COMPARE THE EFFECTIVENESS OF ALOE VERA Vs SILVER SULFADIAZINE APPLICATION ON WOUND HEALING AMONG BURNS PATIENTS AT KANYAKUMARI GOVERNMENT MEDICAL COLLEGE AND HOSPITAL, ASARIPALLAM.

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

MASTER OF SCIENCE IN NURSING

MEDICAL SURGICAL NURSING (Critical care nursing)

BY

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EXAMINERS,

1. ...........................................

2. .............................................
CHAPTER I

INTRODUCTION

“If any of you lacks wisdom, he should pray to God, who will give it to him; because God gives generously and graciously to all”

James: 1:5

Injuries represent one of the most important public health problems faced by both developing and industrialized nations today. Injuries may be extensive burn profoundly affects the patient’s physique, psyche, financial situation and
family. Patients who suffer from extensive burn injuries frequently die, while others suffer from painful physical recovery. In addition to their dramatic physical effects, burn injuries frequently cause deleterious psychological complications, (Nardella.D, 2007).

Burn injuries are among the most devastating of all injuries and a major global public health crisis. Burns are the fourth most common type of trauma worldwide, following traffic accidents, falls, and interpersonal violence. Approximately 90 percent of burns occur in low to middle income countries, regions that generally lack the necessary infrastructure to reduce the incidence and severity of burns, (Park. JO, 2009).

Burns are the injuries that result from dry heat like fire, flame, piece of hot metal, sun, contact with wire carrying high tension electric current, high tension electric current, lightening and friction. Scalds are injuries caused by moist heat like boiling water, steam, oil, hot tar and hot liquids, (Agarwal, 2011).

A burn is a type of injury caused by thermal, chemical, electrical, radioactive, friction. Most burns affect only the skin (epidermis and dermis) rarely deeper tissues such as muscles, bones, blood vessels also injured. Burns may treated with first aid in an out of hospital setting, but some may require specialized treatment, (Mary Mandozzi, 2009).

Burns are among the most intensely painful injuries. All patients will experience pain, regardless of the cause, size, or depth of the burn. Despite advances in topical wound care and pharmacology, and a growing emphasis on
palliative care, wound care is the main source of the pain associated with burn injury, Cannar Ballard, (2009).

Most burn injuries occur in a domestic setting, with cooking as the most common activity. Adults are equally likely to sustain a burn in the home, outdoors or at work. Burns to adult females occur mostly at home, while burns to adult males occur mostly in outdoor or work locations. The elderly are most likely to sustain a burn in the bathroom, followed by the kitchen, (Micheal .D . Peck, 2009).

Burn injuries can be accidental, suicidal and homicidal. Depending on the extent and severity of burns, and the availability and accessibility to health care, the impact of burns varies from superficial burns and scalds to damage of the internal body organs. Secondary complications of burns leading to contractures, deformities and disfigurement are extremely common. Secondary infections could lead to a number of complications resulting in delayed recovery and death. During 2001, 32,509 persons died in India due to burn injuries. The various causes of burns were: electrocution (7%, n=5570), explosion (2%, n=666), fire (71%, n=23,043) and firearms (10%, n=3230). The total number of injured were 6030, indicating that burn injuries are highly under reported (32,509 deaths v. 6030 injured persons). The mortality due to burn injuries was 3.5/100,000 population. The highest number of injuries occurred in the age group of 15-44 years (72%).
More women suffered burn injuries compared to men (1.6:1) in all age groups, except among those 44–59 years of age, (NCRB, 2001).

Each year more than 3,00,000 people die from fire related burn injuries. Millions suffer from burn related disabilities and disfigurements which have psychological, social and economic effects on both the survivors and their families. In India about 7,00,000 people a year are admitted to hospitals. Approximately 5000 patients die each year from burn related complications, (Ramakrishnan, 2011).

People who get burned are very prone to infection. It can be hard to tell if a minor burn is infected because the skin surrounding a burn is usually red and may become warm to the touch -- both of which are also signs of infection. Any change in the appearance of a burn, or in the way that the person feels, should be brought to the attention of a doctor. Potential signs of infection include Change in color of the burnt area or surrounding skin Purplish discoloration, particularly if swelling is also present, change in thickness of the burn (the burn suddenly extends deep into the skin) Greenish discharge or pus and Fever, (Mosby, 2010).

Most burn related deaths (54%) in modern burn units occur because of septic shock and organ dysfunction rather than osmotic shock and hypovolemia. Bloodstream infection and the subsequent development of sepsis are among the most common infection complication occur in burns patients in the intensive care
unit. Sepsis syndrome is clinically heralded by the onset of hypothermia, hypotension, decreased urine output, hyperglycemia, neutropenia, and thrombocytopenia. Burn wound sepsis was predominantly due to invasive wound infection prior to the early burn wound excision, (Mary Mondozzi, 2009).

The worldwide incidence of fire-related injuries in 2004 was estimated to be 1.1 per 100,000 population, with the highest rate in Southeast Asia and the lowest in the Americas. The incidence of burns in low and moderate income countries (LMIC) is 1.3 per 100,000 population compared with an incidence of 0.14 per 100,000 population in high income countries. The incidence of burn injuries severe enough to require medical care is nearly 20 times higher in the Western Pacific (including China) than in the Americas, (Micheal .D . Peck , 2009).

The annual incidence of burns, in all age ranges from 112 to 518 per 100,000 per year. In Karachi, the annual incidence of burn admissions in all ages is reported by some studies with higher rates in females including 13.4 per 100,000 per year, 13.5 (male 9.1, female 18.0), 17.2 and 19.0 admissions per 100,000 per year (male 15.5, female 18.9), (Rahman . A, 2008).

The world wide incidence of fire related injuries in 2007 was estimated to be 1.1% per 1,00,000 population with the highest rate in south east Asia and the lowest in Americas. The incidence of burns is low in moderate income countries is 1.3% per 1,00,000 population in high income countries ,Out of all burns 80.8% were married ones, 71.9% belongs to 21- 40 yrs and 75% came from rural part of
the district, out of all burns 50.7% accidental, 47.8% susidal, 1.5% homicidal, (Anil .K. Batra, 2008).

In India about 700,000 people a year are admitted to hospital, though very few are looked after in specialist burn units. About 90% of burns occur in the developing world and 70% of these are in children. Survival of injuries greater than 40% total body surface area is rare in the developing world. In India about 700,000 people a year are admitted to hospital, though very few are looked after in specialist burn units, (Davies JW, 2001).

According to the National Fire Protection Agency, US fire departments responded to 1.64 million fires during 2006. There were a total of 3,245 civilian fire-related deaths and 16,400 civilian fire-related injuries, resulting in one fire death every 162 minutes and one injury every 32 minutes. The total economic impact was estimated at $11.3 billion, (Abu hammed, 2000).

All over the world millions of people sustains burns and many of them die, few of them were hospitalized and majority of them with minor burns were treated with out-patient basis by primary care physicians, Whether the burns is major or minor first aid treatment plays a major role in reducing the mortality and morbidity. Proper first aid treatment given can prevent the wound from deep and getting infected. Proper care of the burns victims during transportation to referral centers can also play an important role in final outcome, (Wang, 2011).
There are so many treatments available for burns like Antimicrobial ointments (such as silver sulfadiazine, mafenide, Antibiotics (such as oxacillin, mezlocillin, and gentamicin) are used to treat infection. pain medications (such as acetaminophen with codeine, morphine, or meperidine) are used for severe burns. Anabolic steroids, such as oxandrolone, may be used for severe burns to help decrease wound healing time. In case of severe burns, debridement and skin grafting may be performed, *(Hawkins, 2000).*

Aloe Vera, also known as the true or medicinal aloe, is a species of succulent plant in the genus *Aloe.* The species is frequently cited as being used in herbal medicine. Many scientific studies of the use of extracts of Aloe vera have been undertaken; Aloe Vera extracts may be useful in the treatment of wound and burn healing, minor skin infections, Sebaceous cyst, diabetes, and elevated blood lipids in humans. Aloe Vera may be effective in treatment of wounds. Some studies show that aloe Vera promotes the rates of healing. A more recent review *(2007)* concludes that the cumulative evidence supports the use of Aloe Vera for the healing of first to second degree burns In addition to topical use in wound or burn healing, *(Nathorn Chaiyakunapruka, 2010).*

Aloe Vera’s usefulness and its effectiveness in curing burns in many historical documents. Aloe Vera for burns is a known, practiced and useful theory. Although aloe Vera has been known to cure burns, it cannot be used in all types of burns. Some burns need immediate medical assistance. May be Aloe Vera can be
used as first aid, but this does not mean there is no need for doctoral treatment; there are different types of burns. Burn can be caused owing to exposure to hot liquids, cold things, hot gas or any other extremely hot or cold substances, (Jacobs, 2003).

Aloe Vera promote healthy tissue growth by reducing the inflammation and killing bacteria and other organisms. Its cooling effect offers instant relief from burns, Aloe seems to be able to speed wound healing by improving blood circulation through the area and preventing cell death around a wound, (Alice E. Manson, 2007).

Silver Sulfadiazine is the most commonly used topical antibiotic agent for both ambulatory and hospitalized burned patients. This agent is a combination of Sodium Sulfadiazine and Silver Nitrate. The silver ion binds to the microorganism nucleic acid releasing the sulfadiazine which then interferes with the metabolism of the microbe. It is easy to use and painless when applied and can used with or without dressing. Limited systemic toxicity with repeated daily or twice daily application has occurred aside from the development of leukemia. Silver Sulfadiazine has excellent broad spectrum coverage against Pseudomonas aeruginosa and other gram negative bacteria. This has some activity against Candida albicans, but enhanced antifungal activity can be achieved by nystatin in combination with silver sulfadiazine, (Atiyeh BS, 2003).
Silver Sulfadiazine dissociates more slowly than silver nitrate, there is still poor penetration into the wound. Silver Sulfadiazine is only absorbed within the surface epidermal layer, which limits its effectiveness in some patients with severe injuries, (Hawkins, 2002).

NEED FOR STUDY

Burns are the most common and devasting forms of trauma. Patients with serious thermal injury require immediate specialized care inorder to minimize morbidity and mortality. Data from the national centre of injury prevention and control in United States shows that approximately 2 million fires are reported each year which result in 1.2 million with burn injuries. Moderate to severe burn injuries requiring hospitalization account for approximately 1,00,000cases and about 5000 patients die from burns related complications each year, (Micheal .D .Peck ,2010).

Burn injury is a major public health issue in developing nations. Although burn injuries and smoke inhalation in 2002 were documented as being responsible for over 322 000 deaths worldwide, this figure is most likely a gross underestimate. The burden of suffering from fire is exceedingly distributed among the poor. A large proportion of burn injuries are related to the nature of domestic appliances that are used for cooking, heating, lighting or all three. The incidence of injuries is largely associated with the use of stoves and lamps; and from
kerosene or petroleum as well as butane, liquid petroleum gas and alcohol. Associated problems include appliance design and construction, fuel combustion and instability, and mechanical inefficiency. Ignorance of safe usage techniques is also contributory, (Anna E van der Merwe, 2007).

The survival rate for burn patients have improved in the past few decades due to advances in the modern medical care in specialized burn centre. Improved outcomes for severely burned patients have been attributed to medical advances in fluid resuscitation, nutritional support, pulmonary care, burns wound care, and infection control practices. As a result burn related deaths depending on the extend of injury have been halved within the past 40 years. In patients with severe burns over more than 40% of Total Burns Surface Area, 75% of deaths are due to sepsis from burn wound infection or other infection complication, (Gunn SW, 2003)

Burns-related injuries are frequent during the festival of lights (Diwali) in India. A study from two hospitals in NewDelhi revealed that children were injured in greater numbers while lighting crackers. In addition, many of the injured were unaware that the application of cold water soon after suffering burns was helpful, (Mohan and Varghese, 2002).

At the beginning of the 21st century, the Centre of Fire Statistics estimated that the average number of fires worldwide was 7-8 million, resulting in 70,000-80,000 fire deaths and 500,000-800,000 fire injuries. In Europe, 2-2.5 million fires were reported, resulting in 20,000-25,000 fire deaths and 250,000-500,000 fire
injuries. The World Fire Statistics from the Geneva Association reported that, by country, the highest number of fire deaths in 2004 occurred in the United States (4,250), followed by Japan at 2,050 and the United Kingdom at 530. When adjusted for deaths per 100,000 persons between 2002 and 2004, of the 25 countries that reported data, the highest rate was in Hungary (2.1); Japan reported 1.79, the United States reported 1.39, the United Kingdom reported 0.97, Spain reported 0.61, and Singapore reported 0.08, *(Hayek. S N, 2005)*.

Regarding race Among 142,318 patients with burns reported in the National Burn Registry, 58% were white, 17.4% were African American, 12.8% were Hispanic, 2% were Asian, 0.6% were Native American, 1.8% were classified as other, and data were missing for 7.3%. Regarding sex Among 142,318 burn patients reported in the National Burn Registry, 69.7% were male and 30.3% were female. Regarding age most burns occur in persons aged 5-30 years, with only 8% occurring in persons older than 70 years. Younger individuals are more likely to have scald burns, while older individuals are more likely to be burned by fire. With the same percentage of TBSA burned, older patients have a higher mortality rate, *(Michael. D. Peck, 2003)*.

Statistics’ from the Kilpauk Medical College (KMC), centre for burns in Tamil Nadu, bear out their concern. For the year 2008 alone, the centre handled a whopping 1,277 cases of fatal burns, of which 68% (869) were female victims. And these were cases from only Chennai city and adjoining districts like
Thiruvallur, Kanchipuram and chengalpattu. “Then how can only 57 cases be registered for an entire state of 31 districts, (Ragavan, 2009).

One of the major determinants of outcome of burn injuries is the severity of body involvement. In Indore, Madhya Pradesh, the mortality rate was 22% among hospitalized subjects with burns (Mukerji et al. 2001). In a study of burn injuries at Sholapur, Maharashtra, 70% of patients with >70% burns died, while only 6% died among those with <40% burns (Subramanian 1996). Singh et al. (1998) from Chandigarh observed that 56% of cases had >80% burns. Septicemia, neurogenic shock and hypovolaemic shock caused death in 55%, 28% and 15% of cases, respectively. Kumar (2000) observed that among those with burn injuries, 63% had an involvement of <20% of the body surface area. Sepsis (35%) and multiorgan failure (26%) were the major causes of death (Kumar 2000). in New Delhi noticed that 47% of patients had >50% burns. Even among those with 60% burns, the mortality was only 6% if they reached a hospital early and received good-quality first aid at the site of injury. The major causes of death were resuscitation failure, inhalation injury or infections, (Ahuja and Bhattacharya, 2002).

According to the National Burn Repository’s 10-year rolling data collection from January 1, 1996, through June 30, 2006, the mortality rate associated with burns was 5.3% overall, with older age and higher-percentage total body surface area (TBSA) burned correlating with higher mortality rates. The causes of death
were reported in 3,463 cases; 27% died of multiple organ failure, 14% died from withheld treatment, 12% died from trauma wounds, 12% died from burn shock, 11% died from pulmonary failure/sepsis, 11% died from cardiovascular failure, 5% died from other causes, and 4% died from sepsis burn wound. Burns covering 1-10% of the TBSA carried the lowest risk of mortality (0.7%), increasing as the percentage of TBSA burned increased. The mortality rate was 78% in patients with 90% of their TBSA burned, (Robert I. Simon MD, 2009).

Among the 19,655 reported cases of complications included in the analysis, pulmonary complications including pneumonia (3,361), acute respiratory distress syndrome (885), and respiratory failure (1,944) constituted the greatest percentage of cases (31%). Cellulitis (1,988) and wound infections (1,950) were responsible for 17% of the complications. Septicemia (1,672) and other infections (1,250) were the other categories that included infectious complications (15%) , (Brent Winston, 2006).

National Vital Statistics (2003), reported that 1.3 per 100,000 people died from fire/flame injury in the US 2001, 1.2 per 100,000 people died from unintentional fire/flame injury in the US 2001, 0.1 per 100,000 people died from suicidal fire/flame injury in the US 2001, 0.2 per 100,000 people died from homicidal fire/flame injury in the US , 1.5 per 100,000 males died from accidental exposure to smoke, fire and flames in the US , 0.9 per 100,000 females died from accidental exposure to smoke, fire and flames in the US , 1.3 per 100,000
people died from fire or hot object/substance injury in the US 2001, 1.2 per 100,000 people died from unintentional fire or hot object/substance injury in the US 2001, 0.1 per 100,000 people died from suicidal fire or hot object/substance injury in the US 2001, 0.1 per 100,000 people died from homicidal fire or hot object/substance injury in the US 2001, 1.3 per 100,000 people died from fire/flame injury in the US 2001, 1.2 per 100,000 people died from unintentional fire/flame injury in the US 2001, 0.1 per 100,000 people died from suicidal fire/flame injury in the US 2001, 0.0 per 100,000 people died from homicidal fire/flame injury in the US 2001.

Padmaj (2011), conducted a study to assess the knowledge and knowledge on practice of the mothers having under fives regarding prevention of burns and scalds complications, to evaluate the effectiveness of health education on prevention of burns and scalds complications and to associate the relationship between demographic variables and the level of knowledge on practices of mother having under fives on prevention of burns and scalds complications. Pre experimental one group pre test, post test design was adopted fifty mothers of under fives were selected by purposive sampling. Each mother was interviewed by using the structured questionnaire. Health education was given on prevention of burns and scalds complications among mothers of under fives. After 10 days of health education post test was conducted by using the same pre test structured questionnaire. The data was analyzed by using descriptive and inferential
statistics. The findings reveals that in pre test 76% have inadequate knowledge, 18% have moderate knowledge, 6% have adequate knowledge. In post test 68% have adequate knowledge, 30% have moderate knowledge, 2% have adequate knowledge. The effectiveness of health education on prevention of burns and scalds was significant at P< 0.0001 level.

Med Assoc Thai (1995), conducted a study on Effect of aloe Vera gel to healing of burn wound In a study of twenty-seven patients with partial thickness burn wound, they were treated with aloe Vera gel compared with Vaseline gauze. It revealed the aloe Vera gel treated lesion healed faster than the Vaseline gauze area. The average time of healing in the aloe gel area was 11.89 days and 18.19 days for the Vaseline gauze treated wound. Statistical analysis by using t-test and the value of P < 0.002 was statistically significant. In histological study, it showed early epithelialization in the treated aloe Vera gel area. Only some minor adverse effects, such as discomfort and pain were encountered in the 27 cases. This study showed the effectiveness of aloe Vera gel on a partial thickness burn wound, and it might be beneficial to do further trials on burn wounds.

Malik KI (2010), Burn injury is associated with a high incidence of death and disability; yet, its management remains problematic and costly. We conducted this clinical study to evaluate the efficacy of honey in the treatment of superficial and partial-thickness burns covering less than 40% of body surface area and compared its results with those of silver sulphadiazine (SSD). In this randomised
comparative clinical trial, carried out Burn Center of POF Hospital, Wah Cantt, Pakistan, from May 2007 to February 2008, 150 patients of all ages having similar types of superficial and partial-thickness burns at two sites on different parts of body were included. Each patient had one burn site treated with honey and one treated with topical SSD, randomly. The rate of re-epithelialization and healing of superficial and partial-thickness burns was significantly faster in the sites treated with honey than in the sites treated with SSD (13.47 ± 4.06 versus 15.62 ± 4.40 days, respectively: P < 0.0001). The site treated with honey healed completely in less than 21 days versus 24 days for the site treated with SSD. Six patients had positive culture for Pseudomonas aeroginsa in honey-treated site, whereas 27 patients had positive culture in SSD-treated site. The results clearly showed greater efficacy of honey over SSD cream for treating superficial and partial-thickness burns.

So the researcher was interested to compare the effectiveness of Aloe Vera Vs Silver sulfadiazine on wound healing among burns patients.

**STATEMENT OF THE PROBLEM**

“Compare the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient at Kanyakumari Government Medical College & Hospital, Asaripallam”.
OBJECTIVES

- To assess the effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.

- To assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patient in experimental group II.

- To compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine application on wound healing among burns patient in experimental group I & II.

- To find out the association between post test scores on level of wound healing among burns patient in experimental group I & II with their demographic variables.

OPERATIONAL DEFINITIONS

Compare the Effectiveness

Refers to comparing the significant difference in improvement of wound healing as determined by significant difference between post test score of experimental group I and II.

Aloe Vera

It is a natural herbal product, First the Aloe Vera gel is prepared by removing the outer part of Aloe Vera leaf and smashed the inner part, Then the
Aloe Vera gel is applied on burns wound twice a day for 7 days in experimental group I.

**Silver sulfadiazine**

It is an antibacterial agent available in ointment form applied during burns dressing twice a day for 7 days in experimental group II.

**Wound healing**

A process to restore to a state of soundness any injury that results in an interruption in the continuity of external surfaces of the body such as color, consistency, surface, pliability which is measured by burns wound healing observation scale.

**Burns patient**

It refers to patient admitted with first degree burns up to 30% Total Burns Surface Area (TBSA).

**HYPOTHESES**

**H₁**: There is a significant effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.

**H₂**: There is a significant effectiveness of Silver sulfadiazine application on wound healing among burns patient in experimental group II.
**H₃:** There is higher effectiveness of Aloe Vera application on wound healing among burns patients than Silver Sulfadiazine application.

**H₄:** There is a significant association between post test scores of wound healing among burns patient in experimental group I and II with their demographic variables.

**DELIMITATION**

The study was delimited to

- Compare the effectiveness of Aloe Vera Vs Silver sulfadiazine.
- Identify the changes in the level of wound healing.
- Burns patients.
- Kanyakumari Government Medical College and Hospital, Asaripallam.
CONCEPTUAL FRAMEWORK

This study is based on LYDIA HALL’S Core, Care, Cure model (1964) which could be relevant to compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among burns patient. Hall’s core, care, and cure model focuses on basis for nursing care.

According to Hall’s Core, Care, Cure model the client to be an open system interacting with the environment. The person has a core consisting of basic structure. The circles are interrelated to emphasize the importance of a whole person approach. In this study the person is the burns patient. The basic core structure is maintaining normal wound healing.

a) The Core circle

The core circle refers to the patient. It includes nursing care that revolves around a nurse “THERAPEUTIC USE OF SELF” involves developing an interpersonal relationship with a patient, which allows the patient to express feelings about disease and further patient maturity and self identity.

In this study the core circle represents that burns patient with first degree upto 30% Total Burn Surface Area (TBSA).
b.) The Care circle

It refers to patient’s body. It represents the nurturing aspects of nursing care, involves intimate body care such as bathing, the nurse uses knowledge of the natural and biological sciences as a basis of this care. It includes teaching which improves the patient care.

In this study, the nurse researcher intend to compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among burns patient in experimental group I and II.

c) The Cure circle

It refers to the pathological process of the disease. It involves helping a patient and family members through the medical, surgical, and rehabilitative measures instituted by the physician.

In this study the cure circle represents antibiotics, analgesics, IV fluids, oxygen therapy, Psychological support which is prescribed by the physician.
CHAPTER II

REVIEW OF LITERATURE

The review of literature is a broad, comprehensive, in depth, systematic and critical review of scholarly publication, unpublished scholarly print materials audio visual material and personal communication.

A literature review is a written summary of the state of existing knowledge on a research problem. The task of reviewing research literature involves the identification, selection, critical analysis and written description of existing information on a topic, (Polit and Hungler, 1999).

The review of literature in this study is organized under following headings;

1. Studies related to Aloe Vera.
2. Studies related to Silver Sulfadiazine.
3. Studies related to wound healing among burns patients.
4. Studies related to Complementary therapies on wound healing among burns patients.
5. Studies related to comparison of Aloe Vera and Silver sulfadiazine on wound healing among burns patients.
Mansourian (2011), Conducted a study to compare the therapeutic effects of Aloe Vera mouthwash with triamcinolone acetonide 0.1% on oral lichen planus (OLP). A total of 46 patients with OLP were included in the study. The patients were randomly divided into 2 groups. Each group was treated with received AV mouthwash or TA. The intervention period for both the groups was 4 weeks. The basement data were recorded for each patient. Patients were evaluated on days 8, 16 and after completing the course of treatment (visit 1–3). The last follow-up was 2 months after the start of treatment (visit 4). Visual analogue scale was used for evaluating pain and burning sensation and Thongprasom index for clinical improvement and healing. In addition, lesion sizes were measured and recorded at each visit using a grid. Baseline characteristics, including pain and burning sensation score, size and clinical characteristics of the lesions according to Thongprasom index, were not different between the 2 treatment groups. Both AV and TA significantly reduced visual analogue scale score, Thongprasom score and size of the lesions after treatment ($P < 0.001$) and after 2 months of discontinuation of the treatment ($P < 0.001$). In the AV group, 74% of patients and in the TA group 78% of patients showed some degrees of healing in the last follow AV mouthwash is an effective substitute for TA in the treatment of OLP.
Ali Zamani (2011), Conducted a randomized double-blind clinical trial to assess the efficacy of Aloe vera compared with betamethasone 0.1% cream on pruritus patients. Total sample size was 62 out of which 31 patients were treated with Aloe Vera and 31 patients were treated with betamethasone cream twice daily for 6 weeks. Evaluation of pruritus severity was performed using a pruritic score questionnaire and visual analogue scale (VAS). Both treatments were associated with significant reductions in the frequency of pruritus (p < 0.05), burning sensation (p < 0.01 and p < 0.001 in Aloe vera and betamethasone group, respectively), scaling (p < 0.01 and p < 0.05) and dry skin (p < 0.001) at the end of trial. Fissure and excoriation were only reduced in the A. vera group (p < 0.05). The change in the frequency of hyper- and hypopigmentation lesions, blisters, erythema and lichenification did not reach statistical significance in any of the groups (p > 0.05). Mean pruritus (p < 0.05) and VAS scores (p < 0.01 and p < 0.05) were significantly decreased by the end of trial in both groups. The rate of improvement in the pruritus severity [defined as being classified in a less severe category (mild, moderate and severe)] was found to be comparable between the groups (p > 0.05). vera/olive oil cream was at least as effective as betamethasone 0.1% in the treatment of sulfur mustard-induced chronic skin complications and might serve as a promising therapeutic option for the alleviation of symptoms in mustard gas-exposed patients.
Sarakarn P (2010), conducted a study to compare the efficacy of AV and 0.1% Triamcinolone Acetonide (TA) in mild to moderate plaque psoriasis. A randomized, comparative, double-blind, 8-week study was designed. 80 patients were randomly received AV or 0.1% TA cream and their clinical response were evaluated using the Psoriasis Area Severity Index (PASI) and the Dermatology Life Quality Index (DLQI). After 8 weeks of treatment, the mean PASI score decreased from 11.6 to 3.9 (-7.7) in the AV group and from 10.9 to 4.3 (-6.6) in the TA group. Between-group difference was 1.1 (95% confidence interval -2.13, -0.16, P = 0.0237). The mean DLQI score decreased from 8.6 to 2.5 (-6.1) in the AV group and from 8.1 to 2.3 (-5.8) in the TA group. Between-group difference was 0.3 (95% confidence interval -1.18, -0.64, P = 0.5497). Aloe Vera cream may be more effective than 0.1% TA cream in reducing the clinical symptoms of psoriasis; however, both treatments have similar efficacy in improving the quality of life of patients with mild to moderate psoriasis.

Rahmani. N (2010), conducted a study to assess the effects of Aloe Vera cream in reducing postoperative pain, post defecation pain, and its promotion of wound healing after open hemorrhoidectomy. A prospective, randomized, double-blind, placebo-controlled trial was conducted comparing the effects of Aloe Vera Vs placebo cream on post hemorrhoidectomy pain. The study preparations were applied by patients to the surgical site 3 times per day for 4 weeks after hemorrhoidectomy. Pain was assessed with a visual analog scale
immediately postoperatively and at hours 12, 24, and 48 after surgery and at weeks 2 and 4. Wound healing was examined and evaluated at the end of 2 and 4 weeks. The use of analgesics was recorded. Forty-nine (49) patients were randomly assigned to receive aloe (n = 24) or placebo (n = 25). Patients in the topical aloe cream group had significantly less postoperative pain at hours 12, 24, and 48 hours and at 2 weeks. Aloe cream reduced the pain after defecation in 24 and 48 hours post surgery (p < 0.001). Wound healing at the end of the second postoperative week was significantly greater in the aloe group compared with the placebo group (p < 0.001). Patients required fewer additional analgesics post hemorrhoidectomy (p < 0.001). Application of Aloe Vera cream on the surgical site is effective in reducing postoperative pain both on resting and during defecation, healing time, and analgesic requirements in the patients compared with the placebo group.

**DAVIS. K (2006),** Conducted a study to assess the efficacy of Aloe Vera on Irritable Bowel Syndrome patients. Patients with IBS were randomized to receive AV or matching placebo for a month. Symptoms were assessed at baseline, 1 and 3 months. 58 patients randomized, 49 completed the protocol to 1 month and 41 days to 3 months. 11 of 31 (35%) AV patients, and 6 of 27 (22%) placebo patients responded at 1 month (p = 0.763). Diarrhoea predominant patients showed a trend towards a response to treatment at 1 month (10/23 V 2/14, p = 0.07). There was no evidence that AV benefits patients with IBS. However, we
could not rule out the possibility that improvement occurred in patients with diarrhoea or alternating IBS whilst taking AV. Further investigations are warranted in patients with diarrhoea predominant IBS, in a less complex group of patients.

**Rajasekharan et. al., (2005),** conducted a study to assess the effectiveness of Aloe Vera gel in Diabetes patients. The total sample size was 30 patients. Oral administration of Aloe Vera gel extract at a concentration of 300mg/kg/day was given. Evaluative approach was used. Blood glucose level was assessed on the 7th day. The mean, SD of patients in Aloe Vera gel ingestion was evaluated. The Aloe Vera gel among Diabetes patients was more effective in reducing the blood sugar level (P>0.05).

**Brandrup F (2005),** conducted a study to assess the effectiveness of Aloe Vera gel in psoriasis. 41 patients with stable plaque psoriasis were included in a randomized, double-blind, placebo-controlled right/left comparison. The study comprised a 2-week wash-out period followed by a 4-week treatment period with two daily applications and follow-up visits after 1 and 2 months. Data on 40 patients were analyzed. The score sum of erythema, infiltration and desquamation decreased in 72.5% of the Aloe Vera-treated sites compared with 82.5% of the placebo-treated areas from week 0 to week 4, which was statistically significant in favor of the placebo treatment (P = 0.0197). 55% of the patients reported local side-effects, mainly drying up of the skin on test areas. The effect of Aloe Vera gel
on stable plaque psoriasis was modest and not better than placebo. However, the high response rate of placebo indicated a possible effect of this in its own right, which would make the Aloe Vera gel treatment appear less effective.

**Cho.et al. (2004),** conducted a study to assess the effectiveness of Aloe Vera therapy on wound healing among 60 Diabetes Mellitus patients. Patients were selected by Purposive sampling technique. The wound was assessed for 7 days the mean SD of patients in Aloe Vera therapy was evaluated on day 1, 4, 7 shows that the mean wound assessment score in Aloe Vera therapy was on day 1(32.6). day 4(23.8). day 7(7) is less than wound assessment score in control group on day 1(32), day 2(29.8), day3(27.5). This shows that Aloe vera was effective on wound healing among Diabetes patients.

**Langmead (2004),** Conducted a double-blind, randomized, placebo-controlled trial of the efficacy of Aloe Vera gel for the treatment of mildly to moderately active ulcerative colitis. 44 patients were randomly given oral Aloe Vera gel or placebo, 100 mL twice daily for 4 weeks, in a 2 : 1 ratio. The primary outcome measures were clinical remission (Simple Clinical Colitis Activity Index ≤ 2), sigmoidoscopic remission (Baron score ≤1) and histological remission (Saverymuttu score ≤1). Secondary outcome measures included changes in the Simple Clinical Colitis Activity Index (improvement was defined as a decrease of ≥3 points; response was defined as remission or improvement), Baron score, histology score, haemoglobin, platelet count, erythrocyte sedimentation rate, C-
reactive protein and albumin. Clinical remission, improvement and response occurred in 9 (30%), 11 (37%) and 14 (47%), respectively, of 30 patients given Aloe Vera, compared with one (7%) [P = 0.09; odds ratio, 5.6 (0.6–49)], one (7%) [P = 0.06; odds ratio, 7.5 (0.9–66)] and two (14%) [P < 0.05; odds ratio, 5.3 (1.0–27)] of 14 patients taking placebo. The Simple Clinical Colitis Activity Index and histological scores decreased significantly during treatment with Aloe Vera (P = 0.01 and P = 0.03), but not with placebo. Sigmoidoscopic scores and laboratory variables showed no significant differences between Aloe Vera and placebo. Adverse events were minor and similar in both groups of patients. Oral Aloe Vera taken for 4 weeks produced a clinical response more often than placebo; it also reduced the histological disease activity and appeared to be safe. Further evaluation of the therapeutic potential of Aloe Vera gel in inflammatory bowel disease is needed.

Afzal M (1996), conducted a double-blind, placebo-controlled study to evaluate the clinical efficacy and tolerability of topical Aloe Vera extract 0.5% in a hydrophilic cream to cure patients with psoriasis vulgaris. Sixty patients (36M/24F) aged 18-50 years (mean 25.6) with slight to moderate chronic plaque-type psoriasis and PASI (Psoriasis Area and Severity Index) scores between 4.8 and 16.7 (mean 9.3) were enrolled and randomized to two parallel groups. Patients were provided with a precoded 100g tube, placebo or active (with 0.5% Aloe Vera extract), and they self-administered trial medication topically at home 3
times daily for 5 consecutive days per week (maximum 4 weeks active treatment). Patients were examined on a weekly basis and those showing a progressive reduction of lesions, desquamation followed by decreased erythema, infiltration and lowered PASI score were considered healed. By the end of the study, the Aloe Vera extract cream had cured 25/30 patients (83.3%) compared to the placebo cure rate of 2/30 (6.6%) (P < 0.001) resulting in significant clearing of the psoriatic plaques (328/396 (82.8%) Vs placebo 28/366 (7.7%), P < 0.001) and a decreased PASI score to a mean of 2.2. The findings of this study suggest that topically applied Aloe Vera extract 0.5% in a hydrophilic cream is more effective than placebo, and has not shown toxic or any other objective side-effects. Therefore, the regimen can be considered a safe and alternative treatment to cure patients suffering from psoriasis.

2. STUDIES RELATED TO SILVER SULFADIAZINE

Yuenyongviwat V (2011), Conducted a prospective randomized controlled study to compare silver sulfadiazine with dry dressing among pin-site infection patients. Total sample size was 30 out of which 15 were experimental group (Silver sulfadiazine) and 15 were control group( dry dressing). All eligible subjects of open tibial fracture had an emergency debridement with external fixation. Pin tract infection was considered to be present if superficial inflammation (erythema, cellulitis), serous or purulent discharge occurred around
a pin site and deep infection of osteolysis around the pin, and sequestrum. 7 subjects (46.7%) had pin-site infection in the present study group while 6 subjects (40.0%) had it in the control group, with comparable severity. There was no significant difference in prevalence of pin-site infection between both groups (p = 0.97). Therefore, either silver sulfadiazine or dry dressing could be advocated.

**Hemati S (2011)**, Conducted a study on randomized controlled clinical trial to evaluate the effectiveness of topical silver sulfadiazine in preventing acute radiation dermatitis in women receiving radiotherapy for breast cancer. Total sample size was 102 out of which 51 were experimental group and 51 were control group. The intervention group received SSD cream 1%, three times a day, 3 days a week, for 5 weeks during radiotherapy and one week thereafter. A blinded observer assessed the severity of dermatitis weekly (for 6 weeks) and graded it from 0 to 4 according to the Radiation Therapy Oncology Group criteria. The two groups were similar in baseline characteristics. Two patients in the control group discontinued the radiotherapy course because of severe skin injuries (grades 3 and 4). The intervention group encountered significantly less severe dermatitis during radiotherapy compared to the controls. The total score of skin injury was also lower in the intervention group compared with controls (5.49 +/- 1.02 vs. 7.21 +/- 1.76, p < 0.001). A multivariate analysis found that the use of SSD cream (p < 0.001) and flat chest wall anatomy (p = 0.008) were significantly associated with a
decreased skin injury. SSD cream reduced the severity of radiation-induced skin injury compared with general skin care.

**Vokurka S (2009),** Conducted a prospective, non-sponsored and nonrandomized study of 49 uncoated multi-lumen and non-tunneled CVCs and 58 antimicrobial chlorhexidine/silver sulfadiazine-coated CVCs inserted in allogeneic stem cell transplanted patients to facilitate treatment during conditioning and pre-engraftment phase (<30 days after transplantation). No significant differences were found between the two groups with respect to gender, age, intensity of pretransplant chemotherapy conditioning, duration of leucopenia, number of days with inserted CVC, number of CVC occlusive dressing changes performed per patient, and number of non-CVC-related infections. In the antimicrobial coated CVC group, there were observed less median days with fever [2 (0-18) vs. 4 (0-16), p = 0.17], fever incidence (67% vs. 77.5%, p = 0.28), and less days with fever per 1,000 catheter-days (108 vs. 147, p = 0.001), less patients with positive CVC blood cultures (36% vs. 45%, p = 0.05), repeatedly positive CVC blood cultures (8.6% vs. 26%, p = 0.018), less positive CVC blood cultures per 1,000 catheter-days (14 vs. 29, p = 0.005), and less positive CVC tip cultures (17.3% vs. 34.6%, p = 0.065) observed. Lower number of patients with fever, days with fever, and lower number of patients with positive and repeatedly positive CVC blood cultures indicates less intensive antibiotic and antipyretic treatment probably needed in neutropenic allo-transplanted patients with indwelling antimicrobial-
coated CVCs. Real impact on antibiotic consumption should be verified in large randomized study.

**Berra L (2008),** Conducted a prospective, randomized clinical trial study on coated endotracheal tubes with silver sulfadiazine and tested them in a clinical study to assess the feasibility, safety, and efficacy of preventing bacterial colonization Academic intensive care unit. 46 adult patients expected to need 12-24 h of intubation were randomized into two groups. Patients were randomized to be intubated with a standard non-coated ETT (St-ETT, n=23; control group), or with a SSD-coated ETT (SSD-ETT, n=23). Coating with SSD prevented bacterial colonization of the ETT (frequency of colonization: SSD-ETT 0/23, St-ETT 8/23; p<0.01). No organized bacterial bio film could be identified on the lumen of any ETT; however, SSD was associated with a thinner mucus layer (in the SSD-ETT secretion deposits ranged from 0 to 200 microm) in the St-ETT deposits ranged between 50 and 700 microm). No difference was observed between the two groups in the trachea bronchial brush samples (frequency of colonization: SSD-ETT 0/23, St-ETT 2/23; p=0.48). No adverse reactions were observed with the implementation of the novel device. SSD-ETT can be safely used in preventing bacterial colonization and narrowing of the ETT in patients intubated for up to 24 hours.
3. STUDIES RELATED TO WOUND HEALING AMONG BURNS PATIENTS

Sun CF (2011), conducted a statistical survey on Burn Unit at Tangdu Hospital, Shaanxi, China, during January 2000 to December 2009. In this retrospective study, the total sample size was 383 electrical burn patients. Data were collected retrospectively on the basis of patient's general condition, clinical presentation, complications and operation times and analyzed with epidemiological methods. Subjects in our collective were predominantly male (90.3%, n=346/383) and those who injured in work-related incidents (78.3%, n=300/383), rural individuals (58.2%, n=223/383) and students (9.4%, n=36/383). High voltage directly cause clinical complications, and amputation. The percentage of myocardial impairment was 79.3% (n=92/116) among patients who suffered with electrical current through heart tissue. Electrical injuries may cause serious tissue damage, need long hospitalization, and result in high rate of permanent disability and economic hardship for the affected families.

Ahuja RB (2011), A prospective study was conducted to compare the pattern of burn injuries resulting from LPG and kerosene from January 2009 to May 2010 (17 months). Data collected for each patient with their demographic variables like age, gender, religion, socioeconomic status, literacy level, type of family unit, marital status, type of dwelling unit, mode of injury and its exact mechanism, place of incident, level of cooking stove, extent of burns (%TBSA),
presence of features of inhalation injury, number of patients affected in a single mishap, size of LPG cylinder used, length of hospital stay and mortality. Out of 731 flame burn patients, 395 (54%) were kerosene burns and 200 (27.4%) were LPG mishaps. Majority of injuries in both the groups, occurred in lower middle class families living as nuclear units, in a single room dwelling, without a separate kitchen. Majority of LPG burns (70.5%, 141 patients) are due to gas leak and 25.5% were due to cooking negligence (51 patients). 50.5% of kerosene accidents were from 'stove mishaps' and 49% due to cooking negligence. In all kerosene accidents the stove was kept at floor level but in LPG group 20.6% had the stove placed on a platform. There was a slight difference in mean TBSA burns; 51% in kerosene group compared to 41.5% TBSA in LPG group. 77% patients in LPG group were from a large cylinder (14.2kg), which uses a rubber connecting tube. Mortality in kerosene group (50.6%) was far higher than in LPG group (33.5%). A major risk factor is constrained living condition of a single room dwelling unit. Almost all burns from LPG mishaps were potentially preventable if more care had been practiced to ensure safety. Since majority of LPG mishaps were from gas leaks, The observation of floor level cooking in 79.4% of LPG cases may be an economic compulsion of a single room dwelling unit without much impact on the injury pattern.

Steinvall I (2011), conducted a study to find out if there is a sex-related difference in mortality after thermal injury in the age group between 16
years and 49 years. Data’s were collected on the basis of demographic variables like Total Burns Surface Area (TBSA%), age, type of burn, mechanical ventilation, and year were included in a multiple regression (Poisson log) model. The total sample size was 1,119 patients with thermal injury, of these 792 (71%) were men. Crude mortality was 5% among men, and 8% among women (p = 0.04). Eight men and four women died in the group of young adults (16-49 years) in which TBSA% correlated with mortality (p < 0.01) but age did not. Mortality was 14% (32 of 221) among the men and 23% (23 of 102) of women in the group of older adults (50 years and older), and both age and TBSA% correlated with mortality (p < 0.001). There is no relevant sex-related difference in survival after thermal injury.

Coban YK (2010), conducted a retrospective analysis of 411 burns patients admitted at Cengi State Hospital Burn Center from May 2007 to October 2008. According to sex, 35.7% (147) of the cases were female and 64.3% (264) were male. Regarding Total Burn Surface Area (TBSA) 20-35%, the hospital stays for electric, flame and scald burns were 28, 18 and 12 days, respectively. For TBSA of 35-50%, electric burns the mean hospital stay was 44 days, followed by chemical burns (33 days), flame (31 days), and scald (22 days). For TBSA over 50%, electric and scald burns the hospital stay was > or =40 days. Case fatality was 5.6% (23 patients). 1.2% of the samples experienced one episode of epilepsy during treatment. 6 cases had acute renal failure, 8 cases which had inhalation injury, and 4 cases undergone mechanical ventilation.
Zapata DM (2010), A cross-sectional descriptive study was conducted to identify quality of life in people who had affected by burns. The total sample size was 30 people who suffered burns in the period 2001-2005. A standard quality-of-life survey consisting of 36 questions (the SF-36 scale) was administered. Statistical data were tested with Mann Whitney-U, Student-t, ANOVA, and Kruskal Wallis. Men were mostly affected (66.9%) and severe burns was most common (58%). The main burn sources were the fire flames, targeted attacks and gunpowder burns. The component of change of health upper obtained the average (55.3±19.2) and those of emotional performance (30.2±42.9), and physical performance (31.1±43.6) lowest, finding significant differences in those of physical performance (p=0.039) and general health (p=0.034) according to burn degree. The most affected quality-of-life components were the physical and emotional performance, with an overall presentation of a low quality-of-life related to health.

Toscano (2009), conducted a study to identify the risk factors for acquisition of Methicillin-resistant Staphylococcus aureus among patients from a burn unit in Brazil. He performed two retrospective studies. In the first ("cohort" study), 175 patients who were not colonized with MRSA on admission were followed to assess risk factors for MRSA acquisition. In the second ("case-case-control" study), 143 individuals from the previous study who were negative for both MRSA and Methicillin-susceptible S. aureus (MSSA) on admission were
followed. Case-control studies were performed to investigate risk factors for MRSA and MSSA acquisition. MRSA and MSSA were recovered from 75 and 23 patients, respectively. In the "cohort" study, only the number of wound excisions (Odds Ratio [OR] =1.55, 95% Confidence Interval [CI]=1.21-1.98, P=0.001) was associated with MRSA acquisition. In the "case-case-control" study, burns involving head (OR=3.43, 95%CI=1.50-7.81, P=0.003) and the number of wound excisions (OR=1.83, 95%CI=1.27-2.63, P=0.001) were significant risk factors for MRSA. Burns involving perineum were negatively associated with MSSA acquisition (OR=0.16, 95%CI=0.03-0.75, P=0.02). In conclusion, the acquisition of MRSA was related to the site of the burn and to the surgical manipulation of tissues, but not to the use of antimicrobials.

Liu.S (2009), A retrospective study was conducted to find out the epidemiologic characteristics among 280 elderly burns (over 60 years) patients to reduce risk Features, including causes, seasonality, co-morbidities and mortality from 1999 to 2006. The incidence of burns in the elderly has been decreasing gradually from 4.35% in 1999 to 3.81% in 2006. The geriatric burns occurs at any time in a year , but most common in summer and winter seasons. 70% of the geriatric burns were related to activities of daily life. The co-morbid conditions in the elderly, which comprised 83.9% of the victims, contributed to the burn outcomes. No difference in morbidity was found between rural and urban patients. However, mortality was significantly higher in the rural patients with 30% over
TBSA burns. The incidence of geriatric burns has been decreasing associated with social and individual living levels in China.

Delgado-Amaya M, (2006), Conducted a retrospective study to identify the epidemiological characteristics of severe burn patients and analyze the factors related with morbidity and mortality at intensive care unit from January 1998 to December 2004. Total sample size was 59 patients. We studied epidemiological endpoints of this type of patients, diagnosis and initial treatment, early complications and morbidity-mortality. The burned body surface was 41% +/- 25% and age 49 +/- 21 years. Patients remained hospitalized in ICU for a median of 4 days (interquartile range: 2-19). A total of 78% of the patients needed mechanical ventilation, 47% had some infection during admission and 28% developed acute kidney failure during the first week. Mortality in the ICU was 42%. Endpoints associated independently with a significant increase of mortality were burned body surface greater than 35% (OR 1.08; 95% CI: 1.03-1.12) and development of kidney failure (OR 5.47; 95% CI: 2.02 -8.93). Mortality of these patients is very high and is conditioned largely by initial care. Percentage of burned body surface (BBS) and kidney failure entails greater mortality in our series.

Rimdeika R (2004), A retrospective analysis to investigate mortality of burned patients, treated in Kaunas University of Medicine Hospital during 1993-200. Total of 283 burns patients were selected. The mortality rate of burned patients was between 9 and 22% (average--13.3%, standard deviation--3.8). Age
of deceased patients was on average 56 years (standard deviation--8); actually 21.6% were older than 80 years. There were 62% men among deceased burned patients. Common body surface area burned was 32% (standard deviation--28.6%), deep burn area was at average 22% (standard deviation--19.8%). 72% of burns were caused by fire, and 10% of patients were scalded. In 57% atherosclerosis and ischemic heart disease were diagnosed, 5% of patients had respiratory diseases, 7% had central nervous system troubles, mental disorders were diagnosed in 2%. Eight percent were cachectic at admission, 6%--with chronic alcohol dependence. In 70% of patients pneumonia was diagnosed, in 13%--pulmonary edema, and in 39%--sepsis. Deceased patients were treated until death on average 14 days (standard deviation--6); during first two weeks 50% died. At higher mortality risk are elder burned patient with major burns, especially with serious adjacent diseases. Common death causes in burned patients are pneumonia, pulmonary edema and sepsis.

**McCampbell B (2002)**, conducted a retrospective study to compare the clinical outcomes between diabetic and non diabetic burn patients. He selected 181 diabetic (DM) and 190 non diabetic (nDM) patients admitted with burns between January 1996 and May 2000, matched by sex and date of admission. Causes and size of burns, time to presentation, clinical course, and outcomes were evaluated. Because age was a factor, the analysis was done by three age groups like younger than 18 years, 18 to 65 years, and older than 65 year. 51% were diabetic in the age
group of 18 to 65 years, whereas 84% were diabetic in the age group of more than 65 and only 4% were diabetic in the age group of younger than 18 years. Diabetics were more likely to incur scald injury from tub or shower water rather than hot fluid spills (33% DM vs 15% nDM; P < or = 0.01), and have a delayed presentation (45 vs 23%; P = 0.00001). There was no difference in total burn size in all groups. Diabetics in the age group of 18 to 65 years had a higher rate of full-thickness burns (51 vs 31%; P = 0.025), skin grafts (50 vs 28%; P = 0.01) and burn-related procedures (57 vs 32%; P = 0.001), infections (65 vs 51%; P = 0.05), and longer lengths of stay (23 vs 12 days; P = 0.0001). Although there was no statistically significant difference in incidence of specific infections, the rates of cellulitis, wound infection, urinary tract infection, line infection, and osteomyelitis, were consistently higher in the diabetic population. Partial graft slough was 6% in diabetics 18 to 65 years with a 3% regraft rate, whereas non diabetics had a 1% regraft rate. Comparing diabetics with controlled vs uncontrolled glucose levels, diabetics with uncontrolled glucose had higher rates of infection (72 vs 55%; P < or = 0.025), all burn-related procedures (68 vs 45%; P < or = 0.025), and longer ICU stays (24 vs 10 days; P = 0.048). Mortality rate was 2% for diabetics and for nondiabetics. so presence of diabetes in the burn patient was associated with a worse outcome.

**Khedr EM (1997),** conducted a study aimed at looking for neuropathies among burn patients. Total Sample size was 55 burn patients with variable depths
of burn at different stages. Patients' ages ranged from 8 to 55 years with a mean age of 23.6 ± 11.1 years. All patients were undergone to clinical examination, electromyographic and motor conduction velocities of burned and unburned limbs. Serum electrolyte, blood urea, and serum creatinine were measured for all burns patients. 16 patients (29%) had peripheral neuropathy. Mononeuritis multiplex in 9 patients (56%) then generalized distal axonal neuropathy in 5 patients (31%) and entrapment neuropathy in 2 patients (13%). In patients with mononeuritis, 29 nerves were affected, 24 nerves related to the site of the burn and five nerves were away from the site of the burn. All the entrapment neuropathy developed after wound healing. Above 20 years of age of patients with electrical burns having full thickness of skin and more than 20% Total Burns Surface Area (TBSA) had higher prevalence of neuropathy.

4. STUDIES RELATED TO COMPLEMENTARY THERAPIES ON BURNS

Malik KI (2010), conducted a randomised comparative clinical trial to evaluate the efficacy of honey in the treatment of superficial and partial-thickness burns less than 40% of body surface area and compared its results with silver sulphadiazine at POF Hospital, Wah Cantt, Pakistan, from 2007 to 2008. The total sample size was 150 patients of all ages having similar types of superficial and partial-thickness burns at two sites on different parts of body. Each patient had one burn site treated with honey and one treated with topical SSD, randomly. The rate
of re-epithelialization and healing of superficial and partial-thickness burns was significantly faster in the sites treated with honey than in the sites treated with SSD (13.47 +/- 4.06 versus 15.62 +/- 4.40 days, respectively: P < 0.0001). The site treated with honey healed completely in less than 21 days versus 24 days for the site treated with SSD. Six patients had positive culture for Pseudomonas aeroginsa in honey-treated site, whereas 27 patients had positive culture in SSD-treated site. The results clearly showed greater efficacy of honey over SSD cream for treating superficial and partial-thickness burns.

**Tan X (2010),** Conducted a study to explore the efficacy of two music therapy protocols on pain, anxiety, and muscle tension levels during dressing changes in burn patients. 29 inpatients participated in this prospective, crossover randomized controlled trial. On two consecutive days, patients were randomized to receive music therapy services either on the first or second day of the study. On control days, they received no music. On music days, patients practiced music-based imagery (MBI), a form of music-assisted relaxation with patient-specific mental imagery before and after dressing changes. Also, on music days during dressing changes, the patients engaged in music alternate engagement (MAE), which consisted of active participation in music making. The dependent variables were the patients' subjective ratings of their pain and anxiety levels and the research nurse's objective ratings of their muscle tension levels. Two sets of data were collected before, three sets during, and another two sets after dressing
changes. The results showed significant decrease in pain levels before (P < .025), during (P < .05), and after (P < .025) dressing changes on days the patients received music therapy in contrast to control days. Music therapy was also associated with a decrease in anxiety and muscle tension levels during the dressing changes (P < .05) followed by a reduction in muscle tension levels after dressing changes (P < .025). Music therapy significantly decreases the acute procedural pain, anxiety, and muscle tension levels associated with daily burn care.

**Polat S (2010),** Conducted an experimental study to examine the effects of massage therapy reduces burns pain, itching, and anxiety levels. 63 adolescents were enrolled in this study shortly after admission (mean days = 3 +/- 0.48) at a burn unit in a large university hospital from February 2008 to June 2009. The measures including the pain, itching, and state anxiety were collected on the first and last days of the 5-week study period. The participants had an average age of 14.07 +/- 1.78 years and came usually from the lower socioeconomic strata. The authors observed that massage therapy reduced all these measures from the first to the last day of this study (P < .001). In most cultures, massage treatments are used to alleviate a wide range of symptoms.

**Collet C (2009),** Conducted a study to investigate the effects of a 2-week MI (Motor Imagery) training program combined with conventional rehabilitation on the recovery of motor functions in burn patients. 14 patients were selected and randomly assigned to the imagery or the control group. Behavioral data
related to the ability to perform each successive step of three manual motor sequences were collected at five intervals during the medical procedure. The results provided evidence that MI may facilitate motor recovery, and the belief in the effectiveness of MI was strong in all patients. MI may substantially contribute to improve the efficacy of conventional rehabilitation programs. Hence, this technique should be considered as a reliable alternative method to help burn patients to recover motor functions.

**Gurung S (2009)**, Conducted a study was aimed at investigating the healing efficiency of papaya latex formulated as 1.0 and 2.5% hydrogels. Burns were induced in Swiss albino mice divided into five groups as following; Group-I (negative control) received no treatment. Group-II was treated with Carbopol 974P NF empty gel. Groups-III and -IV were treated with Carbopol gel containing 1.0 and 2.5% of dried papaya latex, respectively. Group-V (positive control) received the standard drug (silver sulphadiazine and chlorhexidine gluconate cream). The efficacy of treatment was evaluated based on the hydroxyproline content, wound contraction and epithelialization time. Hydroxyproline content was found to be significantly increased in the Group-III. Significant increase in percentage wound contraction was observed from day 12 in Group-IV and from day 20 in Groups-III and -V. The epithelialization time was found to be the shortest in Group-IV. It may be concluded that papaya latex
formulated in the Carbopol gel is effective in the treatment of burns and thus supports its traditional use.

**Samies J (2008),** A retrospective case study was conducted in a rural wound center lacking specialized burn care to assess the clinical effectiveness of acoustic pressure wound therapy, a noncontact low-frequency, nonthermal ultrasound wound therapy that accelerates healing through positive pressure, stimulating fibroblasts, clearing bacteria and debris, and relieving pain. Data from the records of 14 consecutively treated outpatients (age range 5 months to 78 years old) with mixed partial- and full-thickness burns involving the trunk, extremities, or both, averaging 7% of body surface area (range: 1% to 24%), were reviewed. Patients received acoustic pressure wound therapy with standard burn care. Burn thickness was determined by clinical appearance. Treatment effectiveness was evaluated based on scarring characteristics of healed wounds (ie, cosmetic appearance) and pain resolution. Pain was patient-rated using a 10-point visual analog scale (0 = no pain, 10 = severe). Patients were followed for 6 months post-healing. Pain improved with therapy (range: two to 10 treatments). No patient required hospitalization or developed complications related to infection. Pliable, nonhypertrophic scars developed in 86% of patients and hypertrophic scars developed in 14%. Repigmentation was seen in 79% of patients, with only minor irregularities; hypopigmentation occurred in 21%. Scars available for follow-up (71%) remained unchanged. Acoustic pressure wound therapy with standard burn
care was found to heal mixed partial- and full-thickness burns and reduced pain in outpatients, resulting in cosmetically acceptable scarring without infectious complications, surgery, or skin grafts and may prove beneficial for inpatient management of extensive full-thickness burns.

**Subrahmanyam. M (1998),** Conducted a randomized controlled trial to compare the effectiveness of Pure honey Vs Silver Sulfadiazine on wound healing among burns patients. The total sample size was 50 burns patients with superficial burns upto 40% Total Burn Surface Area. In experimental group I(n=25) was treated with pure honey and group II (n=25) was treated with silver sulfadiazine. Healing rate was assessed on the 21st day, In experimental group II the healing rate was 100% and in group II the healing rate was 84%(P=0.1). This shows that pure honey was more effective when compared to silver sulfadiazine on wound healing among burns patients.

**5. STUDIES RELATED TO COMPARISON OF ALOE VERA AND SILVER SULFADIAZONE ON WOUND HEALING AMONG BURNS PATIENTS**

**Drummer N (2011),** Conducted a study to evaluate the clinical efficacy of polyhexanide containing bio-cellulose dressing (group B) compared to a silver-sulfadiazine cream (group A) in 60 partial-thickness burn patients. Parameters were: pain reduction (VAS), healing time and wound bed condition, comparing day 0 (start) versus day 14 (end), as well as, ease of dressing use and treatment
costs. All completed the study (n=30/n=30) and were included in the ITT analysis, with a total of 72 burns (group A: n=38, group B: n=34). We noted no differences in healing time. Pain reduction was significantly faster and better in group B (p<0.01). There were fewer dressing changes in group B, compared to group A. Ease of use for the bio-cellulose dressing was rated better compared to group A. In group B, euro 95.20 was saved for a 10 day treatment period, compared to group A. Group B demonstrated a better and faster pain reduction in the treated partial-thickness burns, compared to group A. The results indicate the polyhexanide containing bio-cellulose dressing to be a safe and cost effective treatment for partial-thickness burns.

Opasanon S (2010), Conducted a study to compare the efficacy of Askina Calgitrol and 1% silver sulfadiazine in the outpatient management of partial-thickness burn wounds at Siriraj Hospital between January 2008 and January 2009. The total sample size was 65 burns patients with the inclusion criteria of less than 15% TBSA. Patients were divided into two groups, 30 patients were treated with Askina Calgitrol and 35 patients were treated with 1% silver sulfadiazine. The data were compared by the demographics including age, gender, % TBSA burn, pain score, number of wound dressing change, nursing time and time of wound healing. Patients included in both groups were comparable with no significant differences in demographic data of age, gender, location of burn and type of burn injury (P > 0.05 evaluated by paired Student's t-test) between both
group. Results showed that average pain scores in the Askina Calgitrol treated group were significantly lower than the 1% Silver Sulfadiazine treated group (2.23 +/- 1.87 versus 6.08 +/- 2.33, respectively) between both groups (P < 0.02). Patients treated with Askina Calgitrol had significantly lower number of wound dressing change (P < 0.02) and nursing time (P < 0.02) compared with 1% Silver Sulfadiazine treated group. The Askina Calgitrol group needed less frequent wound dressing. Healing time was 7 +/- 3.51 days after the application of Askina Calgitrol. This was significantly shorter than that of control wounds (14 +/- 4.18 days). The present study confirms the effectiveness of Askina Calgitrol in the outpatient management of partial-thickness burn wounds.

Hosseinimehr SJ (2010), conducted a study to evaluate the efficacy of Aloe Vera cream in the treatment of thermal burn wounds and to compare these results with silver sulfadiazine in rats. Animals were divided into four groups. Animals were administered topical cream (Aloe Vera powdered gel 0.5% and silver sulfadiazine) at 24 h of burn injury induced by hot water. On special days wound size was determined and skin sample histopathology performed in animal groups administered topical therapies. On day 25, the mean wound size was 5.5, 4, 0.78 and 4.1 cm2 in control, base, aloe and silver group, respectively. The wound size was significantly smaller in aloe group as compared with other groups. Histologic comparison showed that Aloe Vera increase epithelialization in burn wounds significantly as compared with other cream-treated wounds. The results of
this study showed aloe cream to significantly increase epithelialization in burn wounds when compared with silver sulfadiazine.

**Mahdavi. MR (2009),** conducted a clinical study to evaluate the efficacy of Aloe Vera cream for partial thickness burn wounds and compare its results with those of silver sulfadiazine (SSD). 30 patients with similar types of second-degree burns at two sites on different parts of the body were included in this study. Each patient had one burn treated with topical SSD and one treated with aloe cream, randomly. The rate of re-epithelialization and healing of the partial thickness burns was significantly faster in the site treated with aloe than in the site treated with SSD (15.9 +/- 2 Vs 18.73 +/- 2.65 days, respectively; P < 0.0001). The sites treated with aloe were completely healed in less than 16 days Vs 19 days for the sites treated with SSD. These results clearly demonstrated the greater efficacy of aloe cream over SSD cream for treating second-degree burns.

**Hosseini SN (2009),** Conducted a study to evaluate the effectiveness of Xenoderm compared with 1% silver sulfadiazine in partial-thickness burns with regard to wound infection, length of hospital stay, number of dressings and doses of analgesics used (oral and injection). A total of 78 burns patients were included in this randomised study; their burns were caused by scalds or flames. They had second degree burns and had a burn area of 1060% of total body surface area (TBSA). 37 patients were treated by topical application of SSD dressing and 39 with a Xenoderm. The differences were evaluated using unpaired Student's t-test,
Mann-Whitney U test and Chi-square test. There were no significant differences between the two groups with respect to age, gender, TBSA, cause of burn, and thickness of the burn or burn site. But there were significant differences regarding degree of wound infection, length of hospital stay, number of used dressings and given doses of analgesics. Xenoderm seems to be more effective than SSD dressing in terms of pain control, degree of wound infection, used wound dressings and length of hospital stay for partial-thickness burns.

Chen .J (2006), A study to explore the influence of silver nanoparticle dressing on prevention of infection and healing of the second degree burn wound. 191 burn patients with second degree including superficial and deep burn wound were randomly divided into three groups. Group A including 65 cases was treated by silver nanoparticle dressing on wounds, and group B (63 cases) and group C (63 cases) were treated by 1% silver sulfadiazine cream and Vaseline gauze on their wounds, respectively. Dressing was changed daily, and wound swab bacterial cultures were performed before and after dressing change, and also wound healing times were recorded in each patient. Group A and B were similar in their bacterium colonization’s on wound after treatment with the silver nanoparticle dressing and 1% silver sulfadiazine cream, and they had a similar effect on reducing bacterium colonization on wound after treatment, while in Vaseline gauze group bacterium colonization on wound increased after treatment. In group A the wound healing time of superficial second degree was significantly shorter
than those in group B and group C (P < 0.01). In deep second degree wounds the healing time in group A was much shorter than that in group C (P < 0.01), but had no significant difference when compared with group B (P > 0.05). Silver nanoparticle dressing can be used on second degree burn wound and can decrease the risk of wound infection and accelerate wound healing.

Muangman P (2006), conducted a study to compare the efficacy of acticoat and 1% silver sulfadiazine for treatment of partial thickness burn wound at Siriraj Burn Unit from May 2002 to September 2005. The total sample size was 50 patients who had partial thickness burn wounds less than 25% Total Burns Surface Area. patients were divided into 2 groups the acticoat treated group (25 patients) and the 1% silver sulfadiazine treated group (25 patients). Both the groups were compared for the etiology of burn wound, demographic data including age, sex, % Total Body Surface Area burn (TBSA%), cultured organisms, wound infection and outcome of Length Of hospital Stay (LOS) and level of pain. The authors found no significant differences in age, TBSA (%) between both groups. 7 patients (28%) developed wound infection. There were no differences in wound infection and LOS between both groups (p > 0.05). All of the patients who developed wound infection responded well to targeted topical and systemic antibiotic treatment. The 1% Silver Sulfadiazine treated group (6 of 25, 24%) obtained more split thickness skin graft to close the granulation defects compared to patients who were treated with acticoat (4 of 25, 16%) but no
statistical significance, p = 0.32). Average pain scores in the acticoat treated groups were significantly lower than the 1% Silver Sulfadiazine treated group (4 +/- 0.6 versus 5 +/- 0.7, respectively). The present study confirms the efficacy of acticoat treatment in partial thickness burn wound. The authors conclude that acticoat has an advantage of limiting the frequency of replacement of the dressing and provides a less painful alternative to wound care with 1% AgSD with comparable incidence of burn wound infection. This is due to its long wear time and the ease of application and removal.

**Berger J (1988),** Conducted a study to find the effectiveness of Aloe Vera gel was applied to experimental second-degree burns in guinea pigs, and its effects on epithelialization, wound contraction, newly formed granulation tissue, and regeneration of hair follicles was compared with that effected by 1% silver sulfadiazine cream. Epithelialization (%mean +/- SEM) on post burn day 8, 16, and 24 of the AVG-treated wounds was 38.72% +/- 2.71%, 60.34% +/- 3.28%, and 92.46% +/- 2.26%, respectively, while that of the AgSD-treated burns was 53.35% +/- 2.65%, 94.84% +/- 2.65%, and 100%, respectively (P less than .001). Contraction of the AVG-wounds was significantly higher than that of the AgSD-treated burns during 24 days of the study (P less than .001). The thickness of the newly formed granulation tissue was higher in the AVG-treated wounds (P less than .001), while the hair follicles count was significantly lower (P less than .001) compared with the AgSD-treated burns. It is concluded that this preparation of
Aloe Vera gel hindered the healing process of the present burn wound model when compared with 1% silver sulfadiazine cream.
CHAPTER – III
METHODOLOGY

The methodology of the research indicates that general pattern of organizing the procedure for gathering valid and reliable data for the problem under investigation,(Kothari, 1996).

This chapter includes the description of research approach, research design, setting of the study, variables, sample, sample size, sampling technique, criteria for sample selection, development and description of the tool, validity and reliability of the tool, method of data collection, procedure and plan for data analysis and interpretation of the data.

RESEARCH APPROACH

The research approach is the most essential part of any research. The entire study based on it. The research approach used in this study is an applied form of research to find out how well a programme intervention is effective. In this study the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among burns patients was evaluated. In this study quantitative, evaluative approach was used.
RESEARCH DESIGN

Ram Ahuja (2007), stated that research design is a master plan specifying the method and procedure for collecting and analyzing the needed information.

The research design used for the present study was a Quasi experimental design where Factorial design was selected to evaluate the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient.

**Fig. 3.1: Diagrammatic representation of the design,**

<table>
<thead>
<tr>
<th>Purposively selected burns patient</th>
<th>Pre test</th>
<th>Intervention</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group I (Aloe Vera application)</td>
<td>O₁</td>
<td>X₁</td>
<td>O₂</td>
</tr>
<tr>
<td>Experimental group II (Silver sulfadiazine application)</td>
<td>O₃</td>
<td>X₂</td>
<td>O₄</td>
</tr>
</tbody>
</table>

The symbols used are,

O₁ : Pre test on level of wound healing among burns patient in experimental group I

X₁ : Aloe Vera application to experimental group I

O₂ : Post test on level of wound healing among burns patient in Experimental group I
O₃: Pre test on level of wound healing among burns patient in Experimental group II

X₂: Silver sulfadiazine application to experimental group II

O₄: Post test on level of wound healing among burns patient in Experimental group II

SETTING OF THE STUDY

Research settings are specific places in a research where data collection is to be made. The Selection of setting was done on the basis of feasibility of conducting the study and permission of authorities, (Polit and Hungler, 2004)

The study was conducted at Kanyakumari Government Medical College and Hospital, Asaripallam. It is 500 kms away from the Dhanvantri college of Nursing. It is 500 bedded Multispecialty Hospital, Hospital contains separate burns ward for both male and female each ward contains 20-25 beds. An average of 35-40 burns patients are admitted per month.

VARIABLES

A Concept which can take a different qualitative value are called as variables, (Kothari C.R, 2002)

The variables used for the present study are following;
**Independent variable** According to Polit and Hungler (1999), the variable that is believed to care or influence the behavior and ideas.

In this present study the independent variable are Aloe Vera Vs Silver sulfadiazine applications.

**Dependent variable:** According to Polit and Hungler (1999) the dependent variable is the researcher is interested in understanding, explaining, and proceeding.

In this present study dependent variable is wound healing.

**POPULATION**

According to Polit and Beck (2002), population refers to aggregate or totality of all the subjects or numbers that confirmed to a set of specification.

The populations for the present study were all burns patient who were admitted in the hospital and present during the period of data collection.

**SAMPLE**

According to Polit and Hungler (2004), a sample is a subset of population and selected to participate in research study, it is a portion of the population which represents the entire population.
In this study the sample was burns patient admitted in Kanyakumari Government Medical College and Hospital, Asaripallam, willing to participate and present during the period of data collection.

**SAMPLE SIZE**

Sample size is normally decided by nature of the study, nature of population, type of sampling technique, total variables, statistical test adopted for analysis, sensitivity of the measures and addition, *(Polit and Hungler, 1999)*

The total sample size was 30 burns patients, out of which 15 were in experimental group I and 15 were in experimental group II.
SAMPLING TECHNIQUE

Sampling technique refers to the process of selecting the portion of population to represent the entire sample, (Polit and Beck, 2002)

Purposive sampling technique was used to select the samples for the present study

According to Ram Ahuja, (2001), purposive or judgmental sampling is the researcher chooses persons who, in this judgment about some appropriate characteristics required to the sample members were collected for this present study.

SAMPLE SELECTION CRITERIA

Inclusion criteria

Burns patient,

❖ Age group of 20 – 50 years.
❖ Both gender.
❖ Burns patient with first degree (superficial burns)
❖ Who gave consent to participate in this study.
❖ Who are present during the period of data collection.

Exclusion criteria

Burns patient,

❖ Who were having allergy to Aloe Vera and silver Sulfadiazine.
DESCRIPTION OF THE TOOL

The tool act as an instrument to assess and collect the data from the respondent of the study, (Polit and Beck, 2002)

There are two sections of tools were used. They are;

Section A

It consists of demographic characteristic of burns patients, i.e. Age, Gender, Burns percentage in Total Burns Surface Area (TBSA), Causes of burns, Days of hospitalization, and Co-morbid factors that affect wound healing.

Section B

It consists of burns wound healing observation scale is used to assess the wound healing among burns patient. This scale consists of four wound healing parameters.
Table 3.1 BURNS WOUND HEALING OBSERVATION SCALE

<table>
<thead>
<tr>
<th>S.No</th>
<th>Parameters</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1.</td>
<td>Colour</td>
<td>White</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>Hard</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>Mostly irregular</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>Firm</td>
</tr>
</tbody>
</table>

**Scoring procedures**

Based on the percentage of Scores the level of wound healing was graded into 3 categories. They are “Poor wound healing”, “Moderate wound healing” and “Good wound healing”.

Table 3.2 Grades of level of wound healing among burns patient

<table>
<thead>
<tr>
<th>Level of wound healing</th>
<th>Actual scores</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor wound healing</td>
<td>4-6</td>
<td>33-50%</td>
</tr>
<tr>
<td>Moderate wound healing</td>
<td>7-9</td>
<td>51-75%</td>
</tr>
<tr>
<td>Good wound healing</td>
<td>10-12</td>
<td>76-100%</td>
</tr>
</tbody>
</table>
Validity

The content validity of the demographic variables and burns wound healing observation scale was validated in consultation with guide and field of experts. The experts are dermatologist, siddha doctor, statistician and nurse specialist. The tool was modified according to the suggestions and recommendations of the experts, (Annexure III).

Reliability

The reliability of the burns wound healing observation scale was tested by implementing the tool on 4 burns patients, with first degree upto 30% TBSA in which 2 were in experimental group I and 2 were in experimental group II in Government Headquarters Hospital, Erode, which is other than the sample area, Split half method (spearman Brown Formula) was used to test the reliability of the tool and the tool was found reliable ($r^1=0.9$).

METHOD OF DATA COLLECTION

Data collection is the gathering of information to address the research problem. The word “data” means information that is systematically collected in the course of study, (Treeca and Treeca, 1996).

Permission from the concerned authority

Prior to the collection of the data, permission was obtained from the Medical Superintendent of Kanyakumari Government Medical College, Asaripallam, (Annexure I and II).
Period of data collection

The data was collected from 11/08/2011 to 11/09/2011. The investigator collected the data from both experimental group I and experimental group II.

The investigator was selected the experimental group I and experimental group II by purposive sampling. The experimental group I burns patient was selected on 11th to 25th August whereas in experimental group II burns patient was on 18th August to 1st of September.

Pre test

Pre test was conducted among burns patient with first degree upto 30% TBSA by using Burns wound healing observation scale to assess the level of wound healing. In a day an average of 1-2 patients were observed the time for observation varied from 5-10 minutes.

Implementation of Aloe Vera Vs Silver Sulfadiazine

Immediately after pre test Aloe Vera Vs Silver Sulfadiazine was applied on wound among burns patient at the duration of 15-20 minutes in twice a day for 7 days

Post test

Observations was made after 7 days of application of Aloe Vera Vs Silver Sulfadiazine by using Burns wound healing observation scale among burns patients.
PLAN FOR DATA ANALYSIS

- Assess the effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I was analyzed by using frequency and percentage distribution, Paired ‘t’ test, Mean, SD and mean percentage.

- Assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patient in experimental group II was analyzed by using frequency and percentage distribution, Paired ‘t’ test, Mean, SD and mean percentage.

- Compare the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient in experimental group I & II was analyzed by using frequency, percentage, unpaired ‘t’ test, Mean, SD and mean percentage.

- To find out the association between post test score on wound healing among burns patient in experimental group I & II with their demographic variables was analyzed by using Chi square test.
SUMMARY

Quasi experimental design where Factorial design was carried out on 30 burns patients admitted in Kanyakumari Government Medical College & Hospital, Asaripallam, by using purposive sampling technique modified Burns wound healing observation scale was used to observe the level of wound healing. The data were collected after obtaining permission from the concerned authority of the hospital. Data were planned to analyze by using descriptive and inferential statistics and to be presented in the forms of tables, graphs, and figures.
CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

Analysis is a “process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested”, (Polit and Hungler, 2003).

Analysis enables the researcher to reduce, summarize, organize, evaluate, interpret, and communicate numerical information.(Polit and Hungler, 2004)

This chapter deals with the analysis and interpretation of data collected “To compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among 30 burns patients (15 experimental group I and 15 experimental group II) at Kanyakumari Government Medical College & Hospital, Asaripallam.

The data were coded and analyzed as per objectives of the study under the following headings.

SECTION A: Description of samples according to their demographic variables.

SECTION B: Assess the effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.

- Frequency and percentage distribution of pre & post test scores on wound healing among burns patients in experimental group I.
- Paired “t” test value of pre and post test scores of experimental group I.
Mean, SD, and Mean percentage of experimental group I pre and post test scores on wound healing.

**Section C:** Assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patient in experimental group II.

- Frequency and percentage distribution of pre & post test scores on wound healing among burns patients in experimental group II.
- Paired “t” test value of pre and post test scores of experimental group II.
- Mean, SD, and Mean percentage of experimental group II pre and post test scores on wound healing.

**SECTION D:** To compare the effectiveness of Aloe Vera Vs Sulfadiazine application on wound healing among burns patient in experimental group I and II.

- Frequency and percentage distribution of post test scores on wound healing among burns patients in experimental group I and II.
- Un paired “t” test value of post test scores of experimental group I and II.
- Comparison of Mean, SD, and Mean percentage of experimental group I and II post test scores on wound healing.
SECTION E: Find out the association between post test score on wound healing among burns patient in experimental group I and II with their demographic variables.

- Chi-square value of association between the post test scores of wound healing among burns patient in experimental group I with their demographic variables.

- Chi-square value of association between the post test scores of wound healing among burns patient in experimental group II with their demographic variables.
SECTION A: DESCRIPTION OF SAMPLES ACCORDING TO THEIR DEMOGRAPHIC VARIABLES.

Table 4.1 Frequency and percentage distribution of demographic variables among burns patients in experimental group I & II

\( (N_1=15) \) \( (N_2=15) \)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Demographic Variable</th>
<th>Experimental group I ( (N_1=15) )</th>
<th>Experimental group II ( (N_2=15) )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Frequency ( (N) )</td>
<td>Percentage ( (%) )</td>
</tr>
<tr>
<td>1</td>
<td>Age in year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. 21 – 30</td>
<td>7</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>b. 31 – 40</td>
<td>4</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>c. 41 – 50</td>
<td>4</td>
<td>27%</td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Male</td>
<td>6</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>b. Female</td>
<td>9</td>
<td>60%</td>
</tr>
<tr>
<td>3</td>
<td>Burns percentage in TBSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Less than 10%</td>
<td>7</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>b. 11-20%</td>
<td>5</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>c. 21-30%</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>S. No</td>
<td>Demographic Variable</td>
<td>Experimental group I (N₁= 15)</td>
<td>Experimental group II (N₂= 15)</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
<td>------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency (N)</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>4.</td>
<td>Causes of burns</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Thermal</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>b. Chemical</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>c. Electrical</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>Days of hospitalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. On the day of incident</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>b. 2ⁿᵈ day</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>c. 3ʳᵈ day</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>Comorbid factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Diabetes Mellitus</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>b. Hypertension</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>c. None</td>
<td>12</td>
<td>80</td>
</tr>
</tbody>
</table>

Table 4.1; Reveals that the demographic variables of burns patient in experimental group I and II i.e. age, gender, burns percentage in (Total Burns Surface Area)TBSA, causes of burns, days of hospitalization and Comorbid factors.
Distribution of samples according to their age group shows that more or less similar percentage (46% and 40%) of burns patients were in the age group of 21-30 years in both the groups. However similar percentage (27%) of burns patients were in the age group of 31-40 years in both the groups and only 27% of burns patients in experimental group I and 33% of burns patients in experimental group II were in the age group of 41-50 years. Anil.K.Batra (2008) found in his study that majority (71.9%) of burns patients were in the age group of 21-40 years, when comparing the two statistical data, early adults may be prone for burns.

Distribution of samples according to their gender shows that, most (60% and 53%) of burns patients were females in both the groups and only (40% and 47%) of burns patients were males. It seems that females are affected more than males, similarly (NRCB 2001) says that more women suffered burn injuries compared to men (1.6:1) in all age groups. (fig 4.2)

According to burns percentage in Total Burns Surface Area in experimental group I and II shows that, most (47% and 40%) of burns patients had less than 10% Total Burns Surface Area in experimental group I and 11-20% Total Burns Surface Area in experimental group II. However similar percentage (33% and 33%) of burns patients had less than 10% and 11-20% of Total Burns Surface Area in both the groups and lowest percentage (20% and 27%) of burns patients had 21-30% of Total Burns Surface Area in both the groups. (fig 4.3)
According to the causes of burns in experimental group I and II shows that all (100%) burns patients had thermal burns in both the groups. (NRCB, 2001) stated various causes of burns. Among all the burns 7% (n=5570) are due to electrocution, 2% (n=666) are due to explosion and 71% (n=23,043) are due to fire and 10% (n=3230) are due to firearms. So thermal burns are dominating among all the causes of burns. (fig 4.4)

According to the days of hospitalization among burns patients in experimental group I and II shows that majority (87% and 67%) of burns patients in experimental group I and II were admitted in the hospital on the day of incidence. However 13% of burns patients in experimental group I were admitted in the hospital on the 2\textsuperscript{nd} day of incidence, whereas in experimental group II 20% of burns patients were admitted in hospital on the 2\textsuperscript{nd} day of incidence and only 13% of burns patients in experimental group II were admitted in hospital on the 3\textsuperscript{rd} day of incidence. (fig 4.5)

Distribution of samples according to their Co-morbid factors that affect the wound healing among burns patients in experimental group I and II shows that most (80% and 73%) of patients had no co-morbid factors of wound healing in both the groups. However more or less similar percentage (13% and 20%) of patients had co-morbid factors of Diabetes mellitus and only 7% of patients had hypertension in both the groups. (fig 4.6)
Fig 4.1 Bar diagram showing the percentage distribution of burns patients according to their age group.
Fig 4.2 Bar diagram showing the percentage distribution of burns patients according to their gender
**Fig 4.3** Bar diagram showing percentage distribution of burns according to their percentage in Total Burns Surface Area

- **Less than 10%**
  - Experimental group I: 47
  - Experimental group II: 33

- **11-20%**
  - Experimental group I: 33
  - Experimental group II: 40

- **21-30%**
  - Experimental group I: 20
  - Experimental group II: 27

**Burns patients in Total Burns Surface Area**
Fig 4.4 Bar diagram showing the percentage distribution of burns patients according to their causes of burns.
Fig 4.5 Bar diagram showing the percentage of burns patients according to their days of hospitalization.
Fig 4.6 Bar diagram showing the percentage distribution of burns patients according to their Comorbid factors.
SECTION B ASSESS THE EFFECTIVENESS OF ALOE VERA APPLICATION ON WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP I.

Table 4.2 Frequency and percentage distribution of pre and post test scores of wound healing among burns patients in experimental group I. 

\( (N_1 = 15) \)

<table>
<thead>
<tr>
<th>Level of wound healing</th>
<th>Pre test score</th>
<th>Post test score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency ((N_1))</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>Poor</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Moderate</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Good</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Frequency and percentage distribution of pre and post test scores on level of wound healing among burns patients in experimental group I depicts that, in pre test all (100%) of them were poor wound healing, whereas in post test most (53%) of them were moderate wound healing and 47% of them were good wound healing. It seems that Aloe Vera application on wound healing was effective among burns patients (Table 4.2)
Table 4.3 Paired “t” test value of pre and post test scores of experimental group I

(N₁=15)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Wound healing parameters</th>
<th>Paired ‘t’ value</th>
<th>Table value</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Colour</td>
<td>10.8</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>5.62</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>3.08</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>19.3</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>15.8</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
</tbody>
</table>

Df= 14    Table value = 2.15       P<0.05 significant

Paired ‘t’ test was calculated to analyze the effectiveness between pre and post test scores of experimental group I on different aspects on level of wound healing. The paired ‘t’ test score for overall was 15.8 when compared to table value (2.15) it was high. It seems that Aloe Vera on wound healing was effective among burns patients in experimental group I. (Table 4.3)
TABLE - 4.4 Area wise mean, SD, and mean percentage of experimental group I pre and post test scores on level of wound healing.

\((N_1=15)\)

| S.No | Wound healing parameters | Maximum scores | Pre test score | Post test score | Difference in Mean (%)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean (%)</td>
</tr>
<tr>
<td>1.</td>
<td>Colour</td>
<td>3</td>
<td>1.06</td>
<td>0.258</td>
<td>35.3</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>3</td>
<td>1.53</td>
<td>0.515</td>
<td>51.0</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>3</td>
<td>1.6</td>
<td>0.49</td>
<td>53.3</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>3</td>
<td>1.0</td>
<td>0</td>
<td>7.6</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>12</td>
<td>5.2</td>
<td>0.77</td>
<td>43.3</td>
</tr>
</tbody>
</table>

Comparison of Mean, SD, and mean percentage of experimental group I pre and post test scores depicts that, In pre test the highest mean score was \((1.6\pm0.49)\) which is 53.3% , whereas in post test the mean score was \((2)\) which is 67% in the area of surface. It reveals the difference of 13%.

The Lowest mean score in pre test was \((1.0)\) which is 7.6%, whereas in post test the mean score was \((2.2\pm0.41)\) which is 73% in the area of pliability. It reveals the difference of 65.7%.
Similarly the overall in pre test the mean score was (5.2±0.77) which is 43%, whereas in post test the mean score was (9.0±1.0) which is 75%. It reveals the difference of 31.7%. It seems that Aloe Vera was effective for wound healing among burns patients. (fig 4.7)
**Fig 4.7** Bar diagram Showing the Mean percentage of experimental group I pre and post scores of wound healing.
SECTION:C ASSESS THE EFFECTIVENESS OF SILVER SULFADIAZINE APPLICATION ON WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP II.

Table 4.5 Frequency and percentage distribution of pre and post test scores of wound healing among burns patients in experimental group II

(N₂= 15)

<table>
<thead>
<tr>
<th>Level of wound Healing</th>
<th>Pre test score</th>
<th>Post test score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (N₁)</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>Poor</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td>Moderate</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Good</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Frequency and percentage distribution of pre and post test scores of level of wound healing among burns patients in experimental group II depicts that, in pre test most (87%) of them were poor wound healing and 13% of them were moderate wound healing, whereas in post test most (60%) of them were good wound healing and 40% of them were moderate wound healing. (Table 4.5)
Table 4.6 Paired “t” test value of pre and post test scores of experimental group II

(N₂=15)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Wound healing parameters</th>
<th>paired ‘t’ value</th>
<th>Table value</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Colour</td>
<td>16.7</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>3.49</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>3.49</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>11.07</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>18.8</td>
<td>2.15</td>
<td>P &lt; 0.05 significant</td>
</tr>
</tbody>
</table>

Df= 14  Table value = 2.15  P<0.05 significant

Paired ‘t’ test was calculated to analyze the effectiveness between pre and post test scores of experimental group II on different aspects on level of wound healing. The paired ‘t’ test score for overall was 18.8 when compared to table value (2.15) it was high. It seems that Silver Sulfadiazine on wound healing was effective among burns patients in experimental group II. (Table 4.6)
**TABLE - 4.7 Area wise Mean, SD, and mean percentage of experimental group II pre and post test scores on level of wound healing.**

(N₂=15)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Wound healing parameters</th>
<th>Maximum score</th>
<th>Pre test score</th>
<th>Post test score</th>
<th>Difference in Mean (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean SD</td>
<td>Mean (%)</td>
<td>Mean SD</td>
</tr>
<tr>
<td>1.</td>
<td>Colour</td>
<td>3</td>
<td>1.13 0.34</td>
<td>37.6</td>
<td>2.8 0.35</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>3</td>
<td>1.9 0.26</td>
<td>63.3</td>
<td>2.4 0.5</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>3</td>
<td>1.6 0.5</td>
<td>53.3</td>
<td>2.06 0.25</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>3</td>
<td>1.0 0</td>
<td>33.3</td>
<td>2.4 0.52</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>12</td>
<td>5.6 0.81</td>
<td>46.6</td>
<td>9.8 0.77</td>
</tr>
</tbody>
</table>

Comparison of Mean, SD, and mean percentage of experimental group II pre and post test scores depicts that, In pre test the highest mean score was (1.9±0.26) which is 63.3%, whereas in post test the mean score was (2.4±0.5) which is 80% in the area of consistency. It reveals the difference of 16.7%.

The lowest mean score in pre test was (1.0) which is 33.3%, whereas in post test the mean score was (2.4±0.52) which is 80% in the area of pliability. It reveals the difference of 46.7%.
Similarly the overall in pre test the mean score was (5.6±0.81) which is 46.6%, whereas in post test the mean score was (9.8±0.77) which is 81.6%. It reveals the difference of 35%. It seems that Silver Sulfadiazine was effective for wound healing among burns patients. (fig 4.8)
Fig 4.8 Bar diagram showing the Mean percentage of experimental group II pre and post test scores of wound healing
SECTION D: COMPARE THE EFFECTIVENESS OF ALOE VERA Vs SILVER SULFADIAZINE ON WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP I AND II.

Table 4.8 Frequency and percentage distribution of post test scores of wound healing among burns patients in experimental group I and II

<table>
<thead>
<tr>
<th>Level of wound Healing</th>
<th>Post test scores</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental group I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency (N₁)</td>
<td>Percentage (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Moderate</td>
<td>8</td>
<td>53</td>
<td>6</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>7</td>
<td>47</td>
<td>9</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Frequency and percentage distribution of post test scores on level of wound healing among burns patients in experimental group I and II depicts that, most (53%) of them were moderate wound healing and only 47% of them were good wound healing in experimental group I, whereas in experimental group II most (60%) of them were good wound healing and 40% were moderate wound healing.(Table 4.8)
TABLE-4.9 Unpaired ‘t’ test value of post test scores of experimental group I and II.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Wound healing parameters</th>
<th>Unpaired ‘t’ value</th>
<th>Table value</th>
<th>Level of significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Colour</td>
<td>2.12</td>
<td>2.05</td>
<td>P&lt;0.05 Significant</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>1</td>
<td>2.05</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>1.5</td>
<td>2.05</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>2.93</td>
<td>2.05</td>
<td>P&lt;0.05 Significant</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>2.5</td>
<td>2.05</td>
<td>P&lt;0.05 Significant</td>
</tr>
</tbody>
</table>

Df =28 Table Value=2.05

Significant at P<0.05 No Significant at P> 0.05

Unpaired ‘t’ test was calculated to analyze the effectiveness between experimental group I and II, post test score on wound healing. The unpaired ‘t’ test total score was 2.58, when compared to table value (2.05) it was high. It depicts that Aloe Vera and Silver Sulfadiazine on wound healing among burns patients was effective, It depicts that there is a significant difference in effectiveness of Aloe Vera and Silver Sulfadiazine on wound healing among burns patients.
TABLE - 4.10 Area wise Comparison of Mean, SD, and mean percentage of experimental group I and II post test scores on level of wound healing.

(N₁= 15) (N₂=15)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Wound healing parameters</th>
<th>Maximum score</th>
<th>Post test scores</th>
<th>Difference in Mean (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Experimental group I</td>
<td>Experimental group II</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>1.</td>
<td>Colour</td>
<td>3</td>
<td>2.46</td>
<td>0.72</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>3</td>
<td>2.3</td>
<td>0.48</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>3</td>
<td>2.0</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>3</td>
<td>2.2</td>
<td>0.41</td>
</tr>
<tr>
<td>5.</td>
<td>Total</td>
<td>12</td>
<td>9.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Comparison of Mean, SD, and mean percentage of experimental group I and II post test scores of wound healing depicts that, In experimental group I the highest mean score was (2.46±0.72) which is 82% ,whereas in post test the mean score was (2.8±0.35) which is 93.3% in the area of colour. It reveals the difference of 11.3%.
The lowest mean score in experimental group I was (2.0) which is 66.6%, whereas in experimental group II the mean score was (2.06±0.25) which is 68.6% in the area of surface. It reveals the difference of 2%.

Similarly the overall mean score in experimental group I was (9.0±1) which is 75%, whereas in experimental group II the mean score was (9.8±0.77) which is 81.6%. It reveals the difference of 6.6%. It seems that Silver sulfadiazine was more effective than Aloe Vera among burns patients. (Fig 4.9)
Fig 4.9 Bar diagram showing Mean percentage of experimental group I and II post test scores of wound healing.
SECTION-D: FIND OUT ASSOCIATION BETWEEN THE POST TEST SCORE OF WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP I AND II WITH THEIR DEMOGRAPHIC VARIABLES.

Table 4.11 Association between experimental group I post test scores with their demographic variables.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Demographic variables</th>
<th>Df</th>
<th>$\chi^2$ Value</th>
<th>Table Value</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age</td>
<td>2</td>
<td>5.32</td>
<td>4.99</td>
<td>P&lt;0.05 Significant</td>
</tr>
<tr>
<td>2.</td>
<td>Gender</td>
<td>1</td>
<td>0.7</td>
<td>3.84</td>
<td>p&gt;0.05 Not significant</td>
</tr>
<tr>
<td>3.</td>
<td>Burns Percentage in Total Burns Surface Area</td>
<td>2</td>
<td>15.3</td>
<td>4.99</td>
<td>P&lt;0.05 significant</td>
</tr>
<tr>
<td>4.</td>
<td>Causes of burns</td>
<td>2</td>
<td>0</td>
<td>4.99</td>
<td>p&gt;0.05 Not significant</td>
</tr>
<tr>
<td>5.</td>
<td>Days of hospitalization</td>
<td>2</td>
<td>1.8</td>
<td>4.99</td>
<td>p&gt;0.05 Not significant</td>
</tr>
<tr>
<td>6.</td>
<td>Co-morbid factors that affects wound healing.</td>
<td>2</td>
<td>3.1</td>
<td>4.99</td>
<td>p&gt;0.05 Not significant</td>
</tr>
</tbody>
</table>

**Significant at P<0.05 No significant at P>0.05**

Chi-square value was calculated to find out the association between the experimental group I post test scores of wound healing with their demographic variables.
It reveals that there is a significant association between post test scores of experimental group I when compared to age, burns percentage in Total Burns Surface Area (P <0.05).

It reveals that there is no significant association between post test scores of experimental group I when compared to gender, causes of burns, days of hospitalization and co-morbid factors (P >0.05). Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Aloe Vera was effective on wound healing to all burns patients irrespective of their demographic variables.
Table 4.12 Association between experimental group II post test scores with their demographic variables.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Demographic variables</th>
<th>DF</th>
<th>( \chi^2 ) Value</th>
<th>Table Value</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age</td>
<td>2</td>
<td>1.3</td>
<td>4.99</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>2.</td>
<td>Gender</td>
<td>1</td>
<td>0.7</td>
<td>3.84</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>3.</td>
<td>Burns Percentage in Total Burns Surface Area</td>
<td>2</td>
<td>5.58</td>
<td>4.99</td>
<td><strong>P&lt;0.05 significant</strong></td>
</tr>
<tr>
<td>4.</td>
<td>Causes of burns</td>
<td>2</td>
<td>0</td>
<td>4.99</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>5.</td>
<td>Days of hospitalization</td>
<td>2</td>
<td>2.49</td>
<td>4.99</td>
<td>P&gt;0.05 Not significant</td>
</tr>
<tr>
<td>6.</td>
<td>Co-morbid factors that affects wound healing.</td>
<td>2</td>
<td>5.8</td>
<td>4.99</td>
<td><strong>P&lt;0.05 significant</strong></td>
</tr>
</tbody>
</table>

**Significant at P<0.05  No significant at P>0.05**

Chi-square value was calculated to find out the association between the experimental group II post test scores of wound healing with their demographic variables.

It reveals that there is a significant association between post test scores of experimental group II when compared to burns percentage in Total Burns Surface Area and co-morbid factors that affect wound healing (P <0.05)
It reveals that there is no significant association between post test scores of experimental group II when compared to age, gender, causes of burns, and days of hospitalization (P >0.05). Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Silver Sulfadiazine was effective on wound healing to all burns patients irrespective of their demographic variables.
SUMMARY

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of Aloe Vera and Silver Sulfadiazine application on wound healing among burns patients. Findings revealed that mean post test scores of patients in experimental group I was (9±1) which is 75%, where as in experimental group II post test scores was(9.8± 0.77) which is 81.6%. It reveals the difference of 6.6 . It seems that Silver sulfadiazine was more effective than Aloe Vera. The paired't’ test showed there is moderately significant difference in Aloe Vera and silver sulfadiazine application on wound healing among burns patients and chi-square test showed that There is a significant association was found between in experimental group I post test scores of age, burns percentage in Total Burns Surface Area, whereas significant association was found between in experimental group II post test scores of burns percentage in Total Burns Surface Area and co-morbid factors, whereas no significant association was found between in experimental group I post test score of gender, causes of burns, days of hospitalization and co-morbid factors whereas no significant association was found between in experimental group II post test score of age, gender, causes of burns, days of hospitalization .
CHAPTER – V

DISCUSSION

This chapter deals with the discussion which was based on the findings obtained from the statistical analysis and its relation to the objectives of the study, the conceptual frame work and the related literature.

This study was conducted to compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among burns patients at Kanyakumari Government Medical College and Hospital, Asaripallam. The following were the objectives of this study.

OBJECTIVES

- To assess the effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.
- To assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patient in experimental group II.
- To compare the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient in experimental group I & II.
- To find out the association between post test scores on level of wound healing among burns patient in experimental group I & II with their demographic variables.
OBJECTIVES I

ASSESS THE EFFECTIVENESS OF ALOE VERA APPLICATION ON WOUND HEALING AMONG BURNS PATIENT IN EXPERIMENTAL GROUP I.

a) Frequency and percentage distribution of pre and post test scores of wound healing among burns patients in experimental group I depicts that,

- In pre test all (100%) of them were poor wound healing.
- In post test most (53%) of them were moderate wound healing and (47%) of them were good wound healing.
- It seems that Aloe Vera application on wound healing was effective among burns patients. Similarly Hosseinimehr SJ,( 2010) in his studies says that aloe cream to significantly increase epithelialization in burn wounds.

b) Paired “t” test value of pre and post test scores of experimental group I

- The paired ‘t’ test score for Colour was 10.8 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for Consistency was 5.62 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for Surface was 3.08 when compared to table value (2.15) it was high.
The paired ‘t’ test score for Pliability was 19.3 when compared to table value (2.15) it was high.

The paired ‘t’ test score for overall was 15.8 when compared to table value (2.15) it was high.

It seems that Aloe Vera on wound healing was effective among burns patients in experimental group I.

c) **Area wise mean, SD, and mean percentage of experimental group I pre and post test scores on level of wound healing.**

1. **Pre test Mean, SD, and mean percentage of wound healing among experimental group I**
   
   - In Colour the Mean, SD was 1.06±0.258 and mean Percentage was 35.3%
   - In Consistency the Mean, SD was 1.53±0.515 and mean Percentage was 51%
   - In Surface the Mean, SD was 1.6±0.49 and mean Percentage was 53.3%
   - In Pliability the Mean, SD was 1 and mean Percentage was 7.6%
   - The Overall Mean, SD was 5.2±0.77 and mean Percentage was 43.3%
2. Post test Mean, SD, and mean percentage of wound healing among experimental group I

- In Colour the Mean, SD was 2.46±0.72 and mean Percentage was 82%
- In Consistency the Mean, SD was 2.3±0.48 and mean Percentage was 76.6%
- In Surface the Mean, SD was 2 and mean Percentage was 66.6%
- In Pliability the Mean, SD was 2.2±0.41 and mean Percentage was 73.3%
- The Overall Mean, SD was 9±1 and mean Percentage was 75%

3. Difference in Mean Percentage of pre and post test scores of wound healing among experimental group I

- In colour the difference in mean percentage was 46.7%.
- In Consistency the difference in mean percentage was 25.6%.
- In Surface the difference in mean percentage was 13.3%.
- In Pliability the difference in mean percentage was 65.7%
- The overall difference in mean percentage was 46.7%

It seems that Aloe Vera was effective on wound healing among burns patients.
HYPOTHESIS I

There is a significant effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I. So this hypothesis is accepted.

OBJECTIVES II

ASSESS THE EFFECTIVENESS OF SILVER SULFADIAZINE APPLICATION ON WOUND HEALING AMONG BURNS PATIENT IN EXPERIMENTAL GROUP II.

a) Frequency and percentage distribution of pre and post test scores of wound healing among burns patients in experimental group II depicts that,

- In pre test most (87%) of them were poor wound healing and 13% of them were moderate wound healing.
- In post test most (60%) of them were good wound healing and (40%) of them were moderate wound healing
- It seems that Silver sulfadiazine application on wound healing was effective among burns patients. Storm-Versloot. MN, (2010) silver-containing dressings promote wound healing or prevent wound infection.
b) Paired “t” test value of pre and post test scores of experimental group II

- The paired ‘t’ test score for Colour was 16.7 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for Consistency was 3.49 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for Surface was 3.49 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for Pliability was 11.07 when compared to table value (2.15) it was high.
- The paired ‘t’ test score for overall was 18.8 when compared to table value (2.15) it was high.

It seems that Silver Sulfadiazine on wound healing was effective among burns patients in experimental group II.

c) Area wise Mean, SD, and mean percentage of experimental group II pre and post test scores on level of wound healing.

1. Pre test Mean, SD, and mean percentage of wound healing among experimental group II

   - In Colour the Mean, SD was 1.13±0.34 and mean Percentage was 37.6%.
   - In Consistency the Mean, SD was 1.9±0.26 and mean Percentage was 63.3%.
In Surface the Mean, SD was 1.6±0.5 and mean Percentage was 53.3%.

In Pliability the Mean, SD was 1 and mean Percentage was 33.3%.

The Overall Mean, SD was 5.6±0.81 and mean Percentage was 46.6%.

2. **Post test Mean, SD, and mean percentage of wound healing among experimental group II**

- In Colour the Mean, SD was 2.8±0.35 and mean Percentage was 93.3%.
- In Consistency the Mean, SD was 2.4±0.5 and mean Percentage was 80%.
- In Surface the Mean, SD was 2.06±0.25 and mean Percentage was 68.6%.
- In Pliability the Mean, SD was 2.4±0.52 and mean Percentage was 80%.
- The Overall Mean, SD was 9.8±0.77 and mean Percentage was 81.6%.

3. **Difference in Mean Percentage of pre and post test scores of wound healing among experimental group II**

- In Colour the difference in mean percentage was 55.7%.
- In Consistency the difference in mean percentage was 16.7%.
- In Surface the difference in mean percentage was 15.3%.
In Pliability the difference in mean percentage was 46.7%.

The overall difference in mean percentage was 35%.

It seems that Silver Sulfadiazine was effective for wound healing among burns patients.

**HYPOTHESIS II**

There is a significant effectiveness of Silver sulfadiazine application on wound healing among burns patient in experimental group II, So this hypothesis is accepted.

**OBJECTIVES III**

**TO COMPARE THE EFFECTIVENESS OF ALOE VERA Vs SILVER SULFADIAZINE ON WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP I AND II.**

a) Frequency and percentage distribution of post test scores of wound healing among burns patients in experimental group I and II

- In experimental group I 53% were moderate wound healing, whereas in experimental group II 40% were moderate wound healing.
- In experimental group I 47% were Good wound healing, whereas in experimental group II 60% were Good wound healing.
b) Unpaired ‘t’ test value of post test scores of experimental group I and II.

- The unpaired ‘t’ test score of colour was 2.12 when compared to the table value it was high.
- The unpaired ‘t’ test score of Pliability was 2.12 when compared to the table value it was high.
- The unpaired ‘t’ test total score was 2.58, when compared to table value (2.05) it was high. It seems that there is a significant difference in effectiveness of Aloe Vera and Silver Sulfadiazine on wound healing among burns patients.

c) Area wise Comparison of Mean, SD, and mean percentage of experimental group I and II post test scores on level of wound healing.

1. Post test Mean, SD, and mean percentage of wound healing among experimental group I

- In Colour the Mean, SD was 2.46±0.72 and mean Percentage was 82%
- In Consistency the Mean, SD was 2.3±0.48 and mean Percentage was 76.6%
- In Surface the Mean, SD was 2 and mean Percentage was 66.6%
2. Post test Mean, SD, and mean percentage of wound healing among experimental group II

- In Colour the Mean, SD was 2.8±0.35 and mean Percentage was 93.3%
- In Consistency the Mean, SD was 2.4±0.5 and mean Percentage was 80%
- In Surface the Mean, SD was 2.06±0.25 and mean Percentage was 68.6%
- In Pliability the Mean, SD was 2.4±0.52 and mean Percentage was 80%
- The Overall Mean, SD was 9.8±0.77 and mean Percentage was 81.6%

3. Difference in Mean Percentage of pre and post test scores of wound healing among experimental group I and II.

- In colour the difference in mean percentage was 11.3%.
- In Consistency the difference in mean percentage was 3.4%.
- In Surface the difference in mean percentage was 2%.
- In Pliability the difference in mean percentage was 6.7%
- The overall difference in mean percentage was 6.6%.
It seems that Silver sulfadiazine was more effective than Aloe Vera on wound healing among burns patients

**Hypothesis III**

- There is a higher effectiveness of Aloe Vera application on wound healing among burns patients than Silver sulfadiazine application, So this hypothesis is rejected.

**Objectives IV**

**FIND OUT ASSOCIATION BETWEEN THE POST TEST SCORES OF WOUND HEALING AMONG BURNS PATIENTS IN EXPERIMENTAL GROUP I AND II WITH THEIR DEMOGRAPHIC VARIABLES.**

1. Chi- square value of Association between the post test scores of wound healing among burns patients in experimental group I with their demographic variables.
   - Chi- square value reveals that there is a significant association between post test scores of experimental group I when compared to age, burns percentage in Total Burns Surface Area (P <0.05).
   - Chi- square value reveals that there is no significant association between post test scores of experimental group I when compared to gender, causes of burns, days of hospitalization and co-morbid factors (P >0.05).
2. **Chi-square value of Association between the post test scores of wound healing among burns patients in experimental group II with their demographic variables.**

- Chi-square value that there is a significant association between post test scores of experimental group II when compared to burns percentage in Total Burns Surface Area and co-morbid factors that affect wound healing $(P < 0.05)$.
- Chi-square value that there is no significant association between post test scores of experimental group II when compared to age, gender, causes of burns, and days of hospitalization $(P > 0.05)$.

**HYPOTHESIS IV**

There is a significant association between post test scores of wound healing among burns patient in experimental group I and II with their demographic variables. So the hypothesis is rejected.
CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

This chapter deals with the summary of the study, its findings, conclusion and the implications for nursing administration, nursing practice, nursing education and nursing research. This study has been started with a few limitations and ends with suggestions and recommendation for research in future.

SUMMARY

Burns wound healing management is widely discussed in many settings including journals and in numerable studies in the medical and nursing literature. This topic is great concern because of finding a new solution to preventing the burns wound complication.

Although we have advanced technology regarding burns wound management such as antibiotics (Gentamicin, Ceftrioxone Sodium) Corticosteroids, Burns wound care, skin grafting, etc. There are some health personnel in the hospital having inadequate knowledge regarding application of Aloe Vera and Silver Sulfadiazine on burns wound healing, keep this in view, the investigator aimed to compare the effectiveness of Aloe Vera and Silver Sulfadiazine on wound healing among burns patients at Kanyakumari Government Medical College & Hospital, Asaripallam.
The objectives of the study were,

- To assess the effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.

- To assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patient in experimental group II.

- To compare the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient in experimental group I & II.

- To find out the association between post test scores on level of wound healing among burns patient in experimental group I & II with their demographic variables.

HYPOTHESIS

H₁: There is a significant effectiveness of Aloe Vera application on wound healing among burns patient in experimental group I.

H₂: There is a significant effectiveness of Silver sulfadiazine application on wound healing among burns patient in experimental group II.

H₃: There is higher effectiveness of Aloe Vera application on wound healing among burns patients than Silver Sulfadiazine application.

H₄: There is a significant association between post test scores of wound healing among burns patient in experimental group I and II with their demographic variables.
A review of related literature enabled the researcher to develop the conceptual framework, tools and methodology which is the cornerstone of the study. Literature review done for the present study was organized under the following headings

1. Studies related to Aloe Vera.
2. Studies related to Silver Sulfadiazine.
3. Studies related to wound healing among burns patients.
4. Studies related to complementary therapies on wound healing among burns patients.
5. Studies related to comparison of Aloe Vera and Silver Sulfadiazine on wound healing among burns patients

The investigator developed LYDIA HALL’S Core, Care, and Cure model. The research design adopted for the study was a quasi experimental where Factorial design was selected. Setting chosen to conduct the study was Kanyakumari Government Medical College & Hospital, Asaripallam. The target population in the study was all burns patients who were admitted in the hospital and present during the period of data collection.

In this study the sample size was 30 burns patients out of which 15 were experimental group I and 15 were experimental group II. The sampling technique used in this study was purposive sampling technique and Burns Wound Healing Observation Scale was used to assess the level of wound healing among burns patients.
The reliability of Burns Wound Healing Observation scale was tested by implementing the tool on 4 burns patients, with first degree upto 30% Total Burns Surface Area in Government headquarters Hospital, Erode, Which is other than the sample area. Split half method (Spearman Brown Formula) was used to test the reliability of the tool and tool was found to be reliable ($r^1 = 0.9$)

The main study was conducted in Kanyakumari Government Medical College & Hospital, Asaripallam. The sample were selected by using purposive sampling method among those who fulfill the sampling criteria. Data were gathered through Burns Wound Healing Observation scale. The data gathered are analyzed by descriptive and inferential statistical method and interpretation is made on the basis of the objectives of the study.

MAJOR FINDINGS

The findings are summarized as below:

1. Description of sample characteristics of experimental group I and experimental group II shows that,

In experimental group I

- Most (46%) of the burns patients were in the age group of 21-30 years.
- Majority (60%) of burns patients were females.
- Highest (33%) of burns patients have less than 10% of Total Burn Surface Area.
- Majority (100%) of burns patients are affected by thermal burns.
Highest (87%) of burns patients were admitted on the day of incident.

Most (80%) of burns patients had no Co-morbid factors that affects the wound healing.

**In experimental group II**

- Most (40%) of the burns patients were in the age group of 21-30 years.
- Majority (53%) of burns patients were females.
- Highest (40%) of burns patients have 11-20% of Total Burn Surface Area.
- Majority (100%) of burns patients are affected by thermal burns.
- Highest (67%) of burns patients were admitted on the day of incident.
- Most (73%) of burns patients had no Co-morbid factors that affects the wound healing.

**II. Assess the effectiveness of Aloe Vera application on wound healing among burns patients in experimental group I**

- In pre test all (100%) of them were in poor wound healing.
- In Post test majority (53%) of them were in moderate wound healing.
- Overall Paired ‘t’ value was 15.8 (table value 2.15)
- The Overall Mean and SD in pre test was 5.2± 0.77 and mean percentage was 43.3%.
- The Overall Mean and SD in post test was 9±1 and mean percentage was 75%.
- The Overall difference in mean percentage was 31.7%
III. Assess the effectiveness of Silver Sulfadiazine application on wound healing among burns patients in experimental group II.

- In pre test most (87%) of them were in poor wound healing.
- In Post test majority (60%) of them were in good wound healing.
- Overall Paired ‘t’ value was 18.8 (table value 2.15)
- The Overall Mean and SD in pre test was 5.6±0.81 and mean percentage was 46.6%.
- The Overall Mean and SD in post test was 9.8±0.77 and mean percentage was 81.6%.
- The Overall difference in mean percentage was 35%

IV. Compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine on wound healing among burns patients in experimental group I and II.

1. In experimental group I most (53%) of them in moderate wound healing.
2. In experimental group II majority (60%) of them in good wound healing.
3. The overall unpaired‘t’ test value was 2.58 (table value 2.05).
4. The Overall Mean and SD in experimental I was 9.0±1 and mean percentage was 75%.
5. The Overall Mean and SD in experimental group II was 9.8±0.77 and mean percentage was 81.6%.
6. The Overall difference in mean percentage was 6.6%
V. Find out association between the post test score of wound healing among burns patients in experimental group I and II with their demographic variables.

1. Chi-square value reveals that significant association between post test scores of experimental group I when compared to age, burns percentage in Total Burns Surface Area (P <0.05). However there is no significant association between post test scores of experimental group I when compared to gender, causes of burns, days of hospitalization and co-morbid factors (P >0.05).

2. Chi-square value reveals that significant association between post test scores of experimental group II when compared to burns percentage in Total Burns Surface Area and co-morbid factors that affect wound healing (P <0.05). However there is no significant association between post test scores of experimental group II when compared to age, gender, causes of burns, and days of hospitalization (P >0.05).

**Conclusion**

From the findings of the study can be conclude that,

- Highest were in the age group of 21-30 years.
- Most of them were females.
- Most of them have less than 10% Total Burns Surface Area.
- Majority of them are affected by thermal burns.
- Most of them were admitted on the day of incident.
Majority of the burns patients have no Co-morbid factors.

Aloe Vera was effective on wound healing among burns patients.

Aloe Vera was more effective in the areas of colour and Pliability on wound healing among burns patients.

Silver Sulfadiazine was effective on wound healing among burns patients.

Silver Sulfadiazine was more effective in the areas of colour and Pliability on wound healing among burns patients.

Silver Sulfadiazine was more effective on wound healing among burns patients than Aloe Vera.

In experimental group I significant association between the post test scores of wound healing with their demographic variables like age, burns percentage in Total Burns Surface Area.

In experimental group II significant association between the post test scores of wound healing with their demographic variables like burns percentage in Total Burns Surface Area, Co-morbid factors.

**NURSING IMPLICATIONS**

The studies have implications in nursing practice, nursing practice and nursing administration, nursing education and research.

**Nursing practice**

Aloe Vera and Silver Sulfadiazine can be used by the nursing personnel working in hospitals for reinforcing their practices.
Aloe Vera and Silver Sulfadiazine can be used in various settings.
Aloe Vera and Silver Sulfadiazine can be used to treat burns patients with various Percentage.

**Nursing Education**

- Nursing educator should educate nursing professionals to apply this medicines and find out the effectiveness.
- The researcher educates the health professionals to apply this medicines to improve the wound healing among burns patients.

**Nursing administrator**

- Nursing administrator can foster the use of Aloe Vera and Silver Sulfadiazine to treat burns patients in clinical settings.
- Nursing administrator can organize conference, seminars, and workshop for nurses working in hospitals to encourage a positive attitude on Aloe Vera on wound healing for burns patients.
- Nursing administrator can support the nurses for conducting research on comparing various other complementary therapies.

**Nursing Research**

This study may be used for further reference, Further large scale study can be done as replication to standardize the application of Aloe Vera and Silver Sulfadiazine on wound healing among burns patients.

**RECOMMENDATION**

✓ A longer period of intervention can be studied for more reliability and
effectiveness.

✓ A large scale of studies can be carried out to generalize the findings.

✓ A comparative study can be undertaken to compare the effectiveness of Aloe Vera with other medicines like Vaseline gauze, Acticoat etc.

✓ A comparative study can be undertaken to compare the effectiveness of Aloe Vera with honey on wound healing among burns patients.

**Summary**

This chapter deals with the summary of the study, major findings, conclusions, implications of the study in nursing field and recommendation for future.
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Appendix-I

LETTER SEEKING PERMISSION TO CONDUCT STUDY

From
Mr. Y. Shalin Gijo,
M.Sc Nursing II year, Dhanvantri College of nursing,
Ganapathypuram, No: 1 Renganoor road,
Muniyappan Kovil, Pallakkapalayam, (PO),
Sankagiri west, Namakkal (Dt).

To
The Medical Superintendent,
Government medical college and hospital,
Asaripallam, K.K. Dist.,

Through
The Principal,
Dhanvantri College of Nursing, Ganapathypuram,
No: 1 Renganoor road, Muniyappan Kovil,
Pallakkapalayam, (P.O), Sankagiri West, Namakkal (Dt).

Respected Sir/Madam

Sub: permission to conduct study- Regarding

Mr. Y. Shalin Gijo M.Sc (Nursing ) II Year student of Dhanvantri College of Nursing, Pallakkapalayam, as a partial fulfillment of master of science in nursing, He is to conduct a research and submit the dissertation work to the Tamilnadu Dr. M.G.R. Medical University, Chennai.

The Statement of the problem chosen for his study is “Compare Effectiveness of Aloe Vera Vs Silver Sulfadiazine application on wound healing among Burns Patients at Kanyakumari Government Medical College & Hospital, Asaripallam.

He is in need of your help and co-operation to conduct this research study among Burns patients in your esteemed hospital.

I request your kind office to permit her to collect the data from your hospital and allow my student to utilize the needed facilities.

I assure you that her study will not affect the routine work of your hospital nor it would harm the patients subjected for Aloe Vera dressing.

Kindly do the needful.

Thanking You,

Yours Sincerely,

Place:                                                                                                          Date:
Appendix-II

LETTER GRANTING PERMISSION TO CONDUCT STUDY

From
Mr. Y. Shalin Gijo,
M.Sc Nursing II year, Dhanvantri College of nursing,
Ganapathypuram, No: 1 Renganoor road,
Muniyappan Kovil, Pallakkapalayam, (PO),
Sankagiri west, Namakkal (Dt).

To
The Medical Superintendent,
Government medical college and hospital,
Asaripallam, K.K. Dist.,

Through
The Principal,
Dhanvantri College of Nursing, Ganapathypuram,
No: 1 Renganoor road, Muniyappan Kovil,
Pallakkapalayam, (P.O), Sankagiri West, Namakkal (Dt).

Respected Sir/Madam

Sub: MSc,(Nursing) student –research data collection regarding.

Mr. Y. Shalin Gijo M.Sc (Nursing ) II Year student of Dhanvantri College of Nursing, Pallakkapalayam, as a partial fulfillment of master of science in nursing, He is to conduct a research and submit the dissertation work to the Tamilnadu Dr. M.G.R. Medical University, Chennai.

The Statement of the problem chosen for his study is “Compare Effectiveness of Aloe Vera Vs Silver Sulfadiazine application on wound healing among Burns Patients at Kanyakumari Government Medical College & Hospital, Asaripallam.

He is in need of your help and co-operation to conduct this research study among Burns patients in your esteemed hospital.

I request your kind office to permit her to collect the data from your hospital and allow my student to utilize the needed facilities.

I assure you that her study will not affect the routine work of your hospital nor it would harm the patients subjected for Aloe Vera dressing.

Kindly do the needful.

Thanking You,

Place:                                                       Yours Sincerely,

Date:
Appendix-III

LETTER SEEKING EXPERT OPINION ON CONTENT

From

Mr. Y. Shalin Gijo,
M.Sc Nursing II year, Dhanvantri College of nursing,
Ganapathypuram, No: 1 Renganoor road,
Muniyappan Kovil, Pallakkapalayam, (PO),
Sankagiri west, Namakkal (Dt).

To

The Principal,
Dhanvantri College of Nursing, Ganapathypuram,
No: 1 Renganoor road, Muniyappan Kovil,
Pallakkapalayam, (P.O), Sankagiri West, Namakkal (Dt).

Respected Sir/Madam

Sub: Msc ,(Nursing) student – research data collection regarding.

Mr. Y. Shalin Gijo M.Sc (Nursing ) II Year student of Dhanvantri College of Nursing, Pallakkapalayam, as a partial fulfillment of master of science in nursing, He is to conduct a research and submit the dissertation work to the Tamilnadu Dr. M.G.R. Medical University, Chennai.

The Statement of the problem chosen for his study is “Compare Effectiveness of Aloe Vera Vs Silver Sulfadiazine application on wound healing among Burns Patients at Kanyakumari Government Medical College & Hospital, Asaripallam.

He is in need of your help and co-operation to conduct this research study among Burns patients in your esteemed hospital.

I request your kind office to permit her to collect the data from your hospital and allow my student to utilize the needed facilities.

I assure you that her study will not affect the routine work of your hospital nor it would harm the patients subjected for Aloe Vera dressing.

Kindly do the needful.

Thanking You,

Place:                                                                                                          Yours Sincerely,

Date:                                        Mr. Y. Shalin Gijo.

Enclosure:  1. Demographic data
               2. Burns wound healing observation scale
Appendix-IV

CONTENT VALIDITY CERTIFICATE

I hereby certify that I have validated the tool of **Mr. Y. Shalin Gijo** II year M.Sc. Nursing student of Dhanvantri College of Nursing, Pallakapalayam Namakkal (Dt), who is undertaking the dissertation work on “**Compare the effectiveness of Aloe Vera Vs Silver sulfadiazine application on wound healing among burns patient at Kanyakumari Government Medical College & Hospital, Asaripallam**”.

Signature of the Expert

Place:

Data:

Name & designation
APPENDIX-V

INFORMED CONSENT

Vannakam, I am 30109004 M.sc (N) II year student, studying in Dhanvantri College of Nursing, Pallakapalayam. As a part of my curriculum, I need to do the dissertation. From this study I will not harm you. Whatever information collected that should be in confidential. So I request you to kindly co-operate with me.

Section A: Selected Demographic variables.

Section B: Burns Wound Healing Observation Scale.
APPENDIX-VI

TOOLS FOR RESEARCH

SECTION -A

DEMOGRAPHIC DATA

1. Age in years
   a. 21-30 (  )
   b. 31-40 (  )
   c. 41-50 (  )

2. Gender
   a. Male (  )
   b. Female (  )

3. Burns percentage in TBSA
   a. Less than 10% (  )
   b. 11-20% (  )
   c. 21-30% (  )

4. Causes of burns
   a. Thermal (  )
   b. Chemical (  )
   c. Electrical (  )
5. Days of hospitalization
   a. On the day of incident ( )
   b. 2nd day ( )
   c. 3rd day ( )

6. Co morbid Factors
   a. Diabetes mellitus ( )
   b. Hypertension ( )
   c. None ( )
### BURNS WOUND HEALING OBSERVATION SCALE

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Parameters</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Colour</td>
<td>White</td>
<td>Pink</td>
<td>Red</td>
</tr>
<tr>
<td>2.</td>
<td>Consistency</td>
<td>Hard</td>
<td>Moderately hard</td>
<td>Soft</td>
</tr>
<tr>
<td>3.</td>
<td>Surface</td>
<td>Mostly irregular</td>
<td>Partially irregular</td>
<td>Smooth</td>
</tr>
<tr>
<td>4.</td>
<td>Pliability</td>
<td>Firm</td>
<td>Yielding</td>
<td>Supple</td>
</tr>
</tbody>
</table>

Based on the percentage of scores the level of wound healing was graded into 3 categories. They are Poor wound healing, Moderate wound healing and Good wound healing.

- Poor wound healing : 4-6
- Moderate wound healing : 7-9
- Good wound healing : 10-12
INTRODUCTION

Burn injuries are among the most devastating of all injuries and a major global public health crisis. Burns are among the most intensely painful injuries. All patients will experience pain, regardless of the cause, size, or depth of the burn. Despite advances in topical wound care and pharmacology, and a growing emphasis on palliative care, wound care is the main source of the pain associated with burn injury. People who get burned are very prone to infection. Potential signs of infection include Change in color of the burnt area or surrounding skin Purplish discoloration, particularly if swelling is also present, change in thickness of the burn (the burn suddenly extends deep into the skin) Greenish discharge or pus.

DESCRIPTION ABOUT ALOE VERA

Aloe Vera extracts may be useful in the treatment of wound and burn healing, minor skin infections, Sebaceous cyst, diabetes, and elevated blood lipids in humans. Aloe Vera may be effective in treatment of wounds. Aloe Vera promote healthy tissue growth by reducing the inflammation and killing bacteria
and other organisms. Its cooling effect offers instant relief from burns. Aloe seems to be able to speed wound healing by improving blood circulation through the area and preventing cell death around a wound.

**ARTICLES**

A tray containing
- Aloe Vera gel in a vessel
- Sterile burns care tray
- Kidney tray
- Mackintosh
- Gloves
- Mask
- Apron

**PROCEDURE**

The Aloe Vera gel is prepared by removing the outer part of Aloe Vera leaf and smashed the inner part, Then I explained the procedure to the patient after that burns care was given, then the Aloe Vera gel is applied on burns wound twice a day for 7 days in experimental group I.

**NURSES RESPONSIBILITY**

- Assess the percentage of burns in Total Burn Surface Area
- Assess the general condition of the patient.
- Provide strict aseptic technique throughout the procedure.
- Check for any allergy to Aloe Vera application
Record the procedure in the nurses record

DESCRIPTION ABOUT SILVER SULFADIAZINE

Silver Sulfadiazine is the most commonly used topical antibiotic agent for both ambulatory and hospitalized burned patients. This agent is a combination of Sodium Sulfadiazine and Silver Nitrate. The silver ion binds to the microorganism nucleic acid releasing the sulfadiazine which then interferes with the metabolism of the microbe. It is easy to use and painless when applied and can used with or without dressing

ARTICLES

A tray containing

➢ Sterile burns care tray
➢ Silver Sulfadiazine Ointment
➢ Kidney tray
➢ Mackintosh
➢ Gloves
➢ Mask
➢ Apron

PROCEDURE

Explained the procedure to the patient after that burns care was given, then the Silver Sulfadiazine ointment was applied on burns wound twice a day for 7 days in experimental group I.
NURSES RESPONSIBILITY

➤ Assess the percentage of burns in Total Burn Surface Area

➤ Assess the general condition of the patient.

➤ Provide strict aseptic technique throughout the procedure.

➤ Check for any complication to Silver Sulfadiazine like leucopenia.

➤ Record the procedure in the nurses record.
APPENDIX-VIII

LIST OF EXPERTS

1. Dr. Ramamani MD (Dermatologist),
   Government headquarters hospital,
   Erode.

2. Dr. Arul Amuthan MD siddha,
   Professor in Manipal University,
   Mangalore.

3. Mrs. Anuratha M.sc (N),
   Associate Professor,
   PSG College of Nursing,
   Coimbatore.

4. Mrs. Sumathi M.sc (N),
   Associate Professor,
   Vinayaka Mission Annapoorana College of Nursing,
   Salem.

5. Mrs. Lakshmi Prabha M.sc (N),
   Associate Professor,
   Vinayaka Mission Annapoorana College of Nursing,
   Salem.

6. Prof. Dhanapal,
   Bio- statistician,
   Dhanvantri College of Nursing,
   Pallakapalayam.
APPENDIX-IX

PHOTOGRAPHS

Photograph showing articles needed for Aloe Vera and Silver

Sulfadiazine application

Photograph showing interventions given by the investigator
ABSTRACT

Background: Burn injuries are among the most devastating of all injuries and a major global public health crisis. Burns are the fourth most common type of trauma worldwide, following traffic accidents, falls, and interpersonal violence. People who get burned are very prone to infection, potential signs of infection include Change in color of the burnt area, Purplish discoloration of the skin, swelling, Greenish discharge or pus, and Fever. Objectives: To compare the effectiveness of Aloe Vera Vs Silver Sulfadiazine application on wound healing among burns patients. Design: Quasi experimental where Factorial design was used. Setting: Kanyakumari Government Medical College & Hospital, Asaripallam. Sample size: Total sample size was 30 burns patients out of which 15 were experimental group I and 15 were experimental group II. Sampling technique: Purposive sampling technique. Methods: Experimental group I received Aloe Vera twice a day for 7 days, Experimental group II received Silver Sulfadiazine twice a day for 7 days. Pre test was done by using Burns wound healing observation scale and post test was done by using the same scale on the 8th day. Results: From the findings of the study it can be concluded that Majority (46%) of burns patients were in the age group of 21-30 years. Most (60%) of them are females. Highest Percentage (40%) of burns patients have 11-20% of Total burn Surface Area, All the burns patients are affected by thermal burns, Highest percentage (67%) of burns patient were admitted on the day of incident. Most
(73%) of burns patients have no co-morbid factors. The paired ‘t’ value for experimental group I and II was 15.8 and 18.8 respectively. The unpaired ‘t’ value was 2.58, The difference in the mean percentage in experimental group I and II was 6.6, In experimental group I significant association between post test scores of wound healing with their demographic variables like age, burns percentage in Total Burns surface Area, whereas In experimental group II burns percentage in Total Burns surface Area and co-morbid factors. **Conclusion:** Aloe Vera as well as Silver Sulfadiazine both can be used for wound healing among burns patients, But Silver Sulfadiazine was more effective than Aloe Vera on wound healing among burns patients.