      | 0  | 0    | 0  | 0    |       |                  |
|           |                                |    |      |    |      |       |                  |

**Table 1** represents the frequency and percentage distribution of adult patients with intravenous phlebitis and their selected socio demographic variables such as Age, Gender, and Marital status, Religion, Area of residence, Educational status and Family monthly income.

With regard to age in experimental group I and II, majority of adult patients 13(43.33%) and 10(33.33%) falls between the age group of 40-45 years, 7(23.33%) and 5(16.66%) samples were between the age group of 46-50 years. 5(16.66%) and 12(40%) were between the age group of 51-55years. Also a least proportion of

5(16.67%) and 3(3.10%) were between the age group of 56 -60years of age respectively.

With regard to gender in experimental group I and II, majority of the samples 16(53.33%) and 20(66.66%) were males, whereas 14(46.66%) and 10(33.33%) were females respectively.

With regard to marital status in experimental group I and II, majority of the samples 24(80%) and 20(66.66%) were married and 6(20%) and 8(26.66%) were widows in experimental group I and II.

With regard to the area of residence in experimental group I and II, majority of the samples 15(50%) and 13(43.33%) were from semi-rural background, 17(56.67%) and 13(43.33%) were from semi urban background.

With regard to religion, in Experimental group I and II, majority of the adult patients 16(53.33%) and, 17(57.67%) were Christians in Experimental group I, and experimental group II. Hindus were 10(33.33%) and 13(43.33%) respectively. Comparatively Muslims were found limited in number of 4(13.33%) in each group.

With regard to educational status, majority of the patients 10(33.33%) and 12(40%) completed intermediate high school education in experimental group I and II respectively. 9(30%) patients in experimental group I and 7(23.33%) patients in experimental group II were graduates, 5(16.66%) and 4(13.33%) patients has undergone primary school education in group I &II respectively. 5(16.66%) and 2(6.6%) patients were illiterates in the experimental group I and II.

With regard to family monthly income, in experimental group I and II majority 12(40%) and 8(26.66%) patients are earning an income between Rs.20000 – 24999. 11 (36.66%) and 12(40%) patients are earning an income between Rs 15000 - 19999 in group I and II respectively. 5(16.66%) of them in the both groups are earning an income between Rs.10000 – 14999. Also a least of 2(6.67%) and 3(10%) patients are earning an income between Rs.5000 – 9999 respectively.

**Table 2: Data pertaining to frequency and percentage distribution of clinical variables among adult patients with intravenous phlebitis in Experimental group I and II**

**N=60**

| S. No | Clinical variables                      | Experimental group I |                                    | Experimental group II |       | $\chi^2$ | P value        |
|-------|---|----------------------|------------------------------------|-----------------------|-------|----------|----------------|
|       |   | f                    | %                                  | F                     | %     |          |                |
|       |   | 1.                   | <b>Site of intravenous cannula</b> |                       |       |          |                |
|       | a) Radial vein                          | 17                   | 56.67                              | 12                    | 40    | 3.492    | df=2<br>0.174  |
|       | b) Cephalic vein                        | 9                    | 30.0                               | 8                     | 26.67 |          |                |
|       | c) Antecubital vein                     | 4                    | 13.33                              | 10                    | 33.33 |          |                |
| 2.    | <b>Duration of hospital stay</b>        |                      |                                    |                       |       |          |                |
|       | a) 3 days                               | 9                    | 30                                 | 8                     | 26.67 | 0.11     | df= 2<br>0.946 |
|       | b) 5days                                | 12                   | 40                                 | 12                    | 40    |          |                |
|       | c) More than 5 days                     | 9                    | 30                                 | 10                    | 33.33 |          |                |
| 3.    | <b>Size of intravenous cannula</b>      |                      |                                    |                       |       |          |                |
|       | a) 18 gauge (green)                     | 2                    | 6.67                               | 5                     | 16.66 | 1.558    | df= 2<br>0.458 |
|       | b) 20 gauge (pink)                      | 10                   | 33.33                              | 10                    | 33.33 |          |                |
|       | c) 24 gauge (blue)                      | 18                   | 60                                 | 15                    | 50    |          |                |
| 4.    | <b>Allergic to any medication</b>       |                      |                                    |                       |       |          |                |
|       | a) Yes                                  | 0                    | 0                                  | 0                     | 0     | 0        | df= 1<br>1.0   |
|       | b) No                                   | 30                   | 100                                | 30                    | 100   |          |                |
| 5.    | <b>History of bleeding disorders</b>    |                      |                                    |                       |       |          |                |
|       | a) Yes                                  | 0                    | 0                                  | 0                     | 0     | 0        | df= 1<br>1.0   |
|       | b) No                                   | 30                   | 100                                | 30                    | 100   |          |                |
| 6.    | <b>Frequency of changing IV cannula</b> |                      |                                    |                       |       |          |                |
|       | a) 3 days                               | 19                   | 63.33                              | 18                    | 60    | 0.071    | df= 1<br>0.789 |
|       | b) 5 days                               | 11                   | 36.67                              | 12                    | 40    |          |                |
|       | c) More than 5 days                     | 0                    | 0                                  | 0                     | 0     |          |                |

**Table 2** represents the frequency and percentage distribution of adults with clinical variable such as site of intravenous cannula, duration of hospital stay, size of intravenous cannula, history of allergic disorders, and frequency of changing IV cannula.

With regard to site of intravenous cannulation in experimental group I and II majority of the samples 17(56.67%) and 12(40%) used radial artery as the site for IV infusion and 9(30%) and 8(26.67%) have used cephalic vein as the site for IV infusion.

With regard to the duration of hospital stay, 12(40%) in the experimental group I and 12(40%) in experimental group II were admitted in the hospital for more than 5 days whereas 9(30%) and 8(26.67%) were admitted in the hospital for 3 days in experimental group I and II.

With regard to size of intravenous cannula, 18(60%) samples in experimental group I and 15(50%) in experimental group II used 24 gauge (blue) cannula. whereas 10 (33.33%) samples in both groups used 20 gauge (pink) intravenous cannula for IV infusion.

With regard allergy to any medication, none of the patients in experimental group I & II has history of medication allergy.

With regard to presence of any bleeding disorder, none of the patients in experimental group I & II has history of bleeding disorder.

With regard to frequency of changing intravenous cannulation, in the experimental group I & II, for majority 19(63.33%) and 18(60) of the patients, the cannula was changed every three days, for 11(36.66%) and 12(40%) patients in the experimental group I & II the cannula was changed every 5 days.

## SECTION II

### Testing of hypothesis

**H<sub>1</sub>:** There will be a significant difference in the degree of phlebitis in intravenous site before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in group I and II.

**Table 3:** Data pertaining to frequency and percentage distribution of pre and post-test degree of Intravenous phlebitis among adult patients in Experimental group I

N=30

| S. No | Phlebitis grading scale        | Experimental group I<br>( <i>Aloe vera</i> application) |       |           |       | $\chi^2$ | P value                |
|-------|--------------------------------|---|-------|-----------|-------|----------|------------------------|
|       |                                | Pre-test  |       | Post-test |       |          |                        |
|       |                                | F   | %     | f         | %     |          |                        |
| 1.    | <b>None</b><br>(grade 0)       | 0   | 0     | 12        | 40    | 25.797   | df=3<br>0.00001<br>*** |
| 2.    | <b>Mild</b><br>(grade 1)       | 5   | 16.66 | 10        | 33.33 |          |                        |
| 3.    | <b>Moderate</b><br>(grade 2-3) | 15  | 50    | 8         | 26.66 |          |                        |
| 4.    | <b>Severe</b><br>(grade 4-5)   | 10  | 33.33 | 0         | 0     |          |                        |

(\*\*\*p<0.001)

**Table 3** shows the frequency and percentage distribution of pre and post-test degree of phlebitis among adult patients in Experimental group I. During pre-test, majority of the adult patients, 10(33.33%) had severe symptoms, 10(50%) had moderate symptoms and 5(16.66%) had mild symptoms, whereas in post-test, majority of 12(40%) do not have symptoms, 10(33.33%) had mild symptoms and 8(26.66%) had moderate symptoms. The Chi square value was 26.857, P value was 0.000631 which was highly significant at level of P<0.0001. Hence it shows that there was a significant difference in pre and post-test degree of phlebitis among phlebitis patients in Experimental group I and proves that *Aloe vera* application was effective in minimizing phlebitis. Hence H<sub>1</sub> was accepted.

**Table 4: Data pertaining to frequency and percentage distribution of pre and post-test degree of Intravenous phlebitis among adult patients in Experimental group II**

**N=30**

| S.No | Phlebitis grading scale        | Experimental group II |       |           |       | $\chi^2$ | P value           |
|------|--------------------------------|-----------------------|-------|-----------|-------|----------|-------------------|
|      |                                | Pre-test              |       | Post-test |       |          |                   |
|      |                                | F                     | %     | F         | %     |          |                   |
| 1.   | <b>None</b><br>(grade 0)       | 0                     | 0     | 20        | 66.66 | 46.667   | df=3<br>p value=0 |
| 2.   | <b>Mild</b><br>(grade 1)       | 5                     | 16.66 | 10        | 33.33 |          |                   |
| 3.   | <b>Moderate</b><br>(grade 2-3) | 7                     | 23.33 | 0         | 0     |          |                   |
| 4.   | <b>Severe</b><br>(grade 4-5)   | 18                    | 60    | 0         | 0     |          |                   |

**(\*\*\*p<0.001)**

**Table 4** shows the frequency and percentage distribution of pre and post-test degree of intravenous phlebitis in Experimental group II. During pre-test majority of the patients, 18(60%) had severe symptoms, 7(23.33%) had moderate symptoms (16.67%) had mild symptoms whereas in post-test, majority of 20(66.6%) patients had no symptoms, and only 10(33.33%) had mild symptoms. The Chi square value was 46.667 and P value was 0 which was significant at level of  $P<0.0001$ . Hence it shows that there was a significant difference in pre and post degree of phlebitis among patients in Experimental group II and proves that magnesium sulphate application was effective in minimizing phlebitis. Hence  $H_1$  was accepted.

### SECTION III

#### Testing of hypothesis

**H<sub>2</sub>:** There will be a significant difference in the post-test degree of phlebitis among adult patients in group I and II.

**Table 5:** Data pertaining to comparison of post-test degree of Intravenous phlebitis among adult patients with intravenous phlebitis in Experimental group I and II.

N=60

| Phlebitis grading scale        | Experimental group I |       | Experimental group II |       | $\chi^2$ | P value             |
|--------------------------------|----------------------|-------|-----------------------|-------|----------|---------------------|
|                                | f                    | %     | F                     | %     |          |                     |
| <b>None</b><br>(grade 0)       | 12                   | 40    | 20                    | 66.66 | 10.0     | df=3<br>0.0185<br>* |
| <b>Mild</b><br>(grade 1)       | 10                   | 33.33 | 10                    | 33.3  |          |                     |
| <b>Moderate</b><br>(grade 2-3) | 8                    | 26.66 | 0                     | 0     |          |                     |
| <b>Severe</b><br>(grade 4-5)   | 0                    | 0     | 0                     | 0     |          |                     |

(\*p<0.05)

**Table 5** shows the comparison of post-test degree of phlebitis among adult patients in experimental group I and experimental group II. The chi-square value was 10.0 and P value was 0.0185 which was significant at the level of  $p < 0.05$ . Hence there was difference between experimental group I and experimental group II on degree of phlebitis among adult patients. This proves that there is a difference between *Aloe vera* application and magnesium sulphate application with regard to control of inflammation among adult patients with intravenous phlebitis. Hence H<sub>2</sub> was accepted.



**Table 6: Data pertaining to the effectiveness of application on *Aloe vera* and Magnesium sulphate in reducing Intravenous phlebitis among adult patients in Experimental group I and II**

**N=60**

| Variables                                     | Post-test |       | Paired t test | df | P value     |
|---|-----------|-------|---------------|----|-------------|
|   | Mean      | SD    |               |    |             |
| Experimental group I<br>( <i>Aloe vera</i> )  | 1.656     | 0.570 | 4.3884        | 58 | 0.002<br>** |
| Experimental group II<br>(MgSO <sub>4</sub> ) | 1.432     | 1.145 |               |    |             |

**(\*\*p<0.01)**

**Table 6** reveals the data pertaining to the application of *Aloe vera* and Magnesium sulphate in reducing intravenous phlebitis. It shows that in experimental group I, the mean post-test score is 1.656 with standard deviation of 0.570 where as in experimental group II the mean post-test is 1.432 with standard deviation of 1.145. The obtained t-test value was 4.388 and the p value was 0.01. Also the table value is 0.002 which was less than calculated value. This shows that magnesium sulphate was more effective than *Aloe vera* in treating Phlebitis. Therefore, the research hypothesis H<sub>2</sub> was accepted.

## SECTION IV

### Testing hypothesis

**H<sub>3</sub>:** There will be a significant association between the degree of phlebitis with selected socio demographic and clinical variable.

**Table 7: Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected socio demographic variables of adult patients in experimental group I**

N=30

| S.No | Socio demographic variables | Experimental group I |      |          |        | $\chi^2$ | P value        |
|------|-----------------------------|----------------------|------|----------|--------|----------|----------------|
|      |                             | None                 | Mild | Moderate | Severe |          |                |
| 1.   | <b>Age (in years)</b>       |                      |      |          |        | 0.035    | df=2<br>0.982  |
|      | a) 40-45 years              | 3                    | 3    | 2        | 0      |          |                |
|      | b) 46-50 years              | 5                    | 2    | 4        | 0      |          |                |
|      | c) 51-55 years              | 2                    | 2    | 2        | 0      |          |                |
|      | d) 56-60 years              | 2                    | 3    | 0        | 0      |          |                |
| 2.   | <b>Gender</b>               |                      |      |          |        | 5.972    | df=2<br>0.050  |
|      | a) Male                     | 4                    | 2    | 6        | 0      |          |                |
|      | b) Female                   | 8                    | 8    | 2        | 0      |          |                |
| 3.   | <b>Marital status</b>       |                      |      |          |        | 7.5      | df =6<br>0.277 |
|      | a) Married                  | 12                   | 8    | 4        | 0      |          |                |
|      | b) Unmarried                | 0                    | 0    | 0        | 0      |          |                |
|      | c) Single                   | 0                    | 0    | 0        | 0      |          |                |
|      | d) Widow                    | 0                    | 2    | 4        | 0      |          |                |
| 4.   | <b>Residential area</b>     |                      |      |          |        | 5.615    | df=6<br>0.467  |
|      | a) Rural                    | 3                    | 2    | 3        | 0      |          |                |
|      | b) Semi-rural               | 0                    | 1    | 0        | 0      |          |                |
|      | c) Urban                    | 5                    | 5    | 5        | 0      |          |                |
|      | d) Semi urban               | 4                    | 2    | 0        | 0      |          |                |
| 5.   | <b>Religion</b>             |                      |      |          |        | 1.161    | df =4<br>0.88  |
|      | a) Christian                | 4                    | 5    | 3        | 0      |          |                |
|      | b) Muslim                   | 2                    | 2    | 1        | 0      |          |                |
|      | c) Hindu                    | 6                    | 3    | 4        | 0      |          |                |

|    |                                |   |   |   |   |       |        |
|----|--------------------------------|---|---|---|---|-------|--------|
| 6. | <b>Educational status</b>      |   |   |   |   |       |        |
|    | a) Profession                  | 0 | 2 | 2 | 0 |       |        |
|    | b) Graduate or post graduate   | 2 | 3 | 1 | 0 | 12.51 | df=12  |
|    | c) Intermediate or high school | 4 | 1 | 4 | 0 | 9     | 0.404  |
|    | d) High school                 | 3 | 2 | 0 | 0 |       |        |
|    | e) Middle school               | 2 | 0 | 0 | 0 |       |        |
|    | f) Primary school              | 1 | 3 | 1 | 0 |       |        |
|    | g) Illiterate                  | 0 | 0 | 0 | 0 |       |        |
| 7. | <b>Income</b>                  |   |   |   |   |       |        |
|    | a) $\geq 25000$                | 0 | 2 | 1 | 0 |       |        |
|    | b) 20000-24999                 | 2 | 3 | 3 | 0 | 6.772 | df=6   |
|    | c) 15000-19999                 | 7 | 5 | 2 | 0 |       | 0.3442 |
|    | d) 10000-14999                 | 3 | 0 | 2 | 0 |       |        |
|    | e) 5000-9999                   | 0 | 0 | 0 | 0 |       |        |
|    | f) $< 50000$                   | 0 | 0 | 0 | 0 |       |        |

(\*\*p>0.01)

**Table 7** shows the significant association between the degree of phlebitis and selected socio demographic variables such as gender (0.05). There is no association found between the degree of phlebitis and selected socio demographic variables such as age, marital status, family monthly income, religion and place of living. Hence  $H_3$  was partially accepted.

**Table 8: Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected clinical variables in experimental group I**

**N=30**

| S. No | Clinical variables                   | Experimental group I |      |          |        | $\chi^2$ | P value        |
|-------|--------------------------------------|----------------------|------|----------|--------|----------|----------------|
|       |                                      | None                 | Mild | Moderate | Severe |          |                |
| 1.    | <b>Site of intravenous cannula</b>   |                      |      |          |        |          |                |
|       | a) Radial vein                       | 5                    | 7    | 5        | 0      | 4.043    | df =6<br>0.670 |
|       | b) Cephalic vein                     | 5                    | 3    | 3        | 0      |          |                |
|       | c) Anti cubital vein                 | 2                    | 0    | 0        | 0      |          |                |
| 2.    | <b>Duration of hospital stay</b>     |                      |      |          |        |          |                |
|       | a) 3 days                            | 4                    | 3    | 2        | 0      | 7.402    | df =4<br>0.116 |
|       | b) 5 days                            | 6                    | 6    | 5        | 0      |          |                |
|       | c) More than 5 days                  | 2                    | 1    | 1        | 0      |          |                |
| 3.    | <b>Size of intravenous cannula</b>   |                      |      |          |        |          |                |
|       | a) 18 gauge (green)                  | 2                    | 1    | 1        | 0      | 0.656    | df =4<br>0.956 |
|       | b) 20 gauge (pink)                   | 2                    | 3    | 2        | 0      |          |                |
|       | c) 24 gauge (blue)                   | 8                    | 6    | 5        | 0      |          |                |
| 4.    | <b>Allergy to any medication</b>     |                      |      |          |        |          |                |
|       | a) Yes                               | 0                    | 0    | 0        | 0      | 0        | df=2<br>1.0    |
|       | b) No                                | 12                   | 10   | 8        | 0      |          |                |
| 5.    | <b>History of bleeding disorders</b> |                      |      |          |        |          |                |
|       | a) Yes                               | 0                    | 0    | 0        | 0      | 0        | df=2<br>1      |
|       | b) No                                | 12                   | 10   | 8        | 0      |          |                |

|    |   |   |   |   |   |       |       |
|----|---|---|---|---|---|-------|-------|
| 6. | <b>Frequency of changing IV cannula</b> |   |   |   |   |       |       |
|    | a) 3 days                               | 6 | 5 | 3 | 0 | 2.646 | df=4  |
|    | b) 5 days                               | 6 | 4 | 5 | 0 |       | 0.618 |
|    | c) More than 5 days                     | 0 | 0 | 0 | 0 |       |       |

**Table 8** shows the association between the degree of phlebitis and selected clinical variables such as site of intravenous cannula (0.6700) duration of hospital stay (0.116), size of intravenous cannula (0.956), history of bleeding disorders (1), allergy to medications (1), frequency of changing IV cannula (0.618). There was no association found between the degree of phlebitis and selected clinical variables. Hence  $H_3$  was rejected.

**Table 9: Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected socio demographic variables in experimental group II**

**N=30**

| S.No | Demographic variables   | Experimental group II |                  |                  |                  | $\chi^2$ | P value       |
|------|---|-----------------------|------------------|------------------|------------------|----------|---------------|
|      |   | None                  | Mild             | Moderate         | Severe           |          |               |
| 1.   | <b>Age (in years)</b><br>a) 40-45 years<br>b) 46-50 years<br>c) 51-55 years<br>d) 56-60 years | 3<br>4<br>10<br>3     | 3<br>2<br>2<br>3 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 3        | df=3<br>0.391 |
| 2.   | <b>Gender</b><br>a) Male<br>b) Female   | 12<br>8               | 2<br>8           | 0<br>0           | 0<br>0           | 4.286    | df=3<br>0.232 |
| 3.   | <b>Marital status</b><br>a) Married<br>b) Unmarried<br>c) Single<br>d) Widow                  | 12<br>2<br>0<br>6     | 8<br>0<br>0<br>2 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 1.2      | df =3<br>0.75 |
| 4.   | <b>Residential area</b><br>a) Rural<br>b) Semi-rural<br>c) Urban<br>d) Semi-urban             | 0<br>0<br>15<br>5     | 2<br>1<br>5<br>2 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 6.696    | df=3<br>0.822 |
| 5.   | <b>Religion</b><br>a) Christian<br>b) Muslim<br>c) Hindu                                      | 4<br>2<br>6           | 5<br>2<br>3      | 3<br>1<br>4      | 0<br>0<br>0      | 1.161    | df =4<br>0.88 |

|    |                                |    |   |   |   |       |                      |
|----|--------------------------------|----|---|---|---|-------|----------------------|
| 6. | <b>Educational status</b>      |    |   |   |   |       |                      |
|    | a) Profession                  | 0  | 2 | 0 | 0 |       |                      |
|    | b) Graduate or post graduate   | 4  | 3 | 0 | 0 | 7.848 | df=3<br>0.492        |
|    | c) Intermediate or high school | 4  | 1 | 0 | 0 |       |                      |
|    | d) High school                 | 3  | 2 | 0 | 0 |       |                      |
|    | e) Middle school               | 0  | 0 | 0 | 0 |       |                      |
|    | f) Primary school              | 9  | 3 | 0 | 0 |       |                      |
|    | g) Illiterate                  | 0  | 0 | 0 | 0 |       |                      |
| 7. | <b>Income</b>                  |    |   |   |   |       |                      |
|    | a) $\geq 25000$                | 0  | 2 | 0 | 0 |       |                      |
|    | b) 20000-24999                 | 0  | 3 | 0 | 0 | 12.64 | df=3<br>0.005<br>*** |
|    | c) 15000-19999                 | 7  | 5 | 0 | 0 |       |                      |
|    | d) 10000-14999                 | 13 | 0 | 0 | 0 |       |                      |
|    | e) 5000-9999                   | 0  | 0 | 0 | 0 |       |                      |
|    | f) $< 50000$                   | 0  | 0 | 0 | 0 |       |                      |

**Table 9** shows the significant association between the degree of phlebitis and selected socio demographic variables such as monthly income (0.005\*\*). It shows that there is no association found between the degree of phlebitis and other selected socio demographic variables such as gender, age, educational status, religion and place of living. Hence  $H_3$  was partially accepted.

**Table 10: Data pertaining to association between post-test degrees of Intravenous phlebitis among adult patients with selected clinical variables in experimental group II**

**N=30**

| S. No | Clinical variables                   | Experimental group II |      |          |        | $\chi^2$ | P value        |
|-------|--------------------------------------|-----------------------|------|----------|--------|----------|----------------|
|       |                                      | None                  | Mild | Moderate | Severe |          |                |
| 1.    | <b>Site of intravenous cannula</b>   |                       |      |          |        | 0.075    | df =2<br>0.963 |
|       | a) Radial vein                       | 13                    | 7    | 0        | 0      |          |                |
|       | b) Cephalic vein                     | 7                     | 3    | 0        | 0      |          |                |
|       | c) Anti cubital                      | 0                     | 0    | 0        | 0      |          |                |
| 2.    | <b>Duration of hospital stay</b>     |                       |      |          |        | 3.6      | df =2<br>0.165 |
|       | a) 3 days                            | 4                     | 3    | 0        | 0      |          |                |
|       | b) 5 days                            | 14                    | 6    | 0        | 0      |          |                |
|       | c) More than 5 days                  | 2                     | 1    | 0        | 0      |          |                |
| 3.    | <b>Size of intravenous cannula</b>   |                       |      |          |        | 4.35     | df =2<br>0.11  |
|       | a) 18 gauge (green)                  | 0                     | 1    | 0        | 0      |          |                |
|       | b) 20 gauge (pink)                   | 2                     | 3    | 0        | 0      |          |                |
|       | c) 24 gauge (blue)                   | 18                    | 6    | 0        | 0      |          |                |
| 4.    | <b>Allergy to any medication</b>     |                       |      |          |        | 0        | df=1<br>1      |
|       | a) Yes                               | 20                    | 10   | 0        | 0      |          |                |
|       | b) No                                | 0                     | 0    | 0        | 0      |          |                |
| 5.    | <b>History of bleeding disorders</b> |                       |      |          |        | 0        | df=1<br>1      |
|       | a) Yes                               | 20                    | 10   | 0        | 0      |          |                |
|       | b) No                                | 0                     | 0    | 0        | 0      |          |                |



|    |   |   |   |   |   |       |       |
|----|---|---|---|---|---|-------|-------|
| 6. | <b>Frequency of changing IV cannula</b> |   |   |   |   |       |       |
|    | a) 3 days                               | 6 | 5 | 0 | 0 |       |       |
|    | b) 5 days                               | 6 | 5 | 0 | 0 | 5.455 | df=2  |
|    | c) More than 5 days                     | 8 | 0 | 0 | 0 |       | 0.653 |

**Table 10** shows the association between the degree of phlebitis and selected clinical variables such as site of intravenous cannula (0.93), duration of hospital stay (0.165), size of intravenous cannula (11), history of bleeding disorders (1), allergy to medications(1), frequency of changing IV cannula (0.653). There was no association found between the degree of phlebitis and selected clinical variables. Hence  $H_3$  was rejected

## SUMMARY

This chapter dealt with the major findings of the demographic and clinical variables of adult patients with intravenous phlebitis, description of post- test degree of phlebitis with and without application of aloe vera and magnesium sulphate, effectiveness by comparing the degree of phlebitis between both groups, association between the post interventional degree of phlebitis with selected demographic and clinical variables.

## CHAPTER V

### DISCUSSION

This chapter deals with the discussion of the data analyzed based on the objectives and Hypothesis of the study. The problem statement was “**A comparative study to assess the effectiveness of *Aloe vera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai**”.

The discussion was based on the objectives of the study and hypothesis mentioned in the study.

### OBJECTIVES OF THE STUDY

The objectives of the study are,

- To assess the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and Magnesium sulphate among adult patients in experimental group I and II
- To assess the effectiveness by comparing the post-test degrees of Intravenous phlebitis among adult patients in experimental group I and II.
- To associate the degree of Intravenous phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II.

### Objectives -1

**To assess the degree of phlebitis in intravenous site before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in experimental group I and II**

During pre-test, majority of the adult patients, 10(33.33%) had severe symptoms, 105(50%) had moderate symptoms and 5(16.66%) had mild symptoms, whereas in post-test, majority of 12(40%) do not have symptoms, 10(33.33%) had mild symptoms and 8(26.66%) had moderate symptoms. The Chi square value was 26.857, P value was 0.000631 which was highly significant at level of  $P < 0.0001$ . Hence it shows that there was a significant difference in pre and post-test degree of phlebitis among phlebitis patients in Experimental group I and proves that *Aloe vera* application was effective in minimizing phlebitis. Hence  $H_1$  accepted.

During pre-test majority of the patients, 18(60%) had severe symptoms, 7(23.33%) had moderate symptoms and 5(16.67%) had mild symptoms whereas in post-test, majority of 20(66.6%) patients had no symptoms, and only 10(33.33%) had mild symptoms. The Chi square value was 46.667 and P value was 0 which was significant at level of  $P < 0.0001$ . Hence it shows that there was a significant difference in pre and post degree of phlebitis among patients in Experimental group II and proves that magnesium sulphate application was effective in minimizing phlebitis. Hence  $H_1$  accepted.

### **Objectives -2**

**To assess the effectiveness by comparing the post-test degree of phlebitis among adult patients in experimental groups I and II.**

The result shows the comparison of post-test degree of phlebitis among adult patients in experimental group I and experimental group II. The chi-square value was 10.0 and P value was 0.0185 which was significant at the level of  $p < 0.05$ . Hence there was difference between experimental group I and experimental group II on degree of phlebitis among adult patients. This proves that there is a difference between *Aloe vera* application and magnesium sulphate application with regard to control of inflammation among adult patients with intravenous phlebitis. Hence  $H_2$  accepted.

### **Objectives -3**

**To associate the degree of phlebitis with selected socio demographic and clinical variables of adult patients in experimental group I and II**

The association between the degree of phlebitis and selected socio demographic variables such as gender (0.05), There is no association found between the degree of phlebitis and selected socio demographic variables such as age, marital status, family monthly income, religion and place of living. Hence  $H_3$  was rejected. Association between the degree of phlebitis and selected clinical variables such as site of intravenous cannula (0.6700) duration of hospital stay (0.116), size of intravenous cannula (0.956), history of bleeding disorders (1), allergy to medications (1), frequency of changing IV cannula (0.618). There was no association found between the degree of phlebitis and selected clinical variables. Hence  $H_3$  was rejected.

## **SUMMARY**

This chapter dealt with the major findings of the demographic and clinical variables of adult patients with intravenous phlebitis with and without application of *Aloe vera* and magnesium sulphate, effectiveness by comparing the degree of phlebitis association with selected demographic and clinical variables.

## CHAPTER VI

### SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study and the conclusion drawn, findings, conclusion drawn, nursing implications of the study for different areas like nursing practice, nursing education, nursing administration and nursing research and also includes the recommendation for future research in the field.

#### SUMMARY

The summary includes the, objectives of the study, description of procedure used, major findings and conclusion and recommendations for further research study on **“A comparative study to assess the effectiveness of *Aloe vera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai”**.

#### THE OBJECTIVES OF THE STUDY

The objectives of the study are,

- To assess the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in experimental group I and II
- To assess the effectiveness by comparing the post-test degree of Intravenous phlebitis among adult patients in experimental groups I and II.
- To associate the degree of Intravenous phlebitis with selected socio demographic and clinical variables of adult patients in experimental groups I and II.

#### HYPOTHESES

**H1:** There will be a significant difference in the degree of Intravenous phlebitis before and after application of *Aloe vera* gel and magnesium sulphate among adult patients in group I and II.

**H2:** There will be a significant difference in the post-test degree of Intravenous phlebitis among adult patients in experimental group I and II.

**H3:** There will be a significant association between the degree of Intravenous phlebitis with selected socio demographic and clinical variable of adult patients in experimental group I and II.

The **conceptual framework** adopted for this study is based on the **Katherine Kolcaba comfort theory**. It consist of health care need, comforting interventions, intervening variables, enhanced comfort, comforting health seeking behaviors and institutional strategy.

The investigator organized the **Review of literature** under the following headings:

- I. Empirical studies related to incidence and prevalence of Intravenous phlebitis
- II. Empirical studies related to *Aloe vera* gel application on reduction of intravenous phlebitis among adult patients.
- III. Empirical Studies related to Magnesium sulphate application on reduction of Intravenous phlebitis among adult patients.
- IV. Empirical Studies related to comparison of *Aloe vera* Magnesium sulphate application on reduction of Intravenous phlebitis among adult patients.

Content validity was established by 10 experts in the field like eight experts in the field of medical and surgical nursing and one physician and one statistician. Reliability of the tool was calculated by Karl Pearson coefficient formula method. In this study the reliability of the tool was 0.9.

Pilot study was conducted in the month of February for a period of one week in Annammal hospital, Kuzhithurai. 10 Samples were selected based on the inclusion and exclusion criteria. Structured questionnaire was given to the patients to obtain demographic and clinical data. Then the researcher applied *Aloe vera* to 5 adult patients with intravenous phlebitis and other 5 of them with magnesium sulphate morning and evening for 2 days. After the application of *Aloe vera* and magnesium sulphate, post-test was done by using Modified phlebitis scale among adult patients with Intravenous phlebitis.

Main study data collection was done for 4 weeks in Annammal Hospital, Kuzhithurai. The sample of 60 adults with intravenous phlebitis was selected.

Collected data was analyzed by using the descriptive statistics (mean, standard deviation, frequency and percentage) and inferential statistics (paired t- test, chi-square) and results were calculated.

## **FINDINGS**

### **Findings related to socio demographic and clinical variables among adult patients with intravenous phlebitis in experimental group I and II**

With regard to age in experimental group I and II, majority of adult patients 13(43.33%) and 10 (33.33%) falls between the age group of 40-45 years, 7 (23.33%) and 5(16.66%) samples were between the age group of 46-50years. 5(16.66%) and 12(40%) were between the age group of 51-55years. Also a least proportion of 5(16.67%) and 3(3.10%) were between the age group of 56 -60years of age respectively.

With regard to gender in experimental group I and II, majority of the samples 16(53.33%) and 20(66.66%) were males, whereas 14(46.66%) and 10(33.33%) were females respectively.

With regard to marital status in experimental group I and II, majority of the samples 24(80%) and 20(66.66%) were married and 6(20%) and 8(26.66%) were widows in experimental group I and II.

With regard to the area of residence in experimental group I and II, majority of the samples 15(50%) and 13(43.33%) were from semi-rural background, 17(56.67%) and 13(43.33%) were from semi-urban background.

With regard to religion, in Experimental group I and II, majority of the adult patients 16(53.33%) and, 17(57.67%) were Christians in Experimental group I, and experimental group II. Hindus were 10(33.33%) and 13(43.33%) respectively. Comparatively Muslims were found limited in number of 4(13.33%) in each group.

With regard to educational status, majority of the patients 10(33.33%) and 12(40%) completed intermediate high school education in experimental group I and II respectively. 9(30%) patients in experimental group I and 7(23.33%) patients in experimental group II were graduates, 5(16.66%) and 4(13.33%) patients has undergone primary school education in group I & II respectively. 5(16.66%) and 2(6.6%) patients were illiterates in the experimental group I and II.

With regard to family monthly income, in experimental group I and II majority 12(40%) and 8 (26.66%) patients are earning an income between Rs.20000 – 24999. 11 (36.66%) and 12(40%) patients are earning an income

between Rs 15000 - 19999 in group I and II respectively. 5 (16.66%) of them in the both groups are earning an income between Rs.10000 – 14999. Also a least of 2 (6.67%) and 3(10%) patients are earning an income between Rs.5000 – 9999.

With regard to site of intravenous cannulation in experimental group I and II majority of the samples 17(56.67%) and 12(40%) used radial artery as the site for IV infusion and 9(30%) and 8(26.67%) have used cephalic vein as the site for IV infusion.

With regard to the duration of hospital stay, 12(40%) in the experimental group I and 12(40%) in experimental group II were admitted in the hospital for more than 5 days whereas 9(30%) and 8(26.67%) were admitted in the hospital for 3 days in experimental group I and II.

With regard to size of intravenous cannula, 18(60%)samples in experimental group I and 15(50%) in experimental group II used 24 gauge (blue)cannula. whereas 10 (33.33%) samples in both groups used 20 gauge(pink)intravenous cannula for IV infusion.

With regard allergy to any medication, none of the patients in experimental group I&II has history of medication allergy.

With regard to presence of any bleeding disorder, none of the patients in experimental group I&II has history of bleeding disorder.

With regard to frequency of changing intravenous cannulation, in the experimental group I & II, for majority 19(63.33%)and 18(60) of the patients, the cannula was changed every three days, for 11(36.66%)and12(40%) patients in the experimental group I & II the cannula was changed every 5 days.

### **Findings related to assessment of level of intravenous phlebitis before and after application of intervention experimental group I and II**

During pre-test, majority of the adult patients, 10(33.33%) had severe symptoms, 105(50%) had moderate symptoms and 5(16.66%) had mild symptoms, whereas in post-test, majority of 12(40%) do not have symptoms, 10(33.33%) had mild symptoms and 8(26.66%) had moderate symptoms. The Chi square value was 26.857, P value was 0.000631 which was highly significant at level of  $P < 0.0001$ . Hence it shows that there was a significant difference in pre and post-test degree of phlebitis among phlebitis patients in Experimental group I and proves that *Aloe vera* application was effective in minimizing phlebitis. Hence  $H_1$  accepted.



During pre-test majority of the patients, 18(60%) had severe symptoms, 7(23.33%) had moderate symptoms and 5(16.67%) had mild symptoms whereas in post-test, majority of 20(66.6%) patients had no symptoms, and only 10(33.33%) had mild symptoms. The Chi square value was 46.667 and P value was 0 which was significant at level of  $P < 0.0001$ . Hence it shows that there was a significant difference in pre and post degree of phlebitis among patients in Experimental group II and proves that magnesium sulphate application was effective in minimizing phlebitis. Hence  $H_1$  accepted.

## **CONCLUSION**

The main conclusion of the study was magnesium sulphate is effective in reducing phlebitis among adult patients, which is denoted by significant reduction in degree of phlebitis.

## **IMPLICATIONS OF THE STUDY**

Based on the findings, the researcher recommended the implications on Nursing practice, Nursing administration, Nursing education and Nursing research.

### **Nursing Practice**

- The findings of the study revealed that magnesium sulphate can be included for treatment of phlebitis.
- Evidence based practice helps the staff to update their clinical knowledge.

### **Nursing Administration**

- The Nurse administrators can insist the importance of prevention of intravenous phlebitis through development programmes like in-service education and continuing nursing education programme.
- This enables the nurse to update the knowledge and render the effective care to the public.

### **Nursing Education**

- Nursing students could learn the assessment of phlebitis.
- Nursing students should be taught about the importance of phlebitis management
- Adequate practical training can be given to the nursing staff and students regarding treatment of intravenous phlebitis.

### **Nursing Research**

- The professionals and the students can conduct many studies in different complimentary therapies to bring about newer perspectives
- Nurse researcher should challenge to perform scientific work and take part in assessment, applications in patients with phlebitis.
- This study will be the reference for the extensive and intensive nursing care.

### **RECOMMENDATIONS**

- Similar study can be conducted on large population.
- Similar comparative study can be done with other treatment options

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# ANNEXURE I



## Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,  
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)  
Annammal Hospital Campus, KUZHITHURAI - 629 163  
K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605  
www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayalal MBBS, DGO  
Chairperson

Date : 5-6-2017

To

The Chief Medical Officer,  
Annammal Hospital,  
Kuzhithurai.

Respected Madam,

Sub: Seeking permission to conduct the Research study .

Ms. Vidhya. S II year M.Sc Nursing student of Annammal College of Nursing, is approaching you to conduct a Research study on **“A comparative study to assess the effectiveness of Aloe vera gel application versus magnesium Sulphate application on reduction of Intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai”** which she has to be complete as a partial fulfillment of university requirement for the award of Master of Science in Nursing Degree.

In this regard, I request you to give her permission to conduct the research study in your hospital.,

Thanking you

Yours sincerely,



*[Signature]*  
Dr. J.M. Jeyapriya, M.Sc(N), Ph.D(N),  
Principal,  
Annammal College of Nursing,  
Kuzhithurai - 629 163,  
Kanyakumari District.

*“What we are is gift of god and What we become is gift to god”*

**ANNEXURE II**  
**PERMISSION LETTER FROM ETHICAL COMMITTEE**

Valid from: 2016

Valid to: 2017

Name of the Investigator: Ms. Vidhya.S.

The Ethical committee meeting held on 07-03-2015 had reviewed the project titled "A comparative study to assess the effectiveness of *Aloevera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal hospital Kuzhithurai". The proposal was submitted before the ethical committee for the acceptance and found to be acceptable on ethical grounds. The ethical committee held responsibility and accountability for the investigator for any other administrative approvals that may pertain to this research. This has to be carried out according to conditions outlined in the original protocol submitted for ethical review.

This certificate of approval is valid for the time period provided, there is no change in the methodology protocol or consent process and documents.

Any significant change should be reported to guide for its considerations in advance for its implementation.

Signature of Ethical Committee members:

1) **Dr. Sheeba Jayalal, M.B.B.S, D.G.O.,**  
Chief Medical Officer.

2) **Dr. Jayalal, M.S.,F.I.C.S.,(Germany),M.B.A.,F.I.A.G.E.S**  
Chief Surgeon.

3) **Dr. Jerlin Priya, M.Sc(N),PhD(N)**  
Research Guide& Advisor.

4) **Mr. Theodre Samuvel, M.Sc(Psychology)**  
Psychologist.

5) **Mrs.Ahitha, M.Sc(N)**  
Class Coordinator.

6) **Mrs. Starina Flower, M.Sc(N)**  
Subject Guide.

## ANNEXURE III



### Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,  
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)  
Annammal Hospital Campus, KUZHITHURAI - 629 163  
K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605  
www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayal MBBS, DGO  
Chairperson

Date : 21/2/17

To

Dr. Mrs. Sharmila  
Vice Principal  
Christian College of Nursing  
Neyyoor  
Madam Sir,

Sub: M.Sc Nursing Programme - Dissertation - Validation of study tool  
request - reg.

Ms. Vidhya.S, a bonafide II year M.Sc Nursing student of Annammal College of Nursing is approaching you to obtain validation her study tool pertaining to her dissertation in partial fulfillment of the requirements for the degree of Master of Science in Nursing. The selected topic is

“A Comparative study to assess the effectiveness of alovera gel application versus magnesium sulphate application on reduction of intravenous phlebitis and pain among adult patients in selected hospitals at Kanyakumari district.”

In this regard I request you to kindly extent possible technical guidance and support for successful completion of dissertation.

I enclosed here with a check list for your evaluation.

Thanking you

Yours sincerely,



*[Signature]*  
Principal.  
ANNAMMAL COLLEGE OF NURSING  
KUZHITHURAI - 629 163

“What we are is gift of god and What we become is gift to god”



## ANNEXURE IV

### VALIDATION FOR RESEARCH TOOL

#### Instructions

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.

| S. No | CRITERIA   | 1 | 2 | 3 | REMARKS |
|-------|--|---|---|---|---------|
| 1.    | Content <ul style="list-style-type: none"><li>➤ Adequacy</li><li>➤ Relevance</li><li>➤ Organized</li></ul>         |   |   |   |         |
| 2.    | Language <ul style="list-style-type: none"><li>➤ Simplicity</li><li>➤ Clarity</li><li>➤ Relevant</li></ul>         |   |   |   |         |
| 3.    | Scoring <ul style="list-style-type: none"><li>➤ Easy to score</li><li>➤ Clarity</li><li>➤ Relevant</li></ul>       |   |   |   |         |
| 4.    | Practicability <ul style="list-style-type: none"><li>➤ Procedure</li><li>➤ Utility</li><li>➤ Feasibility</li></ul> |   |   |   |         |

#### Interpretation of column:

Column I : Meets the criteria.

Column II : Partially meets the criteria.

Column III: Does not meets the criteria.

Designation :

Signature of the Expert

**ANNEXURE V**  
**LIST OF EXPERTS**

1. **Mrs. Sheeba. C MSc(N)**  
Reader,  
Christian college of Nursing,  
Neyyoor.  
Kanyakumari District
2. **Mrs. Merlin Suja. MSc(N)**  
Reader  
C.S.I. College of nursing,  
Marthandam  
Kanyakumari District
3. **Mrs. Moona. J. Cicil. MSc(N),**  
Associate Professor,  
Christian College of Nursing,  
Neyyoor,  
Kanyakumari District
4. **Mrs. Meenu. MSc(N)**  
Associate Professor,  
Grace College of  
Nursing,  
Padanthal moodu,  
Kanyakumari District
5. **Mrs. Vini. William. MSc (N)**  
Associate Professor,  
Thassiah college of Nursing,  
Marthandam,  
Kanyakumari District
6. **Mr. Anto John Britto. M.Sc., M.Ed., M.Phil., PGDBM.,**  
Bio Statistician,  
Scott Christian college,  
Nagercoil,  
Kanyakumari District

## ANNEXURE VI

### RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am Vidhya.S II yr M.Sc Nursing student of Annammal College of Nursing, Kuzhithurai. As a part of my academic requirement, I am conducting a study on ‘A comparative study to assess the effectiveness of *Aloevera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithurai. The findings of the study will be helpful in prevention of further complication among patients with intravenous phlebitis. The study does not possess any threat to health and wellbeing; rather it increases your knowledge. I hereby seek your consent and co-operation to participate in this study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I ..... hereby give my consent to participate in the study.

Place:

Date:

Signature of the participant

## ஆராய்ச்சி ஒப்புதல் படிவம்

அன்பார்ந்த பங்குபெறுவோரே,

வித்யா.செ ஆகிய நான் அன்னம்மாள் செவிலியர் கல்லூரியில் செவிலியர் முதுகலைப்பட்டம் இரண்டாம் ஆண்டு படித்து வருகிறேன். எனது படிப்பின் ஒருபகுதியாக, சிரை ஊசி வழியாக ஏற்படும் பாதிப்புகளையும் அதனை குணப்படுத்தும் எளிய முறை பற்றிய ஆராய்ச்சி செய்கிறேன். இதற்கு தங்களுடைய அனுமதியையும், ஒத்துழைப்பையும் தரவேண்டுகிறேன். தயவு செய்து உங்களுடைய பதில்கள் உண்மையாகவும் வெளிப்படையாகவும் இருக்க வேண்டுகிறேன். உங்கள் பதில்கள் அனைத்தும் ரகசியமாக பாதுகாக்கப்படும் என உறுதி அளிக்கிறேன்.

ஆராய்ச்சியாளரின் கையொப்பம்

நான் ..... இந்த ஆராய்ச்சியில் பங்குபெற சம்மதிக்கிறேன்.

இடம்:

நாள்:

பங்குபெறுவோரின் கையொப்பம்

**ANNEXURE VII**  
**CERTIFICATE OF ENGLISH EDITING**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that the dissertation, “A comparative study to assess the effectiveness of *Aloevera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital, Kuzhithrai by Miss. Vidhya 2<sup>nd</sup> year MSc(N) student of Annammal College of Nursing was edited by me the undersigned for English language appropriateness.

Signature

**ANNEXURE VIII**  
**CERTIFICATE OF TAMIL EDITING**  
**TO WHOMEVER IT MAY CONCERN**

This is to certify that the dissertation, "A comparative study to assess the effectiveness of *Aloevera* gel application versus magnesium sulphate application on reduction of intravenous phlebitis among adult patients in Annammal Hospital Kuzhithrai" by Vidhya.S, 2<sup>nd</sup> year MSc(N) student of Annammal College of Nursing was edited for Tamil language appropriateness by

.....

*G. L. Jose Bensigar*  
1/1/17

Signature

**G.L. JOSE BENSIGAR**  
HEADMASTER  
ST. MARY'S HR. SEC. SCHOOL  
MELPALAI - 629 152  
KANYAKUMARI DISTRICT

# ANNEXURE XI

## TOOL I

### SOCIO DEMOGRAPHIC VARIABLE PROFORMA

**Instruction:** Kindly place a tick mark  against the option which you feel as appropriate.

**1. Age**

- a) 40-45 years
- b) 46-50 years
- c) 51-55 years
- d) 55-60 years

**2. Gender**

- a) Male
- b) Female

**3. Residential area**

- a) Rural
- b) Semi-rural
- c) Urban
- d) Semi urban

**4. Marital status**

- a) Married
- b) Unmarried
- c) single
- d) Widow

**5. Religion**

- a) Christian
- b) Muslim
- c) Hindu

**6. Educational status**

- a) Profession
- b) Graduate or post graduate
- c) Intermediate or post high school
- d) High school
- e) Middle school
- f) Primary school
- g) Illiterate
- h) Others

  
  
  
  
  
  
  

**7. Income**

- a)  $\geq 25000$
- b) 20000 – 24999
- c) 15000 -19999
- d) 10000-14499
- e)  $\leq 50000$



**TOOL II**  
**CLINICAL VARIABLE PROFORMA**

**Instruction:** Kindly place a tick mark  against the option which you feel as appropriate.

**1. Site of intravenous cannula**

- a) Radial vein
- b) Cephalic vein
- c) Anti cubital vein

**2. Duration of hospital stay**

- a) 3 days
- b) 5 days
- c) More than 5 days

**3. Size of intravenous cannulation**

- a) 18 gauge (green)
- b) 20 gauge (pink)
- c) 24 gauge (blue)

**4. Allergy to any medication**

- a) Yes
- b) No

**5. History of bleeding disorder**

- a) Yes
- b) No

**6. Frequency of changing intravenous cannula**

- a) 3 days
- b) 5 days
- c) 7 day

## TOOL III

### MODIFIED PHLEBITIS ASSESSMENT SCALE

| S.No | Descriptions   | Grade |
|------|--|-------|
| 1.   | No symptoms  | 0     |
| 2.   | Erythema at access site with or without pain   | 1     |
| 3.   | Pain at access site with erythema and edema  | 2     |
| 4.   | Pain at access site with erythema and or edema and palpable venous cord                                    | 3     |
| 5.   | Pain at access site with erythema, edema and palpable venous cord > 1 inch in length and purulent drainage | 4     |

### SCORING INTERPRETATION

| S.No | INTERPRETATION   | GRADE |
|------|--|-------|
| 1.   | None ( No symptoms)                                    | 0     |
| 2.   | Mild ( Slight pain, redness)                           | 1     |
| 3.   | Moderate( Pain, Redness, Swelling)                     | 2 -3  |
| 4.   | Severe (Pain, Redness, Swelling, Palpable venous cord) | 4-5   |

## நோயாளியின் பொது விவரம்

பயிற்சிக்கு தேர்வு செய்த நபரின் எண்ணிக்கை:

குறிப்பு: கீழே கொடுக்கப்பட்டுள்ள கேள்விகளுக்கு சரியான விடையை தேர்ந்தெடுத்து

அதற்குரிய கட்டத்தில் சரி  என குறியிடுக

1) வயது வரம்பு

1. 20 வயதிற்கு கீழ் உள்ளோர்
2. 21 வயது முதல் 25 வயது வரை உள்ளோர்
3. 26 வயது முதல் 30 வயது வரை உள்ளோர்
4. 30 வயதிற்கு மேல் உள்ளோர்

2) மதம்

1. இந்து
2. கிறிஸ்தவர்
3. முஸ்லீம்
4. பிற மதம்

3) வாழ்மிடம்

1. நகர்ப்புறம்
2. இடைப்பட்ட நகர்ப்புறம்
3. கிராமப்புறம்
4. இடைப்பட்ட கிராமப்புறம்

4) கல்வித்தகுதி

1. படிப்பறிவில்லாதவர்
2. தொடக்கநிலைக்கல்வி
3. இடைநிலைக்கல்வி
4. உயர் நிலைக்கல்வி
5. மேல் நிலைக்கல்வி
6. பட்டதாரி அல்லது முதுகலைபட்டதாரி
7. தொழில்முறைக்கல்வி

5) மாத வருமானம்

1. ரூபாய் 25000 அல்லது அதற்கு மேல்
2. ரூபாய் 20000 முதல் 24999
3. ரூபாய் 15000 முதல் 19999
4. ரூபாய் 10000 முதல் 14999
5. ரூபாய் 5000 முதல் 9999
6. ரூபாய் 5000 திற்கு கீழ்