

**EFFECTIVENESS OF ALOE VERA EXTRACT APPLICATION IN
REDUCING PAIN AMONG PHLEBITIS PATIENTS IN
SELECTED HOSPITALS.**



**BY
301212204**

**A DISSERTATION SUBMITTED TO THE TAMILNADU
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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OCTOBER 2014



*Certified that this is the bonafide work of
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At the Annammal College of Nursing,
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*Submitted in partial fulfillment of the requirements for
the degree of Master of Science in Nursing from the
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Examiners

1. _____
2. _____

**Prof. Mrs. J.M.Jerlin Priya.,
Principal**

OCTOBER 2014

DECLARATION

I hereby declare that the present dissertation titled “A quasi experimental study to evaluate the effectiveness of aloevera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District..”, is the outcome of the original research work undertaken and carried out by me under the guidance of **Prof. Mrs.J.M.Jerlin Priya, M.Sc (N).**, Principal cum Professor in Medical Surgical Nursing Department and **Ms.Vinoli.S.G, M.Sc (N)**, HOD in Medical Surgical Nursing, Annammal college of Nursing. I also declare that the material of this has not found in anyway, the basis for the award of any degree or diploma in this university or any other university.

301212204

M.Sc Nursing II Year

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301212204
MSc. (N) II YEAR

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| IX | Certificate of English Editing. |
| X | Certificate of Tamil Editing |
| XI | Certificate of Statistical analysis and interpretation. |
| XII | Tool for data collection (English and Tamil) Part: I Structured questionnaire to collect the demographic Variables. Part: II Level of Pain. |
| XIII | Master code sheet. |
| XIV | Compact disk. |

LIST OF ABBREVIATIONS

| | |
|--------------|---|
| NSAID | - Non steroidal anti-inflammatory drug. |
| IV | - Intra venous |
| PVT | - Peripheral venous thrombophlebitis |
| PIVC | - Peripheral intravenous catheters |
| RCTs | - Randomised controlled trials |
| qRCTs | - Quasi-randomised controlled trials |
| CI | - Confidence interval |
| RR | - Relative risk |

ABSTRACT

A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District

INTRODUCTION

Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain. Phlebitis is an inflammation of a vein that may be caused by infection, the mere presence of a foreign body (the IV catheter) or the fluids or medication being given. Symptoms are warmth, swelling, pain, and redness around the vein. There are many alternative therapies in that aloe vera is very effective in reducing the pain.

Quatrin has done a study on effectiveness of aloe vera gel topically to reduce pain and edema on inflammatory conditions like thrombophlebitis, who were on intravenous infusions. In this study 56 patients were selected who receive intravenous infusion. Assessment was done with the visual infusion phlebitis score with 0-5 scores. The duration of data collection is 30 days. Aloe vera gel was obtained from the leaves that is the central pulp taken after removing the outer hard layer, 1ml of aloe vera taken and applied to the experimental group, for a period of 3 days then the post test score was taken. To conclude the study, statistical analysis showed that pain, edema and severity of inflammation was ($P=0.01$) for the experimental group it was statistically significant.

STATEMENT OF THE PROBLEM

A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.

OBJECTIVES

- To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.
- To assess the level of pain among phlebitis patients without aloe vera extract application in control group.
- To evaluate the effectiveness of aloe vera extract in reducing level of pain among phlebitis patients by comparing the post test score between experimental group and control group.
- To find out the association between the post test level of pain and selected demographic variables in experimental group.

RESEARCH HYPOTHESIS

- H₁ – There will be a significant difference in the post test level of pain between experimental and control group.
- H₂ – There will be significant association between the post test level of pain and selected demographic variables in experimental group.

RESEARCH METHODOLOGY

A quasi experimental study was conducted to evaluate the effectiveness of aloe vera extract application in reducing pain among 60 phlebitis patients in which purposive sampling technique has been used and allotted 30 patients in experimental group and 30 patients in control group. After obtaining the verbal and written consent of the patient to participate in the study, demographic data were collected by the investigator. The intervention was carried out by the investigator in the experimental group. The investigator applied fresh aloe vera extract 1ml topically and after that gauze dressing over it. This dressing will be changed thrice a day (8th hourly) for two continuous days. The investigator assessed the post test level of pain in patients belonging to experimental group and without the intervention in control group using Numerical pain rating scale.

FINDINGS OF THE STUDY

Findings related to the post test level of pain among phlebitis patients in experimental group and control group.

In the experimental group, mean post test pain score was 2.13 with Standard deviation of 1.07. In the control group the mean post test mean score was 1.07 with Standard deviation of 2.11. The mean difference was 4.90. The obtained unpaired t-test value is 7.07 which is more than the table value ($p=2.000$) with the degree of freedom 58 at 0.05 level of significance. It was inferred that there was a significant difference in the post test level of pain and found that aloe vera extract application is effective in reducing level of pain among phlebitis patients.

Findings related to the association between post test level of pain and selected demographic variables in experimental group.

In experimental group, there is a significant association between the post test level of pain and selected demographic variables such as age, gender, previous hospitalization and exercise pattern and there is no significant association between level of pain and selected demographic variable such as residential area, site of IV cannulation, life style pattern, working pattern and food pattern. Hence it was inferred that aloe vera can be applied to all irrespective of their age, gender, previous hospitalization and exercise pattern.

CONCLUSION

The main conclusion of the present study is aloe vera extract application is effective in reducing pain among phlebitis patients which is denoted by significant reduction in level of pain. The selected patients are comfortable and does not had any discomfort. Hence the nurses may include the aloe vera extract application in their routine activities to reduce the pain among phlebitis patients.

CHAPTER I

INTRODUCTION

- *Background of the study*
- *Need for the study*
- *Statement of the problem*
- *Objectives of the study*
- *Hypothesis*
- *Assumption*
- *Operational definition*
- *Delimitations*
- *Conceptual framework*
- *Summary*

CHAPTER I

INTRODUCTION

“If you focus on results

Things will not change

If you focus on change

You will see results”

- Jack Dixon.

Health is the level of functional or metabolic efficiency of a living organism. In humans, it is the general condition of a person's mind and body, usually meaning to be free from illness, injury or pain. Illness is poor health resulting from disease of body or mind; sickness.

Medical treatment can be defined as the use of therapies, such as prescription of medications or others that are specifically ordered and supervised by a physician. Intravenous devices are indispensable and commonly used among hospitalized patients in the modern practice of medicine. The peripheral venous catheter is sometimes routinely inserted into veins of the forearm and hands for possibilities of administration of fluids, drugs and blood products. Some of the side effects of intravenous therapy are Infection, Infiltration/ Extravasation, Fluid overload, Hypothermia, Electrolyte imbalance, Embolism and Phlebitis

Phlebitis is an inflammation of a vein that may be caused by infection, the mere presence of a foreign body (the IV catheter) or the fluids or medication being given. Symptoms are warmth, swelling, pain, and redness around the vein. The IV device must be removed and if necessary re-inserted into another extremity. Due to frequent injections and recurring phlebitis, scar tissue can build up along the vein. Common Complications of phlebitis may include local infection and abscess formation, clot formation, and progression to a deep venous thrombosis and pulmonary embolism. When pronounced deep venous thrombophlebitis will seriously damage the leg veins, this can lead to post-phlebitic syndrome. Post-phlebitic syndrome is characterized by chronic swelling of the involved leg and can be associated with leg pain, discoloration, and ulcers.

Treatment of phlebitis may depend on the location, extent, symptoms, and underlying medical conditions. The treatment of Thrombophlebitis consist of self-care steps that include applying heat to the painful area, elevating the affected leg and using an over-the-counter non steroidal anti-inflammatory drug (NSAID), medications like anticoagulant, support stockings and bypass surgeries. Some recent trends in hospital care include the application of aloe vera gel. Some hospitals are having the practice of this application. Aloe vera gel contains auxins and gibberellins that help in wound healing and have anti-inflammatory action. Hence reduce the pain which is scientifically proved.

Aloe vera is one of the most versatile plants; it is used in ailments for both external and internal purposes. It is used in various forms like gel, juice, capsule etc.. Aloe vera pulp contains water, 20 minerals, 12 vitamins, 18 amino acids, 200 active plant compounds (phytonutrients) including: enzymes, triterpenes, glyconutrients, glycoproteins, polysaccharides including: acemannan, mannose-6-phosphate polymannans, phenolic glycosides including: dihydrocoumarins. It constitutes diverse mixture of antibiotics, pain inhibitors, cell growth stimulators, inflammation fighters, burns healer, capillary dilators, vasoconstrictor inhibitors, moisturizer, antiseptic, detoxifier and maintains a pH of 4.5 the same as human skin and is proved to be effective in various skin disorders.

BACK GROUND OF THE STUDY

Intravenous catheterisation is the most common invasive procedure among patients admitted to hospital, with about half receiving intravenous therapy during their stay. The procedure is not without risks. Between 2.3% and 67% of patients develop thrombophlebitis; the rate depending on definitions used and populations studied. The more serious complication, infection of the bloodstream, occurs in about 0.1% of cases.

Nassaji Zaveareh (2007) conducted a prospective study on peripheral interventions catheter related factor. In this study 300 patients admitted to medical and surgical wards from April 2003 to February 2004 were participated. Variables evaluated were age, gender, site, size of catheter, type of insertion and underlying condition. They were observed for 3 days continuously. Out of that 26 % occurred phlebitis. There were no significant relationship between age, catheter bore size, trauma and phlebitis. Related risk factors were gender, ie., female, site and type of insertion of catheter, comorbidity like

diabetes mellitus and burns. Important role of nurse is to control pain that of thrombophlebitis. The incidence of phlebitis in this study (11.09%) is congruent with the findings of (3.7% to 67.24%) Oliveira and Parreira (2010); however, it is above 5% established by the INS (2006).

Shakun Nakim (2005) A prospective observational study was conducted on “peripheral intravenous catheter related phlebitis and its contributing factors among adult population” at Dhulikhel Hospital, Kathmandu, Nepal. Peripheral intravenous catheter-related phlebitis was reported as a common and significant problem in clinical practice. The study was carried out among 230 clients who were under first time peripheral infusion therapy, during two months period. Peripheral infusion site was examined for signs of phlebitis once a day. Jackson standard visual phlebitis scale was used to measure the severity of the phlebitis. Phlebitis developed in 136/230 clients (59.1%). It was very mild in most cases. Increased incidence rates of infusion related phlebitis were associated with male gender, small catheter size (20 gauge), insertion at the sites of forearm, IV drug administration and blood product transfusions. The incidence rate of phlebitis rose sharply after 36 hours of catheter insertion. Related risk factors found in the study were insertion site (forearm), size of catheter (20G) and dwell time (>36 hours). There was higher incidence of phlebitis among the clients with intravenous drug administration especially between 21-40 years. Therefore, the study suggested more attention and care was needed in these areas by the care- providers

Peripheral venous thrombophlebitis (PVT) is a common complication of intravenous cannulation, occurring in 30% of patients. We evaluated the effect of elective re-siting of intravenous cannulae every 48 hours on the incidence and severity of PVT in patients receiving intravenous fluids/drugs. Randomized 42 patients who were admitted for major abdominal surgery to either the control or study group (n=21 in either group). Informed consent was obtained from all of them. All cases had signs and symptoms suggestive of PVT, namely pain, erythema, swelling, excessive warmth or a palpable venous cord. Cannulae in the study group were changed and re-sited electively every 48 hours. All the patients were examined every 24 hours for signs and symptoms of PVT at the current and previous sites of infusion. The incidence of PVT was 100% (21/21) in the control group and only 9.5% (2/21) in the study group ($p < 0.0001$). The severity of PVT was also less in the study group compared with that in the control group. Day-wise

correlation of the incidence of PVT showed that 82.6% of the episodes of PVT occurred on day 3. Elective re-siting of intravenous cannulae every 48 hours results in a significant reduction in the incidence and severity of PVT. They recommend that this should be adopted as standard practice in managing all patients who require prolonged intravenous therapy.

Phlebitis, if mild, may or may not cause symptoms. Pain, tenderness, redness (Erythema), and bulging of the vein are common symptoms of phlebitis. The redness and tenderness may follow the course of the vein under the skin. Low grade fever may accompany superficial and deep phlebitis. High fever or drainage of pus from the site of Thrombophlebitis may suggest an infection of the Thrombophlebitis (referred to as septic Thrombophlebitis). Palpable cords along the course of the vein may be a sign of a superficial clot or superficial Thrombophlebitis. A deep venous thrombosis may present as redness and swelling of the involved limb with pain and tenderness. In the leg, this can cause difficulty in walking.

NEED FOR THE STUDY

It is estimated that 150 million peripheral intravenous devices are placed each year in North America alone. One of the most common complications of peripheral intravenous catheter is phlebitis that may occur in up to 75% of hospitalized patients. It remains a significant problem in clinical practice and causes patient discomfort, catheter replacement, prolonged hospital stay and healthcare 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 occur worldwide each year.

The registered nurse is the only member of the health team who can, on a continuous basis 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.

The anti-inflammatory and analgesic activities of aqueous extract of Aloe barbadensis was investigated in rats. Formalin- induced hind leg oedema was used to assess the anti- inflammatory activity of the extract while acetic acid-induced abdominal

writhing was used for analgesic activity. The results of the anti-inflammatory study revealed that 25, 50 and 100 mg/kg of the extract reduced the formalin-induced oedema significantly ($P < 0.05$) at the beginning of 3 hours when compared to the control group. In the analgesic study, 25, 50 and 100 mg/kg of extract significantly ($P < 0.5$) reduced the number of writhes induced by a 0.6% Acetic acid solution with an approximately 66.49%, 57.59% and 68.06% inhibition respectively. The present study showed that the aqueous extract of *Aloe barbadensis* has anti-inflammatory and analgesic activities that could be mediated via modulators of pain and inflammation or through central activity.

Bradykinin is part of the body's complex mechanism that causes painful inflammation. In studies, *Aloe vera* has been shown to possess anti-bradykinin activity. *Aloe vera* contains the enzyme bradykinase, which breaks down bradykinin. Plant sterols, like steroid drugs, have an anti-inflammatory effect. However, steroids inhibit "healing" or tissue regeneration- which conversely *Aloe vera* promotes. Dr. Robert Davis found the natural sterols having the strongest anti inflammatory effect in *Aloe vera* are- lupeol, beta sitosterol, and campesterol. *Aloe vera* is a cactus-like, succulent plant which grows in tropical climates. *Aloe vera* is widely used in a variety of cosmetics including creams and toiletries. Some studies conducted in animals have suggested that *Aloe vera* may help wound healing. *Aloe vera* can be applied topically as a cream or gel, or can be impregnated into a dressing and applied to the wound.

So, the student researcher felt that the phlebitis is one of the major concerns in the admitted patients in the hospital and it is the responsibility of the nurse to find the intervention for the condition. Researches show that *aloe vera* is effective in the treatment of phlebitis. More research is needed to find the effectiveness of *aloe vera*. Hence the student researcher decided to select the topic.

Fresh *aloe vera* is easily available in our locality. It is cheapest and more effective in reducing pain and inflammation. The cost effective care is also one of the main concepts of quality of nursing care. The cost effective management is necessarily carried out to reduce pain and anxiety related to care. From the above information researcher has realized that there is high prevalence of Thrombophlebitis among the patients with intravenous therapy. There is a management for the pain with the application of *aloe vera* gel. The method is also very feasible and less expensive. These factors made researcher to

design a study to assess the effectiveness of application of aloe vera gel on management of pain.

STATEMENT OF THE PROBLEM

A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.

OBJECTIVES

- To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.
- To assess the level of pain among phlebitis patients without aloe vera extract application in control group.
- To evaluate the effectiveness of aloe vera extract application in reducing the level of pain among phlebitis patients by comparing the post test level of pain between experimental group and control group.
- To find out the association between the post test level of pain and selected demographic variables in experimental group.

RESEARCH HYPOTHESIS

- H_1 – There will be a significant difference in the post test level of pain between experimental and control group.
- H_2 – There will be significant association between the post test level of pain and selected demographic variables in experimental group.

OPERATIONAL DEFINITIONS

1. Evaluate:

In the present study, it refers to determine the effect of aloe vera extract on phlebitis in reducing level of pain to minimum score which is assessed by numerical pain rating scale.

2. Effectiveness:

In the present study, it refers to the extent to which the aloe vera extract reduces the level of pain experienced by the patients as manifested by reduction in the post test scores assessed by using numerical pain rating scale.

3. Aloe vera extract application:

In the present study, it refers to fresh aloe vera extract taken from middle shaft of the bark after removing uniformly the outer green covering layer with a surgical blade. The extract obtained will be made into a paste by smashing it with a mortar and pestle. Then fresh aloe vera extract 1ml will be applied topically and a gauze dressing will be applied. This dressing will be changed thrice a day (8th hourly) for two continuous days in the experimental group.

4. Pain:

In the present study, pain refers to unpleasant, pricking sensation experienced by the patient due to phlebitis.

5. Phlebitis patients:

In the present study, it refers to the samples who are having response of body tissues to injury or irritation characterized by pain with varying level of mild, moderate and severe in the peripheral venous cannulation site.

ASSUMPTIONS

- Aloe vera contains glucomannans, special cell-surface receptors which repair damaged tissue.
- Plant hormones in aloe vera called auxins and gibberellins accelerate healing by stimulating cell replication.

DELIMITATION:

It is limited to

- Patients with peripheral intravenous cannula induced phlebitis in selected hospitals, Kanyakumari district.
- 60 patients (30 experimental group and 30 control group).
- Patients who are not hypersensitive to aloe vera.

CONCEPTUAL FRAMEWORK

Concepts are the basic building block of the theory. A conceptual model broadly presents an understanding of the phenomena of the interest and reflects the assumptions and philosophical views of models designed. Conceptual models can serve as spring boards for generating research hypotheses. A frame work is the overall under pinning of the study (Polit & beck 2010).

The conceptual frame work of the present study is based on the modified case management model of Little Rock, 2002. Case Management Society of America has defined case management as a collaborative process that access, plan, implement, monitor, evaluate options and services to meet an individual's health needs through communication and available resources to promote quality and cost effectiveness in health care.

Assessment

A comprehensive assessment of clients needs to begin the process and its foundation. The investigator collected the information such as demographic variables, level of pain, among the phlebitis patients.

Planning

Following assessment the investigator analyze the data by descriptive and inferential statistics and works independently to establish a plan of care. The client is the primary decision maker and the investigator assists the client in decision making.

Intervention

Nursing interventions frequently involve direct care, health education and sharing information with clients. The investigator administers 1ml of aloe vera extract to the experimental group.

Evaluation

Case management is a goal directed process which evaluates the outcome. In this study, the investigator evaluates level of pain before and after the application of aloe vera

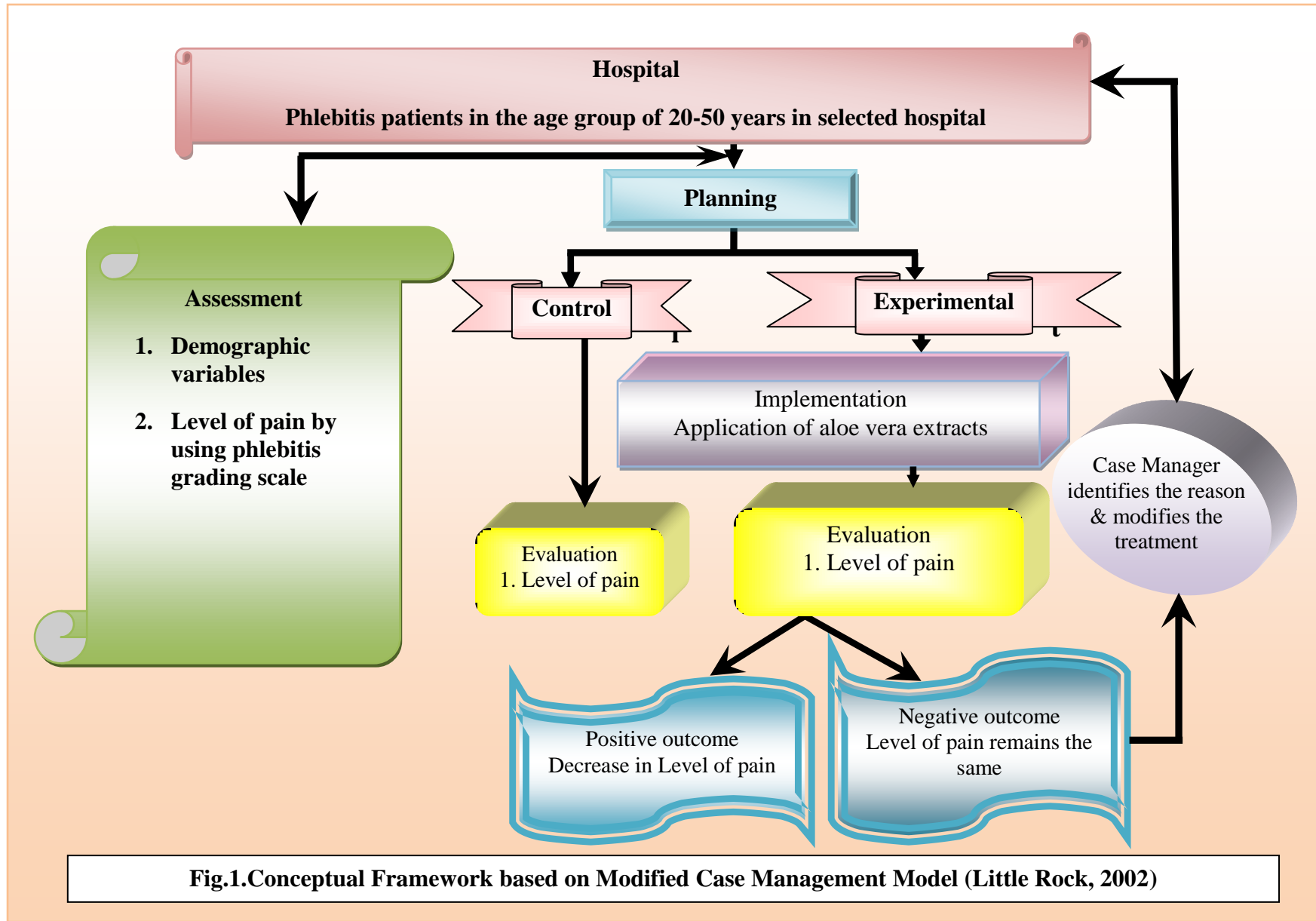
extract on phlebitis for the goal achievement in control and experimental group of phlebitis patients.

Health services

Case management practice extends across all healthcare settings, including medical services or health services Phlebitis patients receiving aloe vera in selected hospitals in kanyakumari district was considered as health services.

Payer

Payer is the Case Manager of the study. Investigator is considered as the Case Manager for this study.



CHAPTER II

REVIEW OF LITERATURE

- *Studies related to incidence and prevalence of thrombophlebitis.*
- *Studies related to effects of selective interventions in minimising thrombophlebitis pain.*
- *Studies related to effects of aloe vera gel in minimising thrombophlebitis pain.*
- *Summary*

Summary

This chapter has dealt with the back ground of the study, need for the study, statement of the problem, objectives of the study, assumptions, operational definitions, hypotheses, inclusion and exclusion criteria, delimitations and conceptual frame work of the study.

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 B.T 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 Hungle 1993

The present study is undertaken to evaluate the effectiveness of aloe vera extract application in reducing pain among thrombophlebitis. Research on the same or similar topic would be done in many ways to be very informative and useful to carry out the study on alternate methods in reducing the pain during invasive procedures. In this study the review of literature is classified into three sections.

The reviews of the study include:

Section A : Studies related to incidence and prevalence of thrombophlebitis.

Section B : Studies related to effects of selective interventions in minimizing thrombophlebitis pain.

Section C : Studies related to effects of aloe vera gel in minimising thrombophlebitis pain.

Section A: Studies Related To Incidence And Prevalance of Thrombophlebitis.

Luís Carlos do Rego Furtado (2011) conducted a study to determine the incidence of phlebitis related to peripheral cannulae, and its predisposing factors in a general surgery department. A data collection tool was developed based on the previous literature and was completed in one month. All patients with peripheral cannulae who fulfilled the inclusion

criteria, and who agreed to participate in the study were monitored. This was a quantitative study, which used descriptive, inferential, and correlational analysis. A total of 171 patients and 286 peripheral cannulae were monitored. The average incidence of phlebitis was 61.5%, and factors such as diabetes and tobacco consumption were identified as relevant to the development of phlebitis. Other elements identified as predisposing to the development of phlebitis include administration of potassium chloride, the dwell time of the peripheral cannula, and the anatomical location of the cannula. Phlebitis associated with peripheral cannulae is still a current problem requiring knowledgeable staff who can prevent, and act appropriately in a timely manner to minimize its severity.

Wilkinson Yoong Jian et al (2011) conducted an observational study on adult patients admitted to the surgical and medical ward of a tertiary hospital in Negeri Sembilan Malaysia. Risk factors that were studied in this research were patient/s age and gender, duration of catheterization, use of catheter for infusion, size of catheter, site of catheter insertion and types of infusate. In total, 428 patients were recruited with an incidence rate of thrombophlebitis of 35.2%. Among those who developed thrombophlebitis, 65% had mild thrombophlebitis, 19% had moderate and 8% had severe thrombophlebitis. The study showed that risk of developing thrombophlebitis is significantly increased among female patients, and also with increased duration of catheterization and use of the peripheral venous catheter for infusion. We recommended elective replacement of catheter every 72 hours and daily examination of catheters for signs of thrombophlebitis by a healthcare personnel.

Ruchi Saini, et al (2011) conducted a study to assess the placement of intravascular cannula for administration of fluids, drugs, blood products and nutritional solutions is one of the most common invasive procedures performed in hospitals. It was found that the peripheral intravenous cannula insertions during morning and night shifts in emergency department to patients with medical and surgical conditions along with inappropriate aseptic technique during insertion and handling of cannula, use of forearm as the site of insertion, involvement of elbow joint, soiling of the cannula dressing, longer duration of cannula placement along with the use of IV infusion sets for more than 24 hours, administration of medications such as antibiotics and electrolytes through the peripheral intravenous cannulae were the most important risk factors for the development of

infiltration and phlebitis. The protocol was developed based on the findings of the study for use by the nurses and other health care professionals who are involved directly or indirectly in the handling of peripheral intravenous cannula.

Prabhjot Kaur et al (2010) conducted a study to assess the risk factors leading to phlebitis amongst the peripheral intravenous cannulated patients. The current study was carried out among hospitalized patients, intravenous therapy is the most common invasive procedure and is associated with phlebitis rate of between 2.3% and 60%. Using 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 situ. Visual Infusion Phlebitis Scale was used to assess the grade of phlebitis. Mean age (yrs) \pm SD of the subjects was 41.37yrs \pm 15.81 with range of 18-87. 70% were male. Mean duration of cannula in situ was 2.66 days \pm 0.75. Out of total 200 subjects 113(56.5%) developed phlebitis. There was significant relationship between the phlebitis and duration of cannula in situ, administration of antibiotics and electrolytes ($p < 0.01$).

Oliveira and Parreira (2010) conducted a prospective observational study to identify the incidence of phlebitis and the risk factors which contribute to its development in patients with peripheral intravenous catheters. Nurses observed the peripheral intravenous (IV) catheterisation site daily and the development of phlebitis and the procedure were recorded. A total of 1,244 catheters were observed, and 317 were removed/inserted. A multivariate analysis of risk factors for phlebitis showed patients with KCI (OR: 2.112; CI: 1.124-3.969), who were on antibiotics (OR: 1.877; CI: 1.141-3.088) and who had a catheter in an upper limb (OR: 0.31; CI: 0.111-0.938) were at higher risk for phlebitis. The results show the accurate selection of the catheterisation site, which relies entirely on the nursing intervention, is an important factor for phlebitis. The insertion of peripheral intravenous catheters (PIVCs) is a common practice in hospitals, resulting in local or systemic complications. Phlebitis is the main local complication with incidence varying according to different settings (3.7% - 67.24%)

Paula Elaine Diniz Reis (2010) conducted a study to the reflection on the mechanisms leading to phlebitis as a complication of intravenous therapy. Methodology is about an

update paper, which presents the epidemiology, predisposing factors, preventive measures and evaluation methods of phlebitis due to insertion of peripheral venous catheter, in order to subsidize the nursing plan. results shown the phenomenon of phlebitis is quite prevalent in hospitalized patients, related to multiple factors such as hyperosmolarity and pH of the solution infused, type of device used venous access and nursing care with regard to the procedure of venipuncture. It is important for nurses to learn the tools to diagnose phlebitis, identifying signs and symptoms of inflammation, thus being able to intervene according to the degree shown, preventing the occurrence of phlebosclerosis. knowing the types of phlebitis and, consequently, their risk factors helps the nurse to have a better basis for decision making regarding the construction of specific protocols aimed at preventing this complication.

Giancarlo Cicolini (2009) conducted an observational study to investigate the most suitable location of peripheral venous cannulae 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 infectious complications. Small cannula size is an important factor in reducing the incidence of thrombophlebitis, A structured observation protocol was used to survey the frequency of thrombophlebitis and the relationship of location and size of peripheral intravenous cannulae. The variables evaluated were age, gender, cannula size and site of cannula location. 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 compared to those with cannulae inserted in cubital fossa 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 cannulae.

Powell (2009) A retrospective study review of quarterly quality assurance data—monitoring indwell time, phlebitis rating, and site and tubing labels—was performed. The purpose of this study was to determine any relationship between peripheral IV catheter indwell time and phlebitis in hospitalized adults. Of 1,161 sites, only 679 had documented indwell time to use. Average indwell time was 1.9 days, and overall phlebitis rate was 3.7%. Analysis of variance revealed a significant association between phlebitis and indwell time. However, asymptomatic peripheral IVs may not need to be removed at

regular intervals because there were healthy, asymptomatic sites with indwell time up to 10 days.

Section B: Studies related to effects of selective interventions in minimising thrombophlebitis pain.

Nilufar Nekuzad (2011) conducted a study to determine the effect of external use of Sesame Oil in the prevention of phlebitis. Sixty patients with colon or rectum cancer, who admitted for chemotherapeutic management, enrolled in clinical trial and were randomly divided into two equal groups: Control and Intervention. Ten drops of Sesame Oil was applied twice a day for 14 days externally in intervention group, whereas the control group received nothing. Incidence and grade of phlebitis was measured in both groups. Data was analyzed through independent t-test, X², Fisher's exact test, Mann-Whitney, and Lagrange survival using SPSS 16. There was a significant difference between two groups ($p < 0.05$). In addition, there was statistically significant difference between the grade and incidence of Phlebitis with Sesame Oil and control group ($p < 0.05$). Results shown that external use of Sesame Oil is effective, safe and well-tolerated for prophylaxis from phlebitis. Therefore, it can be suggested as a selected prevention method for reducing the complication.

Alex John (2011) A study was conducted to assess the effectiveness of application of combination of magnesium sulphate and glycerine dressing on management of pain, limb oedema among patients with Thrombophlebitis in a selected hospital, Bangalore. Pre Experimental one group pre test- post test design. The study was conducted in K.C.G. Hospital, Bangalore. The sample size is 60 with non probability convenience sampling technique. The study was conducted by assessing the pre test level of pain and limb oedema. After application of combination of magnesium sulphate and glycerine dressing on oedema of the limb there was gradual reduction of pain and limb oedema in experimental group, statistical analysis showed that pain and edema edema was ($P=0.01$) for the experimental group it was statistically significant. Thus magnesium sulphate and glycerine dressing will help to reduce complications of Thrombophlebitis.

John Wiley & Sons (2011) An interventional study was conducted in Mangalore on effectiveness of ice packs versus thrombophobe gel for reducing intra venous infiltration and pain in patients admitted in paediatric wards. The study was conducted on 40

samples (20 for thrombophobe gel group and 20 for ice cube group) selected using purposive sampling technique. The infiltration was assessed by using modified infiltration scale. The results showed that before the treatment, majority (65%) of patients had grade two infiltrations after the treatment with thrombophobe and 100% of patient's infiltration had reduced to grade one infiltration. In group two majorities (80%) had grade two infiltrations after the treatment with ice cube 100% had grade one infiltration. The study concluded that both thrombophobe gel and ice pack are effective in reducing intravenous infiltration among paediatric patients.

Anumol .K. V.(2010) a comparative study was conducted to assess the effectiveness of hot fomentation versus cold compress in reducing intravenous infiltration and pain among patients in a selected hospital at mangalore, karnataka. The design selected is time series design The samples for the study was selected by purposive sampling technique. Infiltration and pain measurement is done using standardized infiltration measurement scale and numerical pain scale respectively. Samples for Hot fomentation and cold compress was assigned randomly by lottery method. Interventions are applied to both groups to 30 subjects for 15 minutes twice a day for three days. After each intervention post-test was conducted. The duration of data collection is 30 days. outcome measures (cold compress × hot fomentation $p < 0.05$) The study was concluded that cold compress, is beneficial in reducing the pain and infiltration among thrombophlebitis patients.

Zhang et al (2009) conducted a study on curative effects of notoginseny cream versus Hirudoid cream in the treatment of post infusion phlebitis. Sixty-five patients who received peripheral infusion therapy during a 20-month period and had developed phlebitis were divided randomly into two groups. Group A was treated with notoginseny cream, a topical Chinese medicine produced by the pharmacological department of the Second Affiliated Hospital of Sun Yat-Sen University. Group B was treated with heparinoid cream (Hirudoid, a commercial product from Germany). Significantly fewer applications of notoginseny cream were required to bring about the disappearance of signs and symptoms of phlebitis in the group A patients as compared with the group B patients for the same effect. The actual time of disappearance of the signs and symptoms of phlebitis also were significantly shorter in patients treated with notoginseny cream than with heparinoid cream.

Section C: Studies related to effects of aloevera gel in minimising thrombophlebitis pain

Guo Hua Zheng et al.(2012) A study conducted 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. Randomised controlled trials (RCTs) and quasi-randomised controlled trials (qRCTs) were included if they involved participants receiving topical Aloe vera or Aloe vera-derived products at the site of punctured skin. 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. Aloe vera reduced the occurrence of third degree phlebitis and second degree phlebitis compared with no treatment. When Aloe vera was compared with 50% MgSO₄ (P < 0.0001). For the treatment of phlebitis, Aloe vera was more effective than 33% or 50% MgSO₄.

Hu Huali et al (2010) conducted a study to assess the effectiveness of fresh alovera to prevent phlebitis in malignant patients receiving chemotherapy in the department of tumor Jinghua Guagfu hospital, China. 1510 cases of malignancy were randomized to observation group and control group. In the observation group, 1000 patients undergoing transvenous chemotherapy were subjected to the application of fresh Aloe on the veins. The Aloe was fixed with plaster and replaced every 6 h until healing of phlebitis. In the control group, nothing was applied on 510 cases of patients undergoing transvenous chemotherapy. In different chemotherapy modes, the incidence of phlebitis showed significant difference between two groups (P0.05,P0.01). The incidence of phlebitis in ≤30 min, 24 hours and 72 hours had significant difference between two groups (all P0.01). 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 alovera gel topical effect to reduce pain and edema on inflammatory conditions like thrombophlebitis, who were on intravenous infusions. In this study 56 patients were selected who receives intravenous infusion. Assessment was done with the visual infusion phlebitis score with 0-5 scores. The duration of data collection is 30 days. Alovera gel was obtained from the leaves that is the central pulp taken after removing the outer hard layer, 1ml of aloevera taken and

applied to the experimental group, for a period of 3 days then the post test score was taken. To conclude the study, statistical analysis showed that pain, edema and severity of inflammation was ($P=0.01$) for the experimental group it was statistically significant.

Luyan et al (2010) conducted a study on the effectiveness of aloe-carthamus alcohol hydrophatic distilled liquid in preventing phlebitis resulting from infusing huachansu in vein. 232 patients were randomized divided into four groups. Experimental group (60 cases) compress using aloe-carthamus alcohol hydrophatic distilled liquid, magnesium sulphate group (58 cases) compress with 50% magnesium sulphate and alcohol group (58 cases) compress with alcohol. While control group not use any preventing nursing way. Result shows that the rate of phlebitis four group were very significant at 6.67%, 27.59%, 27.59%, 42.86% respectively ($P0.005$). To conclude, the study shows aloe-carthamus alcohol hydrophatic distilled liquid compress is effective in preventing phlebitis. So it can reduce the rate of phlebitis and decrease the pains of the patients.

Li Bijuan et al (2009) conducted a comparative study to investigate the clinical effectiveness of aloe pigmentum versus magnesium sulphate on phlebitis patients. 64 patients were randomized into two groups: 32 treated with aloe pigmentum (aloe group) and another 32 with wet packing with routine 50% magnesium sulfate (magnesium sulfate group). The duration of data collection is 30 days. Color Doppler was used to detect and compare inner diameter of blood vessels before and after treatment in the two groups. Result shows that in aloe group, 20 cases got healed and 10 better and in magnesium sulfate group, 12 got healed and 11 better ($P0.05$). The study was concluded as aloe pigmentum is superior to the conventional in treating phlebitis than magnesium sulphate.

SUMMARY

This chapter has dealt with the review of literature under various headings. This literature review has provided an understanding and broadened the investigator's outlook necessary for the research study.

CHAPTER III

RESEARCH METHODOLOGY

- *Research approach*
- *Research design*
- *Variables*
- *Settings*
- *Population*
- *Sample*
- *Sample size*
- *Sampling technique*
- *Sampling criteria*
- *Development of the tool*
- *Description of the tool*
- *Validity*
- *Reliability*
- *Pilot study*
- *Data collection procedure*
- *Plan for data analysis*
- *Ethical consideration*
- *Summary*

CHAPTER III

RESEARCH METHODOLOGY

Research methodology involves the systematic procedures by which the researcher starts from the initial identification of the problem to its final conclusion. It involves steps, procedures and strategies for gathering and analyzing data in a research investigation.

Denise F. Polit (2011)

This chapter deals with the research methodology adapted for the proposed study and the different steps undertaken after gathering and organizing data for investigation. It includes Research approach, Research design, Variables, Settings, Population, Sample, Sample size, and Criteria for sample selection, Sampling technique, Development of the tool, Description of tool, validity, Reliability, Pilot study, Data collection procedure, Plan for data analysis and Ethical consideration.

RESEARCH APPROACH

A research approach tells the researcher what data to collect and how to analyze it. It also suggests 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)

Evaluative research approach was used as an appropriate research approach for the present study to evaluate the effectiveness of aloe vera extract in reducing pain among phlebitis patients in selected hospitals at Kanyakumari district.

RESEARCH DESIGN

Research design is the researcher overall plan for answering researcher questions.

Polit (2004)

The research design adopted for this study is Quasi experimental pre-test post-test control group research design.

A DIAGRAMMATIC PRESENTATION OF RESEARCH DESIGN

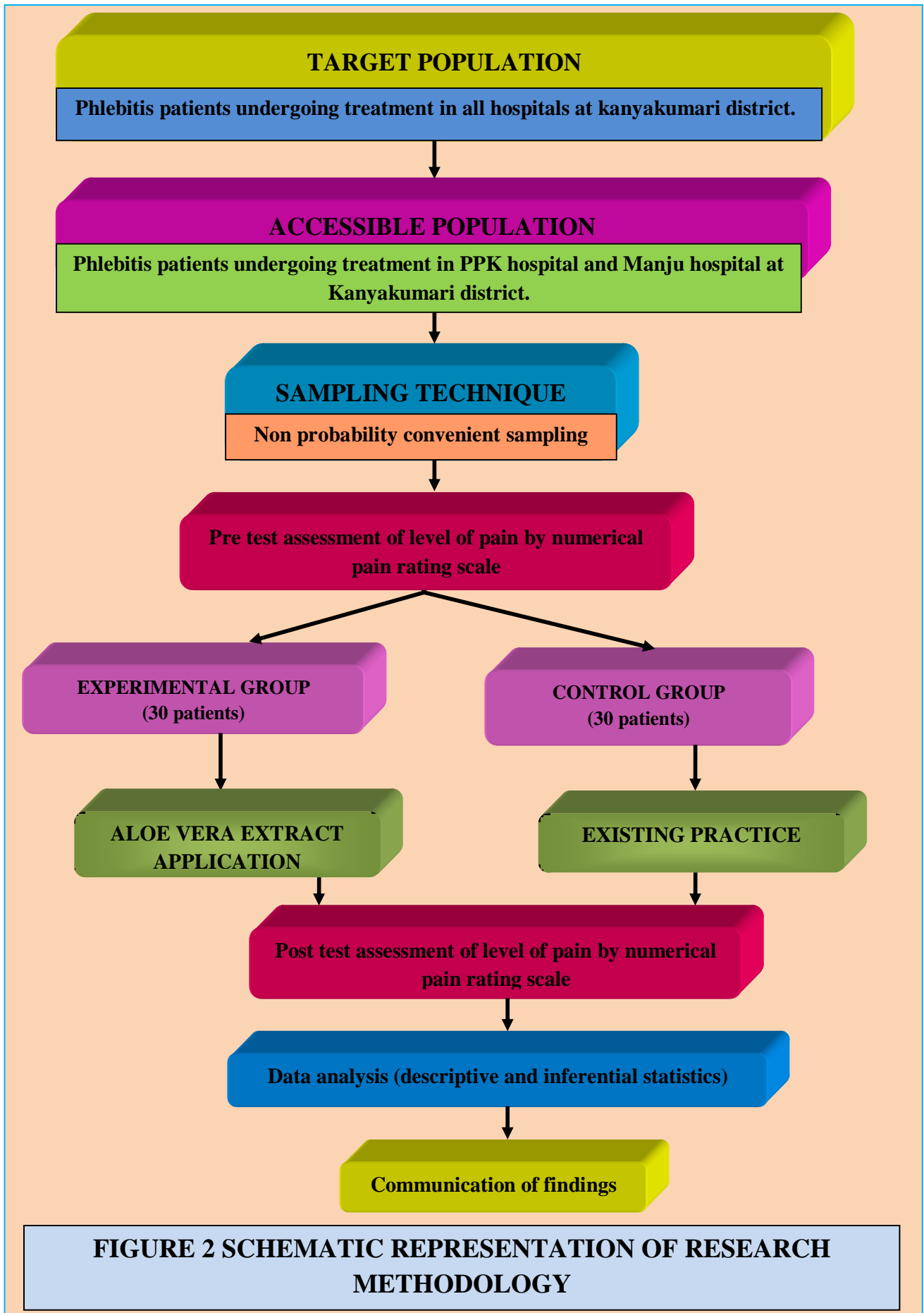
| Group | Pre test | Intervention | Post test |
|--------------------|----------|--------------|-----------|
| Experimental group | O1 | X | O2 |
| Control group | O3 | - | O4 |

KEY:

O1, O3 - Pre test assessment of level of pain in experimental and control group

X - Aloe vera extract application.

O2, O4 - Post test assessment of level of pain in experimental and control group



VARIABLES

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

Denise F. Polit (2011)

INDEPENDENT VARIABLE

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

Denise F. Polit (2011)

In this study the independent variable is aloe vera extract application.

DEPENDENT VARIABLE

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

Denise F. Polit (2011)

In this study the dependent variable is level of pain among phlebitis patients.

EXTRANEOUS VARIABLES

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

Denise F. Polit (2011)

In this study it refers to demographic variables such as age, gender, residential area, site of intravenous cannula, life style pattern, working pattern, food pattern, previous hospitalization, exercise pattern and history of bleeding disorder.

SETTING

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

Polit (1999)

The setting was chosen on the basis of availability of samples and the cooperation extended by the Management and the health team. The study was conducted in PPK hospital and Manju Hospital. These hospitals were specialized with experienced surgeon, physicians and health team. The busy inpatient department helped the investigator in selecting these settings for the study.

POPULATION

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

Denise F. Polit (2011)

TARGET POPULATION

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

Polit (2004)

In this study, the target population was phlebitis patients admitted in all hospitals of kanyakumari district.

ACCESSIBLE POPULATION

The accessible population is the list of population that the researcher finds in study.

Polit & Beck, (2008)

In this study, the accessible population was phlebitis patients admitted in PPK hospital and Manju Hospital.

SAMPLE

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

Denise F. Polit (2011)

The samples were phlebitis patients, who fulfilled the sampling criteria in PPK hospital and Manju Hospital.

SAMPLE SIZE

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

Denise F. Polit (2011)

In this study, the sample size are 60 phlebitis patients who satisfied the inclusion criteria. Among them 30 patients were allocated in experimental group and 30 patients were allocated in control group.

SAMPLING TECHNIQUE

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

Suresh K Sharma (2007)

The investigator used the non probability convenient sampling technique in this study.

SAMPLING CRITERIA

Sampling Criteria involves selecting cases that meet some predetermined criterion of importance. The criteria for sample selection are mainly depicted under two heading, which includes the inclusion criteria and exclusion criteria.

INCLUSION CRITERIA

This study included

- Phlebitis patients with pain score 1-10.
- Phlebitis patients who can understand tamil and English.
- Phlebitis both male and female patients between age group of 20-50 years
- Phlebitis patients who are present during data collection.
- Phlebitis patients who develop phlebitis due to intravenous cannulation.

EXCLUSION CRITERIA

This study excluded

- Phlebitis patients who are having skin disorder, poor skin condition, and abscess seen at the puncture site.
- Phlebitis patients who are not willing to participate the study.
- Phlebitis patients who are below 20 years of age.
- Phlebitis patients who develops hypersensitivity reactions to interventions.

SELECTION AND DEVELOPMENT OF 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, (1993)

Data collection is the gathering information needed to address a research problem. The datas are collected in the month of November.

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.

- Review of literature from books, journals, other publications and websites.
- Investigators experience of alleviating pain in phlebitis patients.
- Discussion with subject experts like guides, physicians and Biostatistician.
- Review of the standardized tool.

DESCRIPTION OF THE TOOL

The tool used in this study has two parts.

PART I

DEMOGRAPHIC VARIABLES

Demographic data are the first part of the tool consists of 10 items for obtaining information about the age, gender, residential area, site of intravenous cannula, life style pattern, working pattern, food pattern, previous hospitalization, exercise pattern and history of bleeding disorder.

PART II

NUMERICAL PAIN RATING SCALE

Numerical pain rating scale was used individually to collect the data.

SCORING PROCEDURES

Numerical pain rating scale consists of 10 numerically scaled, 0 to 10 scores. The total maximum and minimum score were 10 and 0 respectively. The score on the numerical scale, 0 to 10 was interpreted as,

| Score | | Interpretation |
|--------------|---|-----------------------|
| 0 | - | None |
| 1-3 | - | Mild Pain |
| 4-6 | - | Moderate Pain |
| 7-10 | - | Severe Pain |

VALIDITY

Content validity is defined as, “Extent to which an instrument accurately reflects the abstract construct (or concept) being examined”.

Suresh K Sharma, (2007)

To ensure the content validity, the prepared data collection tool along with the problem statement, objectives, operational definitions, hypotheses, and criteria checklist

designed for validation were submitted to ten experts those includes two physicians, seven medical-surgical nursing faculties and one Bio- Statistician. The experts were requested to judge the items for relevance, appropriateness and degree of agreement for the study. All the experts gave their consensus and the tool was finalized.

RELIABILITY

Reliability is defined as, “The degree of consistency or dependability with which an instrument measures an attribute”.

Denise F. Polit (2011)

Reliability of the tool was established using inter rater reliability method for numerical pain rating scale and the reliability was $r = 1$, which showed a positive correlation. The score indicates a high correlation and the tool were considered as highly reliable. Hence the tool was considered reliable for proceeding with the study.

INTERVENTIONAL PROTOCOL

Formal permission will be obtained from the concerned authority of the institution and informed consent will be taken from subjects/parents/legal guardians. Samples will be selected conveniently, pre test will be conducted by using numerical pain rating scale to assess the peripheral intravenous cannula induced phlebitis. Fresh Aloe vera extract from middle shaft of the bark will be taken after removing uniformly the outer green covering layer with a surgical blade. The extract obtained will be made into a paste by smashing it with a pestle and mortar. Two to three drops of the paste will be applied on the forearm of the patient to check if the patient has any allergic or hypersensitivity reaction towards aloe vera. The signs of hypersensitivity reaction will be assessed after 15 minutes of application. If the client develops hypersensitivity reaction, the intervention will not be continued and immediate treatment will be carried out to reduce hypersensitivity symptoms. For clients who do not develop any hypersensitivity reactions, fresh aloe vera extract 1ml will be applied topically and a gauze dressing will be applied. This dressing will be changed thrice a day (8th hourly) for two continuous days and this will be done in experimental group. Post test will be conducted for both groups using the numerical pain rating scale for level of pain after two days of intervention.

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 PPK hospital and Manju hospital, marthandam. Initial permission was sought from the institution and formal permission was sought from the chief medical officer for conducting pilot study. Pilot study was conducted in the month of August for a period of one week. The purpose was explained to samples and confidentiality was assured. Consent was obtained from samples. The investigator selected 10 samples, 5 samples were allocated in experimental group and 5 were in control group using non-probability convenient sampling technique, who fulfilled the inclusion criteria. Investigator applied aloe vera extract only in experimental group. Post test was conducted using Numerical pain rating scale in both the groups. The results of the pilot study gave the evidence that the tool was reliable. Findings of the pilot study also revealed that it was feasible and practicable to conduct the study at the selected settings and the criterion measures were found to be effective.

DATA COLLECTION PROCEDURE

Data collection is the gathering of population needed to address a research problem. Datas were collected among phlebitis patients who are treated in the month of November and December in hospitals such as PPK hospital and Manju hospital

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 datas were collected by the investigator. The intervention was carried out by the investigator in the experimental group. The investigator applied fresh aloe vera extract 1ml topically and after that gauze dressing over it. This dressing will be changed thrice a day (8th hourly) for two continuous days. The investigator assessed the post test level of pain in patients belonging to experimental group and without the intervention in control group using Numerical pain rating scale.

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.

Denise F. Polit (2011)

The data were analyzed according to the objectives and hypothesis of the study. Data analyzed, tabulated and interpreted using descriptive and inferential statistics.

DESCRIPTIVE STATISTICS

- Frequency and percentage distribution of sample according to demographic variables of patients among phlebitis patients.
- Frequency and percentage distribution were used to assess the level of pain.
- Mean and Standard Deviation were used to assess the effectiveness of aloe vera extract application.

INFERENCE STATISTICS

- Unpaired t-test was used to compare the post test level of pain between experimental group and control group.
- Chi square (χ^2) test was used to find out the association of post test level of pain among phlebitis patients and selected demographic variables in experimental group.

ETHICAL CONSIDERATION

For this study the investigator look in to consideration of the ethical issues. No ethical issues raised by conducting the study.

- Permission obtained from the ethical committee of Annammal College of Nursing.
- Permission obtained from the concerned authority in the medical-surgical wards of PPK Hospital and Manju Hospital.

- Verbal permission was obtained from the study samples.
- The subjects were informed that the confidentiality of the data will be maintained.

SUMMARY

This chapter has dealt with the selection of research approach, research design, setting, population, sample, sampling technique, sampling criteria, development of study instruments, validity, reliability of study instrument, pilot study, data collection procedure and plan for data analysis. The following chapter deals with analysis and interpretation of data using descriptive and inferential statistics.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Data is defined as, “The piece of information obtained in a study”.

Denise F.Polit (2011)

Analysis is defined as, “The process of organizing and synthesizing data so as to answer research questions and test hypothesis”.

Denise F. Polit (2011)

Data analysis is defined as the method of organizing data in such a way that the research questions can be answered. Interpretation is the process of the results and of examining the simplification of the findings with in a broader context.

Polit and Beck (2004)

Statistics is a field of study concerned with techniques or methods of collection of data, classification, summarizing, interpretation, drawing inferences, testing of hypotheses, making recommendation, etc.

Mahajan (2004)

This chapter deals with the analysis and interpretation. Analysis and interpretation of data of this study was done using descriptive and inferential statistics.

OBJECTIVES

- To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.
- To assess the level of pain among phlebitis patients without aloe vera extract application in control group.
- To evaluate the effectiveness of aloe vera extract application in reducing the level of pain among phlebitis patients by comparing the post test level of pain between experimental group and control group.

- To find out the association between the post test level of pain and selected demographic variables in experimental group.

RESEARCH HYPOTHESIS

- H_1 – There will be a significant difference in the post test level of pain between experimental and control group.
- H_2 – There will be significant association between the post test level of pain and selected demographic variables in experimental group.

ORGANIZATION OF THE FINDINGS

The data collected were edited, tabulated, analyzed, interpreted and findings are presented in the form of tables and diagrams represented under the following sections.

Section I:

Data on demographic variables of phlebitis patients in both groups.

Section II:

Data on level of pain in experimental group

Data on level of pain in control group

Section III:

Testing Hypotheses

Data on effectiveness of aloe vera application in reducing level of pain among phlebitis patients in the experimental group.

Section IV:

Testing Hypotheses

Data on association between the post test level of pain among phlebitis patients and selected demographic variables in experimental group.

SECTION I

TABLE 1: DATA ON DEMOGRAPHIC VARIABLES OF PHLEBITIS PATIENTS

N=60

| S.No | Demographic variables | Experimental group (n=30) | | Control group (n=30) | |
|------|-----------------------------|------------------------------|-------|-------------------------|-------|
| | | F | % | F | % |
| 1. | Age (in years) | | | | |
| | a. 21-30 | 9 | 30 | 8 | 26.67 |
| | b. 31-40 | 12 | 40 | 12 | 40 |
| | c. 41-50 | 9 | 30 | 10 | 33.33 |
| 2. | Gender | | | | |
| | a. male | 12 | 40 | 10 | 33.33 |
| | b. female | 18 | 60 | 20 | 66.67 |
| 3. | Residential area | | | | |
| | a. rural | 19 | 63.33 | 17 | 56.67 |
| | b. urban | 11 | 36.67 | 13 | 43.33 |
| 4. | Site of intravenous cannula | | | | |
| | a. fore arm | 17 | 56.67 | 15 | 50 |
| | b. radial | 9 | 30.00 | 11 | 36.67 |
| | c. ante cubital fossa | 2 | 6.67 | 2 | 6.67 |
| | d. others | 2 | 6.66 | 2 | 6.67 |
| 5. | Life style pattern | | | | |
| | a. smoking | 4 | 13.33 | 6 | 20 |
| | b. betal chewing | 2 | 6.67 | 3 | 10 |
| | c. alcoholism | 13 | 43.33 | 12 | 40 |
| | d. none | 11 | 36.67 | 9 | 30 |

Table 1

It represents the frequency and percentage distribution of phlebitis patients with selected demographic variables such as age, gender, residential area, site of intravenous cannulation and life style pattern.

With regard to age, majority of the sample subject 12(40%) were in the age group of (31-40) years in both the groups, 9(30%) and 8(26.67%) were in the age group of (21-30) years in experimental and control groups and 9(30%) and 10(33.33%) were in the age group of (41-50) years in experimental and control group respectively.

With regard to gender, majority of 18(60%) and 20 (66.6%) were females in experimental and control group and least of 12 (40%) and 10(33.33%) were males in both groups.

With regard to the residential area, majority of 19 (63.3%) and 17 (56.67%) belongs to rural area in both the groups and 11(36.67%) and 13(43.33%) were from urban area in experimental and control group.

With regard to site of intravenous cannula, majority of them had IV cannulation in fore arm which was 17(56.67%), in experimental and 15(50%) in control group. Least of them had cannulation in ante cubital fossa and others which was 2(6.66%) in both experimental and control groups. 9(30%) and 11(36.67%) had cannulation in radial in both experimental and control groups.

With regard to Life style pattern, majority of them had habit of alcoholism which was 13(43.33%), in experimental and 12(40%) in control group. Least of them had habit of betal chewing 2(6.66) and 3(10%) in both experimental and control groups. 4(13.33%) and 6(20%) had habit of smoking in both experimental and control groups. 11(36.67%) and 9(30%) had no bad habits in both experimental and control groups.

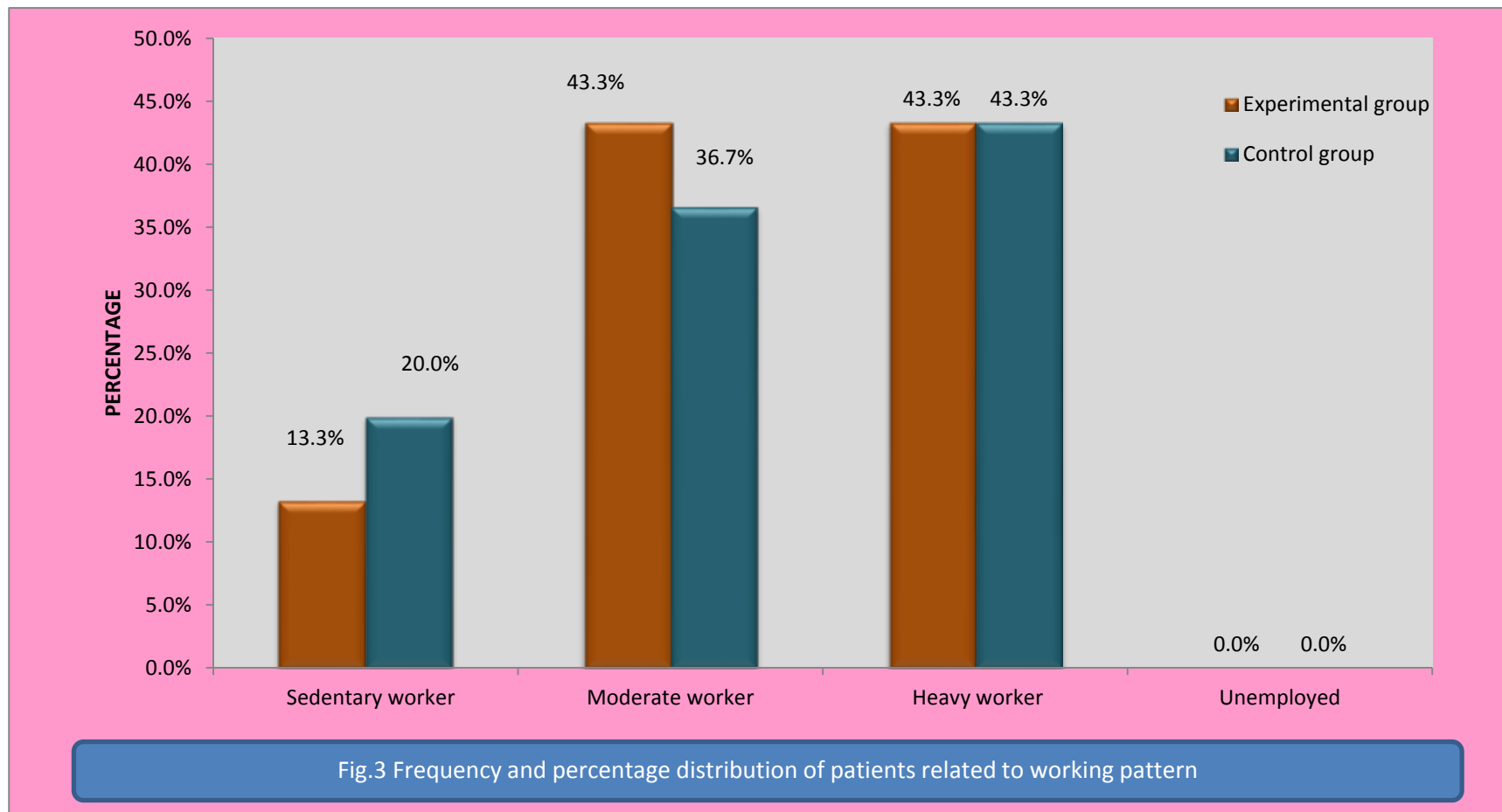


Figure-3 represents the frequency and percentage distribution of patients related to working pattern, majority of them are heavy workers with 13(43.33%) in both the groups, 13(43.33%) and 11(36.67%) are moderate workers in the experimental and control group. 4(13.33%) and 6(20%) are sedentary workers in both experimental and control group.

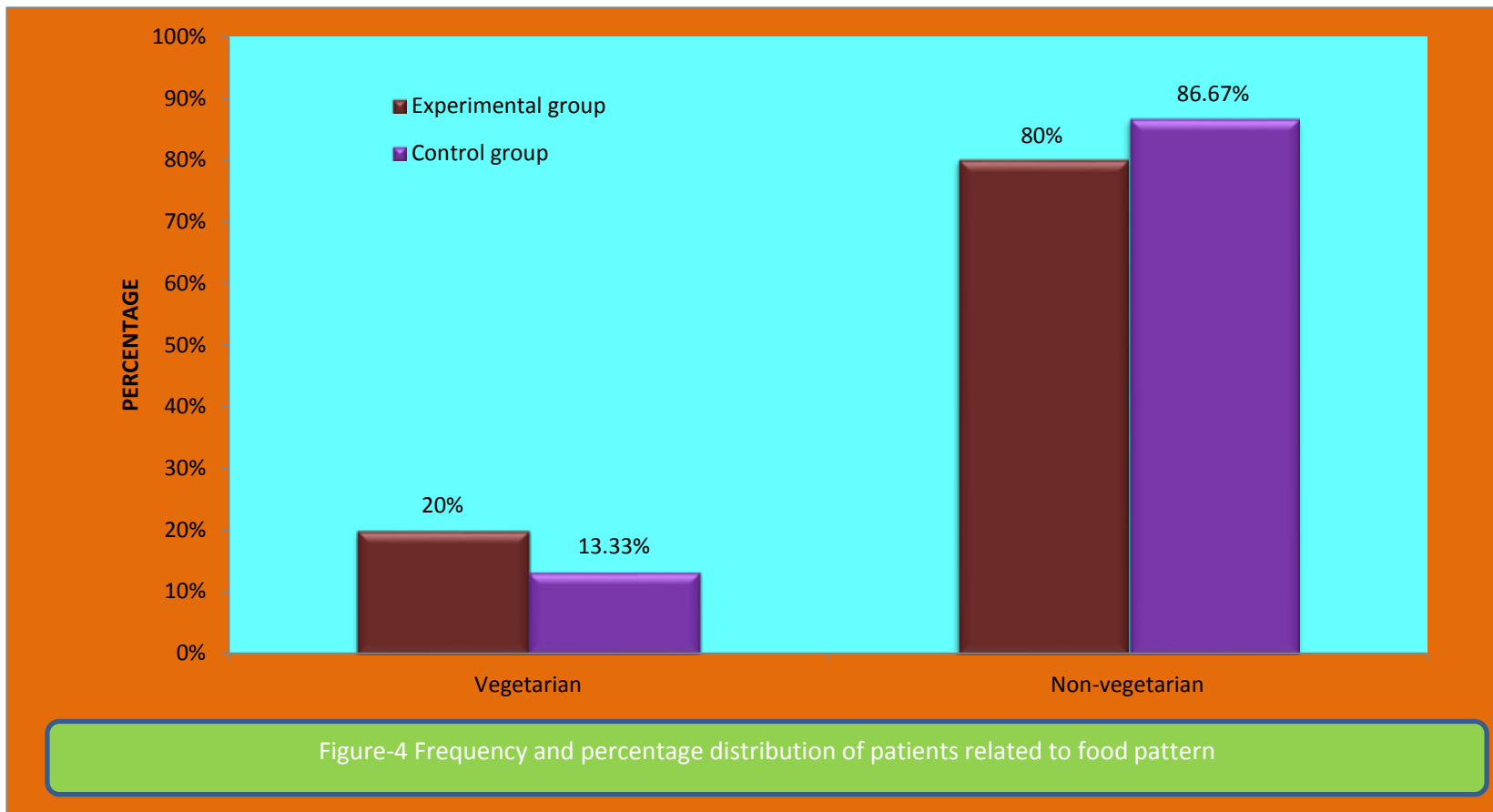


Figure-4 represents the frequency and percentage distribution of patients related to food pattern, majority of 24(80%) and 26(86.67%) are non-vegetarian in experimental and control group. 6(20%) and 4(13.33%) of them are vegetarian in experimental group and in control group.

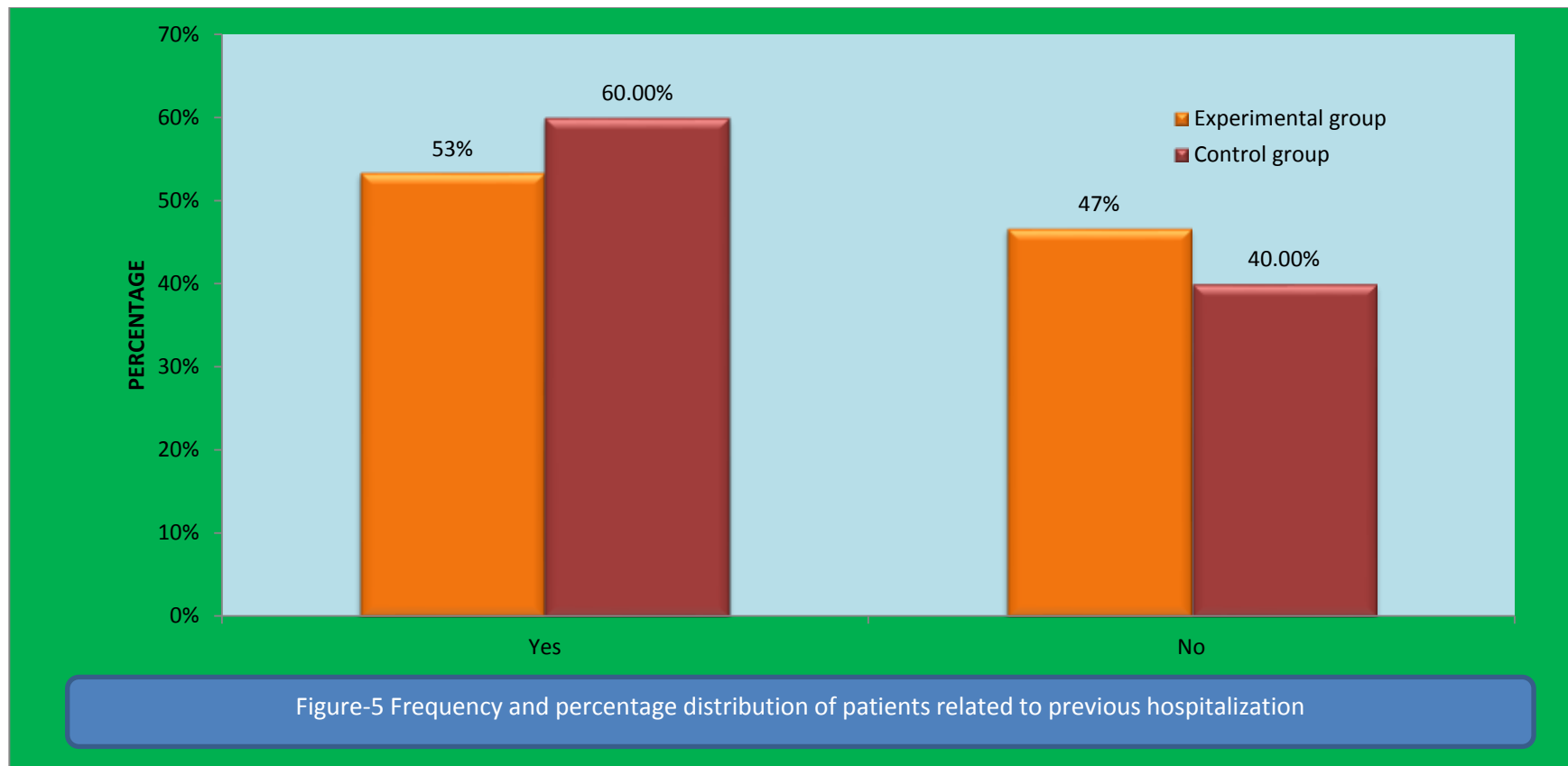


Figure-5 represents the frequency and percentage distribution of patients related to previous hospitalization, majority of 16(53.33%) and 18(60%) had history of previous hospitalization in experimental group and in control group. least of 14(46.67%) and 12(40%) does not have previous history of hospitalization in experimental group and in control group.

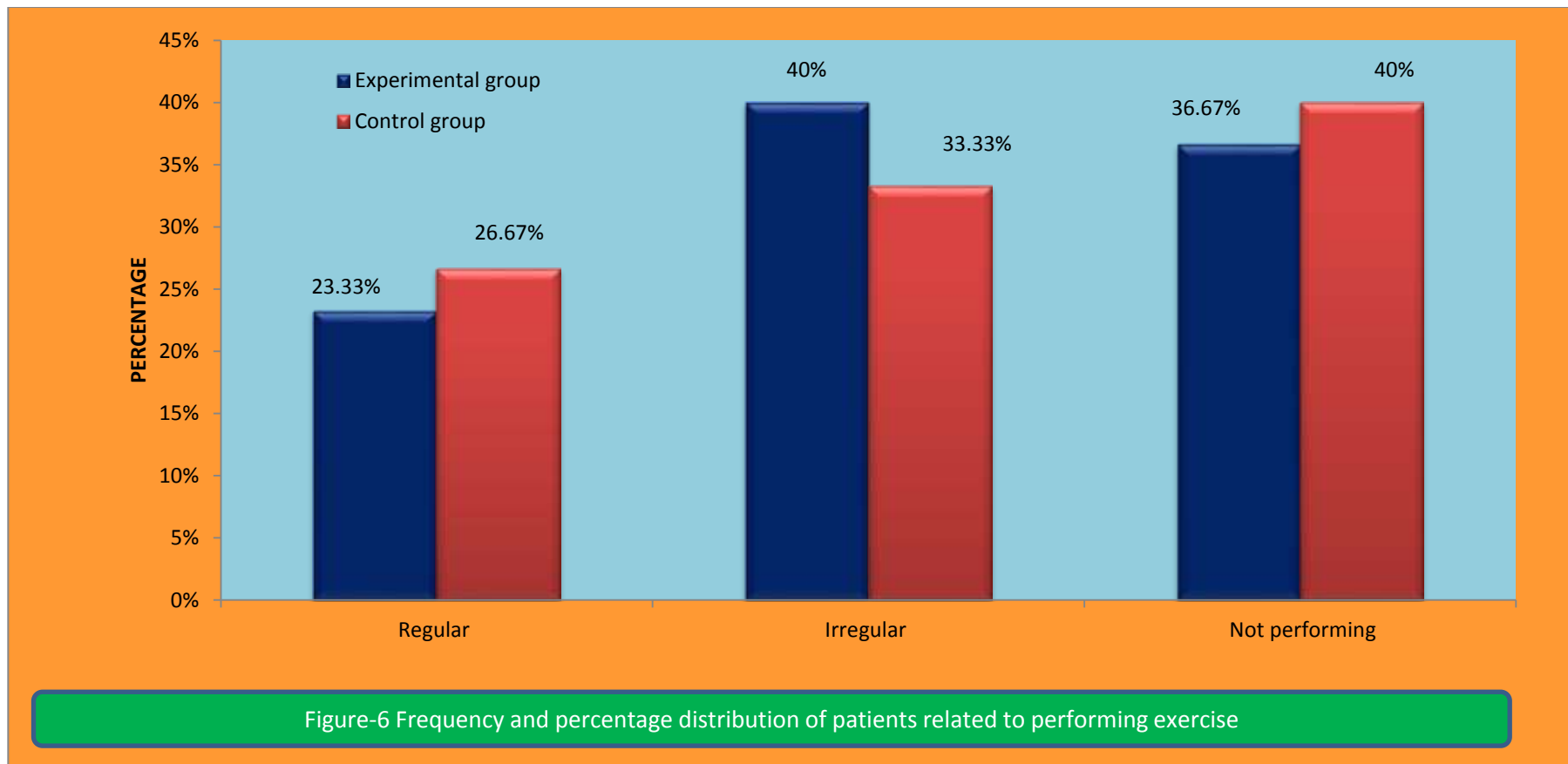


Figure-6 represents the frequency and percentage distribution of patients related to performing exercise, majority of 12(40%) and 10(33.33%) are not regular in performing exercise in experimental group and in control group. least of 7(23.33%) and 8(26.67%) are performing regular exercise in experimental group and in control group. 11(36.67%) and 12(40%) are not performing exercise in experimental group and in control group.

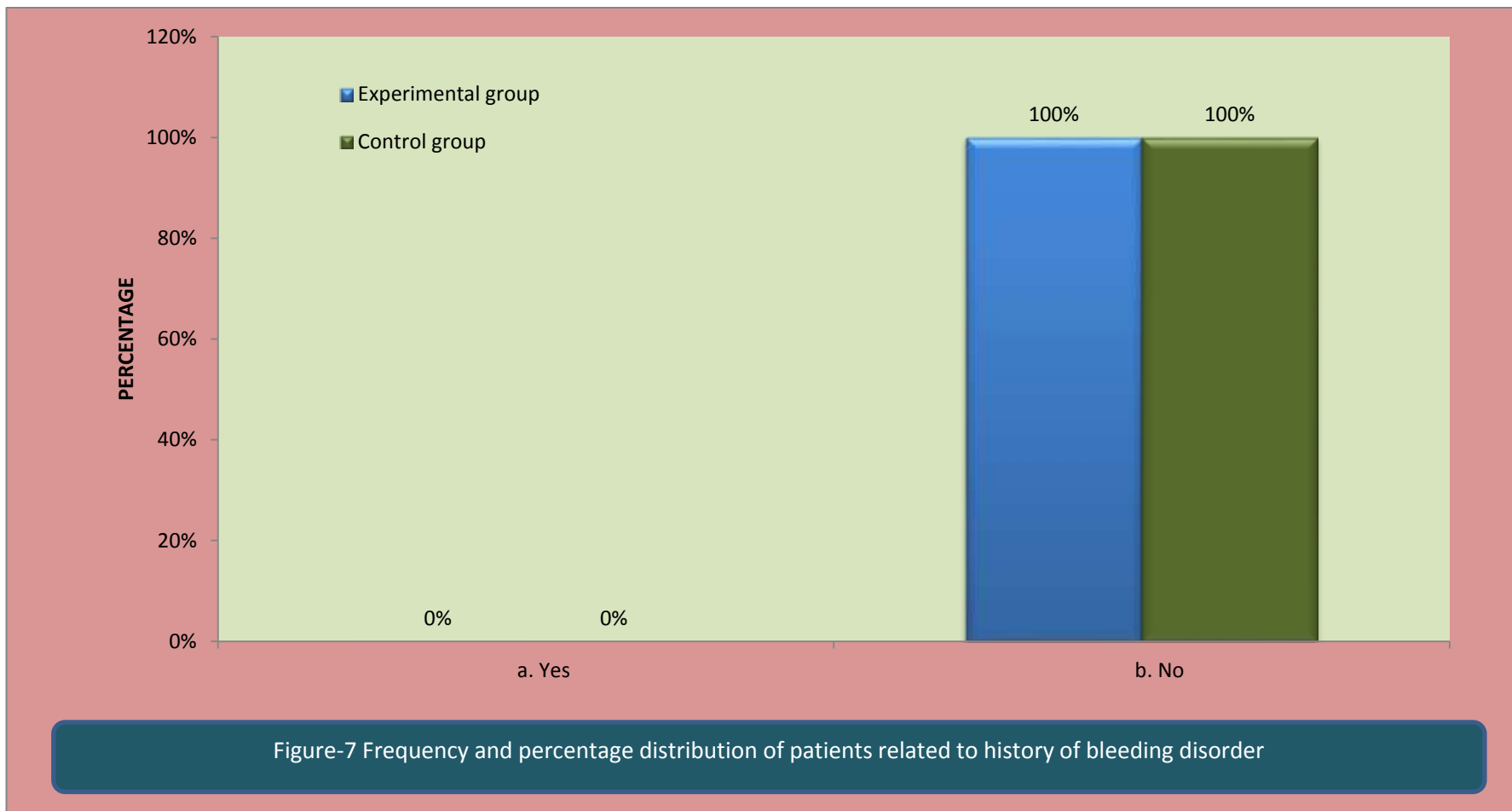


Figure-7 represents the frequency and percentage distribution of patients related to history of bleeding disorder, 30(100%) had no history of bleeding disorder in both experimental and in control group.

SECTION II

TABLE :2 PRETEST LEVEL OF PAIN AMONG PHLEBITIS PATIENTS

N=60

| S.No | Level of pain | Experimental group (n=30) | | Control group (n=30) | |
|------|---------------|------------------------------|-------------------|-------------------------|-------------------|
| | | Frequency (f) | Percentage (%) | Frequency (f) | Percentage (%) |
| | | 1. | No pain | 0 | 0 |
| 2. | Mild | 0 | 0 | 0 | 0 |
| 3. | Moderate | 19 | 63.33 | 17 | 56.67 |
| 4, | Severe | 11 | 36.67 | 13 | 43.33 |

Table no 2 shows the pretest level of pain in experimental and control group, In experimental group, 19(63.33%) of the phlebitis patients had moderate level of pain, 11(36.67%) had severe pain and no one had mild or absence of pain.

whereas in control group, 17(56.67%) of the phlebitis patients had moderate level of pain ,and 13(43.33%) had severe pain and no one had mild or absence of pain.

TABLE NO 2.1: POST TEST LEVEL OF PAIN AMONG PHLEBITIS PATIENTS**N=60**

| S.no | Level of pain | Experimental group | | Control group | |
|-------------|----------------------|---------------------------|-------------------|----------------------|-------------------|
| | | (n=30) | | (n=30) | |
| | | Frequency | Percentage | Frequency | Percentage |
| | | (f) | (%) | (f) | (%) |
| 1. | No pain | 12 | 40 | 2 | 6.67 |
| 2. | Mild | 18 | 60 | 18 | 60 |
| 3. | Moderate | 0 | 0 | 10 | 33.37 |
| 4, | Severe | 0 | 0 | 0 | 0 |

Table no 2.1 shows the post test level of pain in experimental and control group, In experimental group, 12(40)% of the phlebitis patients had absence of pain,18(60)% had mild pain and no one had moderate and severe pain.

whereas in control group, 2(6.67%) of the phlebitis patients had absence of pain,18(60)% had mild pain and 10(33.37) had moderate pain and no one had severe pain.

SECTION III

TABLE 3: DATA ON EFFECTIVENESS OF ALOE VERA APPLICATION ON LEVEL OF PAIN

TESTING OF HYPOTHESES

H_1 – There will be a significant difference in the post test level of pain between experimental and control group.

Table 3: Mean standard deviation, mean difference and ‘t’ value of post test level of pain in the experimental group

N=60

| Sl.No | Phlebitis patients | Mean | S.D | M.D | Unpaired t- value | P-value |
|-------|--------------------|------|------|------|-------------------|---------|
| 1. | Pre test | 6.90 | 2.12 | 4.77 | 12.32 | 2.042 |
| 2. | Post test | 2.13 | 1.07 | | | |

***Significant at ($p < 0.05$) (df = 29)**

Table no 3 shows, that in the experimental group, the pre test mean value is 6.90 with standard deviation of 2.12, mean difference 4.77 and the post test mean value is 2.13 with standard deviation of 1.07. The obtained unpaired t-test value is 12.32 which is more than the table value (P value is 2.042) with the degree of freedom 29 at 0.05 level of significance. So it concludes that there will be a significant difference between post test level of pain in experimental and control group. Hence the research hypothesis (H_1) was accepted, and it was inferred that aloe vera extract application is effective in reducing level of pain among phlebitis patients.

Table 3.1: Mean standard deviation, mean difference and ‘t’ value of post test level of pain in the control group

N=60

| Sl. No | Phlebitis patients | Mean | S.D | M.D | Unpaired t- value | P-value |
|---------------|---------------------------|-------------|------------|------------|--------------------------|----------------|
| 1. | Pre test | 2.13 | 1.07 | 4.90 | 7.07 | 2.00 |
| 2. | Post test | 5.23 | 2.11 | | | |

***Significant at (p < 0.05) (df = 58)**

Table no 3.1 shows that in the control group, mean pre test value is 2.13 with the standard deviation of 1.07 and mean difference of 4.90. and the post test mean value is 5.23 with the standard deviation of 2.11. the obtained t-test value is 7.07 which is more than the table value(P value is 2.00) with the degree of freedom 58 at 0.05 level of significance. Hence, there will be a significant difference between post test level of pain in experimental and control group.

The mean difference was high and statistically significant.. that is the pain score in the experimental group is less than the pain score in the control group. Hence the research hypothesis (H₁) was accepted, and it was inferred that aloe vera extract is found to be effective in minimizing the pain among phlebitis patient in the experimental group than the control group.

SECTION-IV

TABLE 4: DATA ON ASSOCIATION BETWEEN THE POST TEST LEVEL OF PAIN OF PHLEBITIS AND THEIR SELECTED DEMOGRAPHIC VARIABLES IN THE EXPERIMENTAL GROUP.

TESTING HYPOTHESES H₂: There will be a significant association between the post test level of pain and selected demographic variables in experimental group.

n=30

| Sl.No | Demographic variables | Level of pain | | | | P value | χ^2 Value |
|-------|--|------------------|------------------------------|-------------------|-------------------------------|---------|---------------------------|
| | | None | | Mild | | | |
| | | F | % | F | % | | |
| 1 | Age (in years) a.21-30 b.31-40 c.41-50 | 7 3 2 | 23.33 10 6.6 | 9 12 9 | 30 40 30 | 6.231 | 5.99 df=2 S |
| 2. | Gender a. Male b.Female | 8 4 | 26.66 13.33 | 4 12 | 13.33 40 | 4.115 | 3.84 df=1 S |
| 3. | Residential area a. Rural b. Urban | 7 5 | 23.33 16.66 | 12 6 | 40 20 | 0.215 | 3.84 df=1 NS |
| 4. | Site of intravenous cannula a. Fore arm b. Radial c. Ante cubital fossa d. Others | 8 2 1 1 | 26.66 6.6 3.33 3.33 | 9 7 1 1 | 30 23.33 3.33 3.33 | 1.46 | 7.82 df=3 NS |
| 5. | Life style pattern d. Smoking e. Betal chewing f. Alcoholism d. None | 2 1 2 7 | 6.6 3.33 6.6 23.33 | 2 1 11 4 | 6.6 3.33 36.66 13.33 | 6.244 | 7.82 df=9 NS |
| 6. | Working pattern a. Sedentary worker b. Moderate worker c. Heavy worker d. Unemployed | 2 4 6 0 | 6.6 13.33 20 0 | 2 9 7 0 | 6.6 30 23.33 0 | 1.202 | 5.99 df=2 NS |

| | | | | | | | |
|----|---|-------------|--------------------|-------------|---------------------|-------|---------------------------|
| 7. | Food pattern a. Vegetarian b. Non-vegetarian | 4 8 | 13.33 26.66 | 2 16 | 6.6 53.33 | 2.22 | 3.84 df=1 NS |
| 8. | Previous hospitalization a. Yes b. No | 10 2 | 33.33 6.6 | 6 12 | 20 40 | 7.232 | 3.84 df=1 S |
| 9. | Exercise pattern a. Regular b. Irregular c. None | 6 4 2 | 20 13.33 6.6 | 1 8 9 | 3.33 26.66 30 | 8.475 | 5.99 df=2 S |

***Significant at (p < 0.05) level S –significant NS- not significant**

Table 4 indicates the sustentative summary of chi-square analysis, which was used to bring out the association between the post test level of pain and their selected demographic variables in experimental group.

The table 4 shows that there is a significant association between the level of pain and selected demographic variable, age, gender, previous hospitalization and exercise pattern and there is no significant association between level of pain and selected demographic variable such as residential area, site of IV cannulation, life style pattern, working pattern and food pattern

To find out the association, the following hypothesis was formulated.

H₂: There will be a significant association between the posttest level of pain and selected demographic variables in experimental group.

There was a significant association between the post test level of pain and socio demographic variable, age, gender, previous hospitalization and exercise pattern. Hence the research hypothesis (H₂) was accepted.

SUMMARY

This chapter dealt with analysis and interpretation of data obtained by the researcher. The analysis of the results showed that in the experimental group the level of pain was reduced by aloe vera application, when compared to control group without aloe vera application. This implied that aloe vera application has significant effect on reduction in the level of pain among phlebitis patients in the experimental group.

CHAPTER V

DISCUSSION

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analyzed based on the objectives and Hypothesis of the study. The problem stated was “An experimental study to evaluate the effectiveness of aloe vera extract in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.”. The discussion was based on the objectives of the study and hypothesis mentioned in the study.

OBJECTIVES OF THE STUDY

- To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.
- To assess the level of pain among phlebitis patients without aloe vera extract application in control group.
- To evaluate the effectiveness of aloe vera extract application in reducing the level of pain among phlebitis patients by comparing the post test level of pain between experimental group and control group.
- To find out the association between the post test level of pain and selected demographic variables in experimental group.

DATA ON DEMOGRAPHIC VARIABLES OF PHLEBITIS PATIENTS IN EXPERIMENTAL AND CONTROL GROUP

With regard to age, the majority of the sample subject 12(40%) were in the age group of (31-40) years in both the groups, 9(30%) and 8(26.67%) were in the age group of (21-30) years in experimental and control groups and 9(30%) and 10(33.33%) were in the age group of (41-50) years in experimental and control group respectively.

With regard to gender, majority of 18(60%) and 20 (66.6%) were females in experimental and control group and least of 12 (40%) and 10(33.33%) were males in both groups.

With regard to the residential area, majority of 19 (63.3%) and 17 (56.67%) belongs to rural area in both the groups and 11(36.67%) and 13(43.33%) were in urban area in experimental and control group.

With regard to site of intravenous cannula, majority of them had IV cannulation in fore arm which was 17(56.67%), in experimental and 15(50%) in control group. Least of them had IV cannulation ante cubital fossa and others which was 2(6.66%) in both experimental and control groups. 9(30%) and 11(36.67%) had IV cannulation in radial in both experimental and control groups.

With regard to Life style pattern, majority of them have the habit of alcoholism which was 13(43.33%), in experimental and 12(40%) in control group. Least of them have the habit of betal chewing 2(6.66) and 3(10%) in both experimental and control groups. 4(13.33%) and 6(20%) have the habit of smoking in both experimental and control groups. 11(36.67%) and 9(30%) no habits in both experimental and control groups.

Objective – 1

➤ **To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.**

In experimental group during the pre test, 19(63.33%) of the phlebitis patients had moderate level of pain, 11(36.67%) had severe pain and no one had mild and no pain.

Whereas during the post test, 12(40)% of the phlebitis patients had no pain,18(60)% had mild pain and no one had moderate and severe pain.

Objective – 2

➤ **To assess the level of pain among phlebitis patients without application of aloe vera extract in control group.**

In the control group, during the pre test 56.67% of the patients had moderate level of pain ,43.33% had severe pain and no one had mild and no pain.

whereas, during the post test 2(6.67%) of the patients had no pain ,18(60)% had mild pain and10(33.37) had moderate pain and no one had severe pain.

Objective – 3

➤ **To evaluate the effectiveness of aloe vera extract in reducing level of pain among phlebitis patients by comparing the post test score between experimental group and control group.**

In the experimental group, mean post test mean score was 2.13 with Standard deviation of 1.07. In the control group the mean post test mean score was 1.07 with Standard deviation of 2.11. The mean difference was 4.90. The obtained unpaired t-test value is 7.07 which is more than the table value ($p=2.000$) with the degree of freedom 58 at 0.05 level of significance. Hence the Research Hypotheses (H1) was accepted.

It is revealed that the post test level of pain in Experimental group is lower than that of the Control group.

Hence the research hypothesis H1 stated earlier that denotes there will be a significant difference between post test level of pain among phlebitis patients in experimental and control group is retained at $p<0.05$ level.

The finding of this study is supported by the study conducted by **Shansi.k (2011)** evaluation of an aloe vera gel topical effect to reduce pain among thrombophlebitis patients, who were on intravenous infusions. In this study 60 patients were selected who receives intravenous infusion. Assessment was done with the pain score with 0-10 scores. The duration of data collection is 30 days. Aloe vera gel was obtained from the leaves that is the central pulp taken after removing the outer hard layer, 1ml of aloe vera taken and applied to the experimental group, for a period of 3 days then the post test score was taken. The study finding revealed that majority (80%) of the patients in experimental group had mild pain level after aloe vera extract application. The mean (8.43) and standard deviation (1.30) of experimental group when computed with mean (16.97) and standard deviation of (1.22) of control group revealed that the calculated 't' value 26.19 was greater than the table value. Thus, the study findings revealed that there was a high statistical significant difference in level of pain among patients between experimental and control group at $p<0.001$ level of significance.

Objective – 4

➤ **To find out the association between the post test level of pain and selected demographic variables in experimental group.**

The results shows that there is a significant association between the level of pain and selected demographic variable, age, gender, previous hospitalization and exercise pattern and there is no significant association between level of pain and selected demographic variable such as residential area, site of IV cannulation, life style pattern, working pattern and food pattern in the experimental group.

The finding of this study is supported by the study conducted by **Maria punnen (2012)** A study to assess the effectiveness of aloe vera application on proximal site of intravenous cannulation in prevention of thrombophlebitis among cancer patients undergoing chemotherapy in a hospital at mangalore was done with 40 cancer patients undergoing chemotherapy for 4 hours to 3 days between the age group of 30 years to 65 years. Baseline proforma used in the study include age, gender, previous hospitalization, residential area and exercise pattern. It reveals that there is a significant association between post test level of pain and age, gender and residential area in experimental group.

Chi square reveals that there was an association between post test level of pain and baseline proforma age gender and residential area. Hence the research hypothesis RH₂ stated earlier was accepted.

In conclusion this study has enlightened on the importance of the role of the nurses in identifying the pain among phlebitis patients and they can provide aloe vera extract application to reduce the level of pain. The above findings give a clear direction to health care professionals that everyone must pay equal attention with regard to pain and aloe vera extract application.

SUMMARY

This chapter dealt with the objectives of the study, major findings of the demographic variables among phlebitis patients, description of Level of pain with and without aloe vera extract application, effectiveness by comparing the level of pain between experimental and control group, association between the post test level of pain and selected demographic variables in experimental group.

CHAPTER VI

SUMMARY

CONCLUSION

IMPLICATION

RECOMMENDATION

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS & RECOMMENDATIONS

This Chapter deals with the summary of the study and the conclusion drawn from the study, implication of the study for different areas like nursing practice, nursing education, nursing administration and nursing research. It also includes the recommendation for future research in the field.

SUMMARY

The summary includes the objectives of the study, description of procedures used, major findings and conclusion and recommendations for the research study. The present study is **“A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.”**

THE OBJECTIVES OF THE STUDY WERE

- To assess the level of pain among phlebitis patients before and after aloe vera extract application in experimental group.
- To assess the level of pain among phlebitis patients without aloe vera extract application in control group.
- To evaluate the effectiveness of aloe vera extract application in reducing level of pain among phlebitis patients by comparing the post test level of pain between experimental group and control group.
- To find out the association between the post test level of pain and selected demographic variables in experimental group.

RESEARCH HYPOTHESES

- H₁ – There will be a significant difference in the post test level of pain between experimental and control group.
- H₂ – There will be significant association between the post test level of pain and selected demographic variables in experimental group.

The **conceptual frame work** of the present study is based on the **modified case management model of Little Rock, 2002**. Case Management Society of America has defined case management as a collaborative process that assess, plan, implement, monitor, evaluate options and services to meet an individual's health needs through communication and available resources to promote quality and cost effectiveness in health care.

The investigator organized the **Review of literature** under the following sections

Studies related to incidence and prevalence of thrombophlebitis.

Studies related to effects of selective interventions in minimising thrombophlebitis pain.

Studies related to effects of aloe vera gel in minimising thrombophlebitis pain.

In the **methodology** the investigator selected a one group pretest post test design.

The variables in the study are as follows,

- **Independent variable:** Aloe vera extract application.
- **Dependent variable:** Level of pain among phlebitis patients.

The tool used to collect the data consisted of two parts,

Part I: Demographic data consists of 10 items for obtaining information including age, gender, residential area, site of intravenous cannula, life style pattern, working pattern, food pattern, previous hospitalization, exercise pattern and history of bleeding disorder.

Part II: Numerical pain rating scale was used individually to collect the data.

Content validity was established by 7 Nursing Experts, 2 medical experts 1 statistician and was found to be reliable and feasible. Reliability of the tool was calculated by inter rater method. Pilot study was conducted among 10 patients with phlebitis in ppk hospital and Manju hospital, Marthandam.

Main study data collection was done for a period of 4 weeks in ppk hospital and Manju hospital, marthandam during the month of November and December 3013. Purposive sampling method was adopted to select the samples based on the inclusion and exclusion criteria. Structured questionnaire was used to obtain the background factors. Then the investigator applied aloe vera extract every 8 hourly.

After the application of aloe vera extract for 2 days the post test was done for patients with phlebitis by Numerical pain rating scale for both the experimental and the control group. Collected data was analyzed and interpreted as per the objectives of the study by using the Descriptive statistics (Mean, Standard deviation, Frequency, and percentage) and the inferential statistics (t-test, Chi-square) methods after careful editing, coding, and transfer to computer, tabulating and decoding.

MAJOR FINDINGS OF THE STUDY

1. Findings related to data on demographic variables of phlebitis patients in experimental and control group

In the experimental group, majority of them were in the age group of 31-40 years (40%). With regard to gender, majority of them (60%) were females. With regard to residential area, majority of them were rural (63.33%). With regard to site of intravenous cannula, majority of them (56.67%) had cannula in the forearm. With regard to life style pattern, majority of them were alcohol consumers (43.33%). With regard to working pattern, maximum of them are heavy workers with (43.33%). With regard to food pattern, majority of (80%) are non-vegetarian. With regard to previous hospitalization, majority of (53.33%) had history of previous hospitalization. With regard to performing exercise, majority of (40%) are not regular in performing exercise. With regard to history of bleeding disorder, (100%) had no history of bleeding disorder.

In the control group, majority of them were in the age group of 31-40 years (40%). With regard to gender, majority of them (66.6%) were females. With regard to

residential area, majority of them were rural (56.67%). With regard to site of intravenous cannula, majority of them (50%) had cannula in the forearm. With regard to life style pattern, majority of them were alcohol consumers (40%). With regard to working pattern, maximum of them are heavy workers with (43.33%). With regard to food pattern, majority of (86.67%) are non-vegetarian. With regard to previous hospitalization, majority of (60%) had history of previous hospitalization. With regard to performing exercise, majority of (33.33%) are not regular in performing exercise. With regard to history of bleeding disorder, (100%) had no history of bleeding disorder.

2. Findings related to post test level of pain among phlebitis patients in the experimental and control group

- In experimental group 12(40%) patients had no pain.
- In experimental group 18(60%) of them had mild pain.
- In experimental group no one had moderate and severe pain.
- In control group, least of 2 (6.67%) had no pain.
- In control group, 18(60%) was reported as mild pain.
- In control group, 10(33.37%) had moderate pain
- None of them reported as severe pain.

3. Findings related to data on effectiveness of aloe vera application on level of pain

In the experimental group, the pre test mean value is 6.90 with standard deviation of 2.12, mean difference 4.77 and the post test mean value is 2.13 with standard deviation of 1.07. The obtained paired t-test value is 12.32 which is more than the table value (P value is 2.042) with the degree of freedom 29 at 0.05 level of significance. So it concludes that there will be a significant difference between post test level of pain in experimental and control group. Hence the research hypothesis (H_1) was accepted, and it was inferred that aloe vera extract application is effective in reducing level of pain among phlebitis patients.

In the control group, mean pre test value is 2.13 with the standard deviation of 5.23 and mean difference of 4.90. and the post test mean value is 1.07 with the standard deviation

of 2.11. the obtained t-test value is 7.07 which is more than the table value(P value is 2.00) with the degree of freedom 58 at 0.05 level of significance. Hence, there will be a significant difference between post test level of pain in experimental and control group.

Hence the research hypothesis (H_1) was accepted, and it was inferred that aloe vera extract is found to be effective in minimizing the pain among phlebitis patient in the experimental group than the control group.

4. Findings related to data on association between the post test level of pain among phlebitis and their selected demographic variables in the experimental group.

The result shows that there is a significant association between the level of pain and selected demographic variable, age, gender, previous hospitalization and exercise pattern and there is no significant association between level of pain and selected demographic variable such as residential area, site of IV cannulation, life style pattern, working pattern and food pattern.

There was a significant association between the post test level of pain and socio demographic variable, age, gender, previous hospitalization and exercise pattern. Hence the research hypothesis (H_2) was accepted.

CONCLUSION

- The main conclusion of the present study is aloe vera application is effective in reducing pain among phlebitis patients which is denoted by significant reduction in level of pain.
- The selected patients are comfortable and does not had any discomfort. From the results of the study, it is concluded that aloe vera extract application is not only cost effective but also easy to apply and shows a better effect.
- The nurses can include the aloe vera extract application in their routine activities to reduce the pain among phlebitis patients.

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 the aloe vera extract application can be included for pain management in nursing procedure among phlebitis patients.
- Aloe vera extract application is considered as complimentary therapy and can be imparted to nursing students to improve skill in providing care and update their knowledge on evidence based practice.
- In-service education can be conducted in the wards by the nursing personnel to help the patients with phlebitis in reducing the Level of pain.
- Nurses are in best position to impart aloe vera extract application to the patients with phlebitis.
- Nurses play an important role in primary health care by early detection and prevention of pain.

NURSING EDUCATION

- With the emerging health care demands and newer trends in field of nursing education must focus on the innovations to enhance the nursing care.
- Nurses could learn the assessment of pain and use of aloe vera extract application in reducing pain among phlebitis patients.
- Nursing students should be taught about the importance of aloe vera extract application thereby they can help patients to overcome pain.
- Adequate practical training can be given to the nursing staff and students regarding aloe vera extract application in reduction of pain and it can be incorporated in nursing curriculum.

NURSING ADMINISTRATION

- With technological advances and ever growing challenges, the health care administrators have the responsibility to provide continuing nursing education opportunities to understand the pain management with complementary therapies including aloe vera extract application.
- The Nurse administrators can initiate aloe vera extract application to reduce the pain through developmental programmes like in-service education and continuing nursing education programme.
- This enables the nurses to update the knowledge and to render the cost effective care to the public.
- The nurse administrators can train the nurses to identify level of pain, and to give counseling and teaching regarding management of pain in patients with phlebitis.
- Nurse administrators can prepare written policies and protocols regarding care of patients with Pain.

NURSING RESEARCH

- The professionals and the students can conduct many studies in different complimentary therapies to bring about newer perspective in nursing care.
- Nurse researcher should challenge to perform scientific work and take part in assessment, applications, evaluation for patients with phlebitis to reduce pain.
- The study finding will motivate the initial researchers to conduct the same study on large scale and study will be the reference for the extensive and intensive nursing care. Disseminate the findings of research through conferences, seminars and publishing in nursing journals.

RECOMMENDATIONS

- The similar study can be done on a larger population.
- A similar study can be done with other Complimentary therapies to reduce Pain.
- A comparison of aloe vera extract with other therapies like ayurveda, and homeopathy can be done.
- The knowledge, attitude and skills of medical and paramedical personnels regarding aloe vera extract can be assessed.
- Longitudinal study can be conducted for long term effects of aloe vera extract application.

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ANNEXURE-I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY



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.annammalnursingcollege.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayalal MBBS, DGO
Chairperson

Date :

18/11/2013

From

Mrs.J.M.Jerlin Priya., M.Sc (N), Ph.D,
Principal,
Annammal College of Nursing,
Kuzhithurai.

To

Dr.Suresh Kumar, MBBS, MD.
Manju Hospital,
Marthandam.

Respected Sir,

Sub: Permission letter for conducting the study

Mrs. P.Sharon Sumi, II Year M.Sc (N) student of Annammal College of Nursing, Kuzhithurai is approaching you to conduct a research on "A Quasi experimental study to evaluate the effectiveness of aloe vera application in reducing pain among phlebitis in Selected Hospitals of Kanyakumari district" which she has to complete in partial fulfillment of university requirement for the award of Master of science in nursing Degree.

In this regards I humbly request you to give permission to conduct the study in your esteemed institution.

Thanking you

Yours faithfully,

Principal
The Principal

ANNAMMAL COLLEGE OF NURSING
KUZHITHURAI 629 163

Permitted to start here

Dr. Suresh, M.B.B.S., M.D.
Reg. No: 84473
Manju Nursing Home
Marthandam



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

ANNEXURE-II

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY



PPK HOSPITAL
Main Road, Marthandam - 629 165.

Ph : 04651- 270135, 273245, 273255

E-mail: ppkvijayakumar@gmail.com



19/11/2013

Ref.No.PPK/L32/2013

To

The Principal,
Annammal College of Nursing,
Kuzhithurai.

Sir,

Sub: Approved Permission to Undergo Research Project – Regarding

We are glad to inform that we approved permission to your college Nursing Student **Mrs. P. Sharon Sumi, II year M.Sc. Nursing** to undergo Research project on "An experimental study to Evaluate the effectiveness of aloe vera application in reducing pain among phlebitis " in our Hospital from 18-11-2013 to 19-12-2013.

We trust that your student will abide our hospital rules and regulations.

Thanking You




Administrative Officer
A. MUTHIVANAN MBA
ADMINISTRATIVE OFFICER
PPK HOSPITAL
MARTHANDAM - 629 165

QUALITY HEALTH CARE WITHIN YOUR REACH

ANNEXURE-III

LETTER FOR COMPLETING THE STUDY



PPK HOSPITAL
Main Road, Marthandam - 629 165.

Ph : 04651- 270135, 273245, 273255

E-mail:ppkvijayakumar@gmail.com




Date: 22/12/2013

Project Completion Certificate

This is to Certify that **Mrs. P. Sharon Sumi**, II year M.Sc(N) student of Annammal College of Nursing. She has successfully completed the project work in our hospital on "**An experimental study to Evaluate the effectiveness of aloe vera application in reducing pain among phlebitis** " in our Hospital from 18-11-2013 to 19-12-2013 during the project period her attendance is 100 %




A. MATHIVANAN MBA
ADMINISTRATIVE OFFICER
PPK HOSPITAL
MARTHANDAM - 629 165

ANNEXURE-IV

ETHICAL COMMITTEE LETTER

ETHICAL CLEARANCE CERTIFICATE








Name of the Investigator: P.Sharon sumi

The Ethical Committee meeting held on 02-02-2013 had reviewed the project titled "An experimental study to evaluate the effectiveness of aloe vera extract in reducing pain among phlebitis patients in selected hospitals in Kanyakumari District". The proposal was submitted before 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/regulatory approvals that may pertain to this research. This has to be carried out according to the conditions outlined in the original protocol submitted for ethics 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 Research Committee members :

1. Dr. Sheeba Jayalal M.B.B.S., D.G.O.,
Chief Medical Officer 
2. Dr. J.A.Jayalal M.S., F.I.C.S., D.L.S (Germany), M.B.A., F.L.A.G.E.S
Chief Surgeon 
3. Dr. Jeya Raj, M.Sc., M.A, M.Ed., M.Phil., BGL, PhD
District Liaison officer 
4. Dr. Santhi Appavu, M.Sc.(N), Ph.D.,
Nursing Research Advisor 
5. Dr. Nazereth Solomon M.B.B.S
Physician 
6. Mrs. J.M. JerlinPriya, M.Sc. (N)
Research Guide 
7. Mrs. Vinoli S.G., M.Sc. (N)
Subject Guide 

ANNEXURE V

LETTER SEEKING EXPERT'S OPINION FOR THE VALIDITY OF THE TOOL



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 MBS, DGO
Chairperson

Date :

To

Madam/Sir,

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

Ms. P. Shron Sumi a bonafide II year M.sc Nursing student of Annammal college of Nursing is approaching you to obtain validation ^{for} 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 study to evaluate the effectiveness of "Aloe Vera extract application in reducing pain among thrombophlebitis patients in selected hospital 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,

Principal

Our Motto : Heal us to Heal others

"What we are is gift of god and What we become is gift to god"

ANNEXURE VI

EVALUATION CRITERIA CHECKLIST FOR VALIDATING THE TOOL

INTRODUCTION

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

Interpretation of column

Column I: Meets the criteria Column II:

Partially meet the Criteria Column III:

Does not meet the Criteria

| S.No | Criteria | 1 | 2 | 3 | Remarks |
|------|--|---|---|---|---------|
| 1. | Scoring ■ Adequacy ■ Clarity | | | | |
| 2. | Content ■ Logical sequence ■ Adequacy | | | | |
| 3. | Language ■ Appropriate ■ Clarity | | | | |
| 4. | Practicability ■ It is easy to score ■ Does it precisely | | | | |

Signature :

Any other suggestions :

Name :

Designation :

Address :

ANNEXURE VII

LIST OF EXPERTS

1. Dr. Suresh, M.B.B.S, MD

physician,
Manju Hospital,
Marthandam,
Kanyakumari District.

2. Dr. Santhosh kumar, MBBS, MD

SP Hospital,
Parasalai,
Trivandrum District.

3. Mrs. Ajitha Jothi, S.T MSc., (N), PhD(N),

Associate Professor,
C.S.I College of Nursing,
Karakkonam,
Trivandrum District.

4. Dr. Mrs. S.S. Sharmila Jansi Rani, MSc (N), Ph.D

Professor
Christian college of Nursing,
Neyoor,
Kanyakumari District.

5. Mrs. Vinitha Bai, MSc., (N),

Lecturer,
NIMS college of Nursing,
Neyyattinkara.
Trivandrum District.

6. Mrs.Jannet,MSc.,(N),
Associate Professor,
Saraswathy college of Nursing,
Karode.
Trivandrum District.

7. Mr.Joseph Merlin,MSc.,(N),
Associate Professor,
Saraswathy college of Nursing,
Karode.
Trivandrum District.

8. Mrs.Merlin Suja,MSc.,(N),
Lecturer,
Christian college of Nursing,
Marthandam,
Kanyakumari District.

9.Mrs.Sheeba, MSc(N)
Reader,
Christian college of Nursing,
Neyoor,
Kanyakumari District.

10.Mr. Anto Paulin Britto,M.Sc.,M.Ed.,M.Phil.,PG,DBM.,
Biostatistician and Assistant Professor,
Scott Christian College,
Nagercoil,
Kanyakumari District.

ANNEXURE VIII

RESEARCH PARTICIPANTS CONSENT FORM

Dear participant,

I am a MSc.,Nursing student of Annammal college of Nursing, Kuzhuthurai.As part of my study, a research on “A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.”. The findings of the study will be helpful in reducing the pain perception in phlebitis patients.

I hereby seek your consent and co-operation to participate in the study .please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I..... hereby consent to participate and undergo the study.

Place:

Date:

Signature of the participant

ANNEXURE IX

CERTIFICATE OF ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper “**A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.**” by Ms. P.SHARON SUMI, has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.


Signature
(ALEX MARTIN.M)

ANNEXURE X

CERTIFICATE OF TAMIL EDITING

CERTIFICATE OF TAMIL EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the tool for demographic data and the Numerical pain rating scale is translated by the 2nd year M.Sc (N) student, Annammal College of Nursing for the dissertation, **“A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.”**, was edited for Tamil language appropriateness by

Dr. I. Makizh Ulda Kamalam, Associate Professor, H.O.D of Tamil

I. U. K.
Dr I. Makizh Ulda Kamalam,
M.A., M.Phil., M.D.
Associate Professor
H.O.D of Tamil
N.M. Christian College
Marthandam K.K. Dist - 625 165

ANNEXURE XI

CERTIFICATE OF STATISTICAL ANALYSIS AND INTERPRETATION

CERTIFICATE OF STATISTICAL ANALYSIS

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation paper titled **“A quasi experimental study to evaluate the effectiveness of aloe vera extract application in reducing pain among phlebitis patients in selected hospitals at Kanyakumari District.”**, by Ms.P.SHARON SUMI has been checked for the accuracy of statistical analysis and interpretation and was apt for its purpose.

for to.
P. Anto Paulin Brin
Bio-Statistician & Asst Prof
Scott Christian College
Nagercoil.

ANNUXURE XII

TOOL FOR DATA COLLECTION

SECTION-A

STRUCTURED QUESTIONNAIRE (ENGLISH)

PUT A TICK MARK (✓) IN THE APPROPRIATE COLUMN

1. Age

- a. 21-30 years
- b. 31-40 years
- c. 41-50years

2. Gender

- a. Male
- b. Female

3. Residential area

- a. Rural
- b. Urban

4. Site of intravenous cannula

- a. Fore arm
- a. Radial
- b. Ante cubital fossa
- c. Others

5. Life style pattern

- a. Smoking
- b. Betal leaves chewing
- c. Alcoholism
- d. Others

6. working pattern

- a. Sedentary worker
- b. Moderate worker
- c. Heavy worker
- d. Unemployed

7. Food pattern

- a. Vegetarian
- b. Non-vegetarian

8. Previous hospitalization

- a. Yes
- b. No

9. Exercise pattern

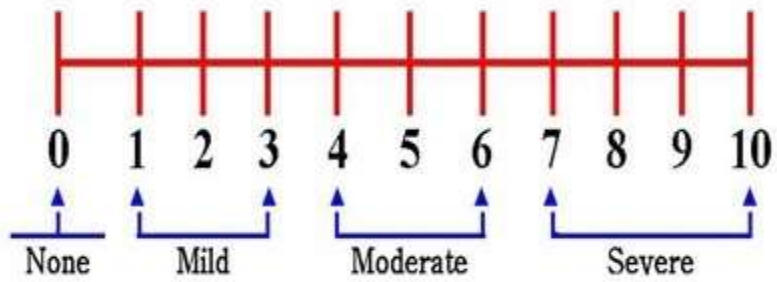
- a. Regular
- b. Irregular
- c. Not performing

10. History of bleeding disorder

- a. Yes
- b. No

SECTION –B

NUMERICAL PAIN RATING SCALE



MARKS INTERPRETATION

| Marks | Interpretation |
|--------------|-----------------------|
| 0 | No Pain |
| 1-3 | Mild |
| 4-6 | Moderate |
| 7-10 | Severe |

பகுதி - அ

விவரக்குறிப்புகள்

கொடுக்கப்பட்டுள்ள அனைத்து கேள்விகளுக்கும் பொருத்தமான விடையைத் தேர்ந்தெடுக்கவும்.

1. வயது

அ. 21-30

ஆ. 31-40

இ. 41-50

2. பாலினம்

அ. ஆண்

ஆ. பெண்

3. வசிக்கும் இடம்

அ. கிராமம்

ஆ. நகரம்

4. ஊசி பொருத்தி வைத்துள்ள பகுதி

அ. முன்னங்கை

ஆ. மேல்கை

இ. முன்னால் முட்டுப்பகுதி

ஈ. வேறுபகுதி

5. வாழ்க்கை முறை

அ. புகைப்பிடித்தல்

ஆ. வெற்றிலை வைத்தல்

இ. மது அருந்துதல்

ஈ. எதுவுமில்லை

6. வேலை வழக்கம்

அ. உட்கார்ந்தே பணியாற்றுபவர்

ஆ. நடத்தரப்பணியாளர்

இ. கடின உழைப்பாளி

ஈ. வேலையில்லாதவர்

7. உணவு வழக்கம்

அ. சைவம்

ஆ. அசைவம்

8. முன்பு மருத்துவமனையில் அனுமதிக்கப்பட்டவரா

அ. ஆம்

ஆ. இல்லை

9. உடற்பயிற்சி முறை

அ. சீரான

ஆ. சீரற்ற

இ. இல்லை

10. குடும்பத்தில் இரத்தப்போக்கு நோயால் பாதிக்கப்பட்டவர் உண்டா

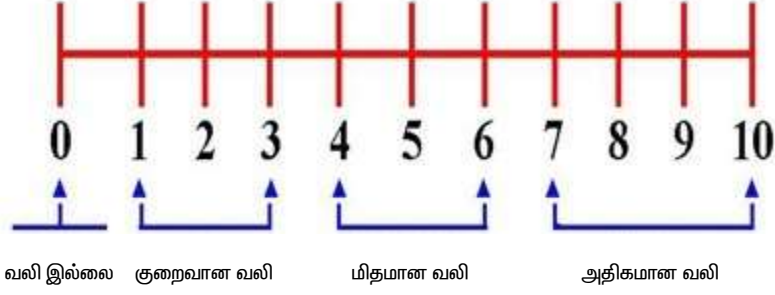
அ. ஆம்

ஆ. இல்லை

பகுதி-2

வலியின் எண் அளவு கோல்

(கீழ்க்கண்ட எண்களில் ஊசியினால் ஏற்பட்ட வலியின் தன்மை குறிப்பிடுக)



மதிப்பெண் குறிப்பீடு

| மதிப்பு | குறிப்பீடு |
|---------|-------------|
| 0 | வலி இல்லை |
| 1-3 | குறைவான வலி |
| 4-6 | மிதமான வலி |
| 7-10 | அதிகமான வலி |

ANNEXURE-XIII
MASTER CODE SHEET

| DEMOGRAPHIC DATA EXPERIMENTAL GROUP | | | | | | | | | | |
|--|------------|---------------|-------------------------|------------------------------------|--------------------------|------------------------|---------------------|---------------------------------|----------------------------|-------------------------------------|
| S.No | Age | Gender | Residential Area | Site of intravenous cannula | Lifestyle pattern | working pattern | food pattern | previous hospitalization | performing exercise | History of bleeding disorder |
| 1 | a | b | b | b | c | a | b | a | b | b |
| 2 | c | b | a | a | d | b | b | a | b | b |
| 3 | a | a | b | b | a | b | a | b | a | b |
| 4 | c | b | a | a | c | b | b | a | c | b |
| 5 | b | a | b | b | d | b | b | b | c | b |
| 6 | a | b | a | d | c | b | a | a | c | b |
| 7 | b | b | b | a | a | a | b | b | c | b |
| 8 | a | a | a | b | c | b | b | a | b | b |
| 9 | c | b | b | a | d | a | a | a | c | b |
| 10 | b | a | a | b | c | b | b | b | c | b |
| 11 | a | b | b | c | a | b | b | b | c | b |
| 12 | b | b | a | a | c | b | b | a | b | b |
| 13 | b | b | a | a | d | b | a | b | c | b |
| 14 | a | a | b | b | c | b | b | a | a | b |

| | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|---|
| 15 | b | b | a | a | d | a | b | a | b | b |
| 16 | c | a | b | c | c | c | a | b | b | b |
| 17 | a | b | a | a | d | c | b | a | c | b |
| 18 | b | b | b | b | c | c | a | b | a | b |
| 19 | a | b | a | a | a | c | b | b | b | b |
| 20 | b | a | a | a | c | c | b | a | b | b |
| 21 | c | b | a | a | d | c | b | a | c | b |
| 22 | b | a | a | d | c | c | b | b | a | b |
| 23 | b | a | a | a | b | c | b | a | b | b |
| 24 | c | b | b | b | c | c | b | b | b | b |
| 25 | c | b | a | a | d | c | b | b | a | b |
| 26 | b | a | a | a | b | c | b | a | b | b |
| 27 | a | a | a | a | d | c | b | b | c | b |
| 28 | c | b | a | a | c | c | b | a | a | b |
| 29 | b | a | a | a | d | b | b | b | b | b |
| 30 | c | b | b | b | d | b | b | a | a | b |

MASTER CODE SHEET**DEMOGRAPHIC DATA CONTROL GROUP**

| S.No | Age | Gender | Residential Area | Site of intravenous cannula | Lifestyle pattern | working pattern | food pattern | previous hospitalization | performing exercise | History of bleeding disorder |
|-------------|------------|---------------|-------------------------|------------------------------------|--------------------------|------------------------|---------------------|---------------------------------|----------------------------|-------------------------------------|
| 1 | a | a | a | b | a | a | b | b | b | b |
| 2 | c | b | b | d | c | c | b | a | c | b |
| 3 | b | b | a | b | d | b | b | b | c | b |
| 4 | a | b | b | a | d | a | b | a | a | b |
| 5 | b | a | a | d | a | c | b | a | b | b |
| 6 | a | b | b | a | d | a | a | b | c | b |
| 7 | c | b | a | a | c | c | b | a | c | b |
| 8 | b | b | b | b | d | c | b | a | b | b |
| 9 | c | a | a | a | c | a | b | b | a | b |
| 10 | b | b | b | c | a | b | b | a | c | b |
| 11 | a | b | a | a | c | c | a | a | c | b |
| 12 | c | b | b | a | d | b | b | b | b | b |
| 13 | b | b | a | c | c | c | b | a | a | b |
| 14 | c | b | a | a | a | b | b | a | c | b |
| 15 | b | a | a | b | d | a | b | b | b | b |

| | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|---|
| 16 | c | b | a | a | c | c | a | a | a | b |
| 17 | a | b | b | a | b | b | b | b | c | b |
| 18 | b | a | a | b | c | c | b | a | b | b |
| 19 | b | b | b | a | d | b | b | b | c | b |
| 20 | c | b | a | b | a | c | b | a | b | b |
| 21 | b | a | b | a | c | b | b | a | a | b |
| 22 | c | b | b | b | c | c | b | b | c | b |
| 23 | a | a | a | b | d | b | b | a | b | b |
| 24 | b | b | b | b | c | c | b | a | a | b |
| 25 | c | b | a | a | b | b | a | b | c | b |
| 26 | a | a | b | a | c | c | b | a | b | b |
| 27 | c | b | a | b | c | a | b | b | c | b |
| 28 | b | b | b | a | d | c | b | a | a | b |
| 29 | a | b | a | a | a | b | b | a | b | b |
| 30 | b | a | a | b | b | b | b | b | a | b |