EFFECTIVENESS OF CHLORHEXIDENE VERSUS HYDROGEN PEROXIDE MOUTH CARE ON LEVEL OF ORAL HYGIENE AMONG DEPENDENT PATIENTS AT SELECTED HOSPITALS, SALEM

By

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CERTIFICATE

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ABSTRACT

A Comparative study was conducted to Evaluate the Effectiveness of Chlorhexidene versus Hydrogen Peroxide Mouth Care on level of Oral Hygiene among Dependent Patients at selected hospitals, Salem. A Quasi Experimental pre and post test design was used. The 60 samples were selected through Non-Probability Convenience Sampling Technique among them 30 patients from Sri Gokulam Hospital were assigned as experimental group I (Chlorhexidene) and 30 patients from SKS hospital were assigned as experimental group II (Hydrogen peroxide). The level of oral hygiene was assessed by using observational checklist. After pre-assessment the experimental group I and II patients were received mouth care with chlorhexidene and hydrogen peroxide twice a day for 3 days respectively. Posttest was done for both the groups on 4^{th} day.

The findings reveals that in experimental group I and II 10(33.33%) and 11(36.7%) of them were aged between 41-50 years respectively. In experimental group I, 16(53.3%) and experimental group II, 17(56.7%) of them were males. In both experimental group I and II, 13(43.3%) and 9(30%) majority of them had neurological disorders. In experimental group I 23(76.7%) and in experimental group II 18(60%) of them had Nasogastric tube feeding. In experimental group I 22(73.3%) and in experimental group II 18(0%) of them were admitted between the duration of 12-24 hrs. In experimental group I 10(33.4%) and in experimental group II 7(23.2%) of them had no personal habit. During pretest in experimental group I 83.3%, and experimental group II 90% of them had average oral hygiene. In experimental group I and II pretest mean score was 19.43 ± 3.95, 18.83± 2.64 respectively. The posttest mean score for experimental group I and II was 31.93±5.38, 26.23± 2.78 respectively. The obtained 't' value was 9.72, which was significant at $P \leq 0.05$ level. Hence H_1 was retained. There was significant association ($\chi^2=10.47$) found between oral hygiene with duration of hospitalization in experimental group I at $P \leq 0.05$ level. Hence H_2 was retained only for this variable and rejected for all other variables in experimental group I and II. The study concludes that chlorhexidene mouth care was effective than hydrogen peroxide mouth care among dependent patients.

CHAPTER I

INTRODUCTION

"Oral health is just as important as getting a regular physical health .

And it's not just about getting a cavity filled, it's about the

overall health of the individual."

- Jennifer Williams

Health defines the concepts of physical, social, and spiritual well being. Among those the physical health remains as one of the essential components. Oral health one factor of the physical health is an essential component of health throughout the life. Poor oral health and untreated oral diseases and its conditions can have a significant impact on the quality of life. They can affect the most basic human needs including the ability to eat, drink, swallow, by which we can maintain proper nutrition, a smiling, pleasant face and good communication. **(NIDCR, 2010)**

Oral health is not only important to give a better physical appearance and sense of wellbeing, but also the over all health of a person. Cavities and gum disease may contribute to many serious conditions such as heart disease, diabetes mellitus, respiratory disease, pre mature low birth weight babies etc. **(Medical News Today, 2004).**

Functions of teeth is to masticate the food particles, to produce speech, sound, esthetics, serves protection and attachment. Teeth has various developmental changes according to the age factor. Aging cause colour changes and acquire stains in teeth.

Hospital need to be concerned over acquired infections. Acquired infections has captured much National media's attention over the past several years. Organizations have also focused their efforts on the prevention of infections. The Institute for Healthcare Improvement (IHI) in the year has served 2005 "100000 lives campaign" and then in the 2006 to 2008 "5 million lives campaign" focusing on

prevention of central line infections, ventilator associated pneumonia, and surgical site infections. Because of the increased focus on this topic from national organizations, hospitals have also increased their focus on the prevention of hospital acquired infections. **(Lori Laux, 2010)**

Oral hygiene is keeping the oral cavity i.e, the mouth and its accessory structures in a healthy condition. It helps to prevent nasocomial infections to a large extent. Many clients are elderly, undernourished, dehydrated, immunosuppressed and they also have history of smoking and alcohol or are intubated. Hence many different modalities are required to provide oral care. Literature suggests that tooth brush is an effective modality in the removal of plaques and they are superior to swabs.**(Loser,2009)**

Dental carries and periodontal disease can be controlled by regular tooth brushing with fluoride tooth paste. Oral health promotion which brings about the use of fluoride is more effective for reducing carries, oral health promotion has been effective for more than other methods of health promotion**. (Kay. E, Locker.D, 2001)**

Oral hygiene is a practice in order to maintain the tissues and structures of the mouth in a healthy condition. It includes brushing the tongue and teeth, to remove food particles, bacteria and plaque. Use of this method to remove is that by massaging the gums with a tooth brush, dental floss or water irrigator, to stimulate circulation and remove foreign matter and cleansing dentures and ensuring proper fit to prevent irritation dependent or unconscious patients are also assisted in maintaining a healthy oral condition, such care includes lubricating the lips and cleaning the inside of the cheeks, the roof of the mouth and the tongue. **(Karas. G, 2001)**

Poor oral hygiene allows the accumulation of acid producing bacteria on the surface of the teeth. The acid demineralizes the tooth enamel which causes tooth decay. Dental plaque can also invade and infect the gums causing gum diseases and periodontitis.

Poor oral health cause the pain, discomfort, limitation of food intake which ultimately leads to poor nutrition. Risk groups include people with disability, those in long term institutional care, homeless people may face increased risk of oral disease. **(Dept. of Health Annual Report,2007)**

NEED FOR THE STUDY

Oral health is now seen as a preventive measure that helps maintain health and contributes to good looks and quality of life. Various studies have revealed that one cannot be said to have good health without proper oral health. The concept of dental health under the theme "Health for all by 2025 A.D" is a significant issue among human beings because 95% of all human beings have one or other dental problems at least once in their life time. **(Kanmani. D, 2011)**

One of the technical programmes within the department of non-communicable disease prevention and health promotion (NPH) have been reoriented according to the new strategy of disease prevention and promotion of health. Greater emphasis is put on developing global policies in oral health promotion and also oral disease prevention. These programmes are coordinated more effectively with other priority programmes of NPH and other clusters along with external partners. **(World Oral Health Report,2003)**

Emerging evidence have shown a strong link between the effects of chronic oral inflammation and general health. The mouth is the visible gateway to the rest of the body and reflects what is happening deep inside. Periodontal disease has been

linked to systemic disease and impact on oral health. In fact, there are over 100 systemic diseases such as cardiovascular disease, stroke, respiratory infections, pancreatic cancer, diabetes, nutritional problems, etc., that have oral manifestations. This is a bidirectional relationship and the link is inflammation. Oral health problems can have adverse effect on the quality of life and are more prevalent in older adults, but are not caused by aging. Studies indicate that resident with good oral care require less health care dollar expenditures. **(Hauschild RJ, 2010)**

Oral health protocols are mainly based on the daily removal of bacterial plaque from teeth or prostheses (or both), cleaning of oral mucosa, and continual oral hydration. These practices are facilitated by the use of electric toothbrushes and products such as chlorhexidene, fluoride toothpastes, and rinse or gels. This type of protocol should include regular collaboration with dental professional and provide a program of continuous training for nursing staff on oral health issues. **(Gil-Montoya JA, 2006)**

Intubated patients are totally dependent on their caregiver. They cannot control their secretions, brush their teeth and close their mouth. They are completely helpless and require total care for all bodily function. Plaque buildup on teeth and dental surfaces, requires mechanical elimination to eradicate the proliferation and successive colonization of bacteria. Oral care once a day is not sufficient to maintain a healthy environment for these patients. Intubated patients require frequent oral care, including brushing of teeth at the beginning and at the end of the day, just like every one else. The addition of antiseptic rinses and moisturizer will also support a healthy environment. **(Jones DJ, 2009)**

Provision of oral hygiene in critically ill patient is important, because oropharyngeal morbidity can cause pain and dysphagia. Oral hygiene is integral to the prevention of ventilator associated pneumonia. **(Ford SJ, 2008)**

There is an ongoing research on the best method of providing oral care to clients in the intensive care unit, and yet there is no evidence to determine the most appropriate method of oral care. There are many hindrances in providing oral care. Some of the barriers are,

i. mechanical barriers & equipment issues

ii. perceptions in importance of mouth care.

iii. altered sensory perception & discomfort of patient

iv. difficulties in patient communication.

In spite of these challenges, opportunities for collaborative research & increasing expertise in nursing research creates a conducive climate to derive solution to these factors. **(Berry AM, 2006)**

Chlorhexidine gluconate (Peridex, 0.12%) is the antibacterial agent of choice to control oral pathogens. Other essential oil based products are available, but are less effective. Although chlorhexidine gluconate is more effective in reducing the burden of oral bacteria, it has significant negative side effects, including staining of the teeth and alteration of taste. Adherence to the protocol can be problematic. Chlorhexidine gluconate is only available by prescription. Patients should be advised to rinse twice per day with 0.5 oz (one capful) for 30 second per rinse. This product should be used only for a 30 day period, every 3 months, because substantivity provides ongoing action. **(David. P, et.al, 2006)**

The investigator during her clinical experience has seen many dependent patients develop respiratory tract infection, ventilator associated pneumonia and has inflammation related to oral hygiene practices. The investigator has thus decided to compare the chlorhexidene solution and hydrogen peroxide solution in promotion of oral hygiene among dependent patients.

Statement of the Problem:

A Comparative Study To Evaluate The Effectiveness Of Chlorhexidene Versus Hydrogen Peroxide Mouth Care On Level of Oral Hygiene Among Dependent Patients At Selected Hospitals, Salem.

Objectives:

- To assess the level of oral hygiene among dependent patients at selected hospital in experimental group I and II.
- To compare the effectiveness of chlorhexidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I and II.
- To associate the level of oral hygiene in experimental group I and II among dependent patients with their selected demographic variables.

Operational Definition:

Effectiveness:

It refers to significant improvement in oral hygiene as determined by significant change in level of oral hygiene after given a mouth care with specific solution for a period of 3 days.

Chlorhexidine Solution:

It is an antiseptic agent which causes increased resistance of oral bacteria even at lower concentration.

Hydrogen Peroxide:

It is an anti-septic solution which is used to clean the mouth to maintain a healthy state in oral cavity.

Mouth care:

It is a procedure to clean the oral cavity with the help of anti-septic solution.

Dependent Patient:

A patient who is bedridden and unable to do mouth care by ourselves in critical care units at selected hospital.

Oral Hygiene:

It is a condition of the mouth characterized by cleanliness of teeth, tongue, palate, gums, roof of mouth, cheeks and lips inorder to maintain the oral cavity in healthy state.

Assumptions

- Dependent patients may have poor oral hygiene.
- Chlorhexidene and hydrogen peroxide mouth care solution may have good effect on promotion of oral hygiene in dependent patients.

Hypotheses

H_1: There will be significant difference between chlorhexidene and hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II at $p \leq 0.05$ level.

H_2: There will be significant association between the level of oral hygiene among dependent patients in experimental group I & II with their selected demographic variables at $p \leq 0.05$ level.

Delimitation:

1. The study was limited to dependent patients who are admitted in critical care unit at selected hospitals.
2. The sample size was limited to 60 samples.
3. The study period was limited to 4 weeks.

Projected Outcome:

- Mouth Care will improve the level of oral hygiene among dependent patients .
- It helps to promote well being among dependent patients .
- It helps to reduce the hospital acquired infection among dependent patients.

Conceptual Framework:

Conceptual models are made up of concepts, which are words describing mental images of phenomena and proportions which are statements about concepts. It provides a schematic representation of some relationship among phenomena.

Ernestine Widenbach's proposed a prospective theory for nursing which is described as conceiving of a desired situation and the ways to attain it. Prescriptive theory directs action towards an explicit goal.

According to this theory, nursing practice consists of 3 steps which include,

Step-1 Identifying the need for help.

Step-2 Ministering the needed help.

Step-3 Validating the need for help was met.

Step-1: Identifying the need for help:

The investigator identified that dependent patients needs good oral hygiene.

Step-2: Ministering the needed help:

This refers to the provision of required help for the identified need. It has two components:

1. Prescription
2. Realities

Prescription:

It refers to planning of care to achieve the objectives. The investigator assessed the level of oral hygiene among dependent patients by using the checklist for assessing the oral hygiene.

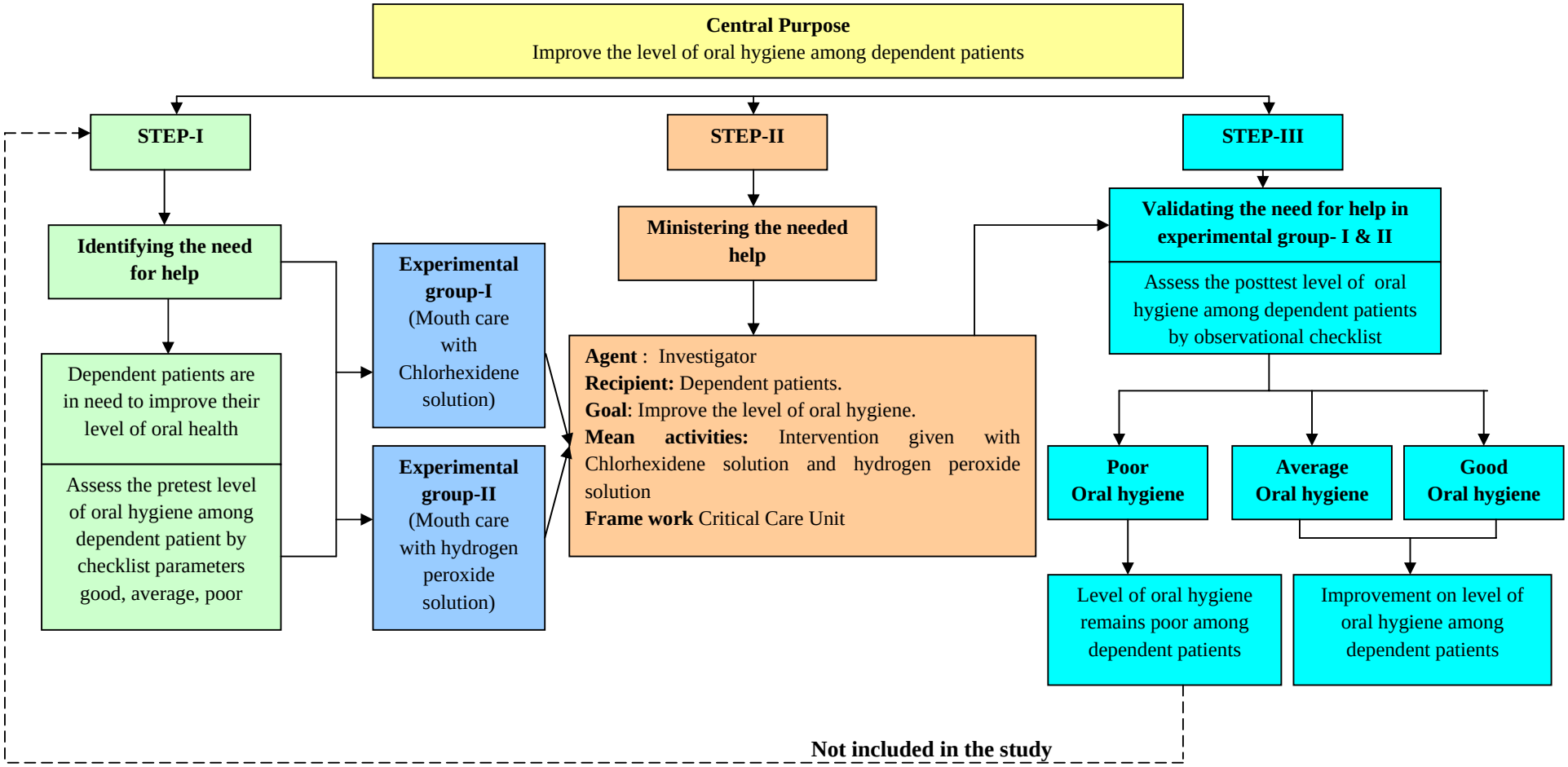
Realities:

It refers to the factors that come in to play in a situation involving nursing actions. Includes,

Agent	Investigator.
Recipient	Dependent patients.
Goal	Improving the level of oral hygiene.
Mean Activities	Administration of mouth care with chlorhexidene solution and Hydrogen peroxide solution.
Framework	Intensive care unit.

Step-III: Validating the need for help was met:

It refers to the collection of evidences that shows from the level of oral hygiene among dependent patients. The validation is done by analyzing the findings the investigator categories the oral hygiene as poor, average, good by using checklist.



FIG–1.1: Conceptual Framework Based on Modified Wiedenbach's Helping Art of Clinical Nursing Theory (1964)

SUMMARY:

This chapter dealt with the introduction, need for study, statement of the problem, objectives, hypothesis, operational definition, assumptions, delimitations, projected outcome, and conceptual frame work.

CHAPTER II

REVIEW OF LITERATURE

A literature review involves the systematic identification, location, scrutiny and summary of written materials that contain information on a research problem. **(Polit and Hungler, 2008)**

The available literature was organized under the following headings.

1. Literature related to importance of oral hygiene
2. Literature related to complication due to neglected oral care
3. Literature related to mouth care solution used for oral hygiene
4. Literature related to nursing practice in the management of oral hygiene.

1. Literature related to importance of oral hygiene:

Constance J. Cutler. RN, et.al., (2011) conducted a observational study on improving oral care in patients receiving mechanical ventilation at 5 acute care hospitals. Time blocks of 4 hours were randomized over 8 intensive care units and the 7 days of the week. Baseline data were collected before implementation of multifaceted education on an oral-cleansing protocol; interventional data were collected afterward. Oral care practice was observed for 253 patients during the baseline period, oral cleansing was primarily via suction swabs. Tooth brushing and moisturizing of the oral tissues was not observed. Only 32% of the patients had suctioning to manage oral secretions. During the interventional period, 33% of patients had their teeth brushed, 65% had swab cleansing, and 63% had a moisturizer applied to the oral mucosal tissues. A total of 61% had management of oral secretions; 38% had oropharyngeal suctioning via a special catheter. The study concluded that implement of an evidence based oral cleansing protocol improved the oral care of patients receiving mechanical ventilation.

Karen Stonecyper RN, MSN, CRRN, (2010), conducted a study on importance of oral care in intubated adults. Intubated patients are totally dependent on the nurse who delivers care to them. They can't control their secretions and brush their teeth. They are completely helpless and require total care for all bodily functions. Plaque buildup on teeth and dental surfaces requires mechanical elimination to eradicate the proliferation and successive colonization of bacteria. Oral care once a day, will not enough to maintain a healthy environment in dependent patients. Intubated patients require frequent oral care to include the brushing of teeth at the beginning and at the end of the day, just like every one else. In addition of an antiseptic rinse and moisturizer will also support a healthy environment.

Forestier C, et.al, (2008) conducted a prospective, randomized, double blind, placebo-controlled study between March 2007 and October 2008 in intensive care unit at for Clermont-Ferrand, France on oral probiotic and prevention of Psudomonas aeruginosa infection. In that the occurrence of Psudomonas aeruginosa respiratory colonization was significantly delayed in the probiotic group, with difference in median delay to acquisition of 11 days versus 50 days (p=0.01) and a non acquisition expectancy mean of 69 days versus 77 days (p=0.01). Also Ventilator associated pneumonia due to Psudomonas aeruginosa in patients receiving the probiotic was less frequent (2.9%) compared to placebo group (7.5%).

Kokubu.K, et.al, (2008) conducted a study to find the impact of routine oral care on opportunistic pathogens in the institutionalized elderly. Twenty five elderly subjects participated in the study. Caregivers and dental hygienists cleaned the mouth by routine and professional oral care techniques opportunistic pathogens were collected in oral cavity by using cotton swab. The species of microbes were determined. The result revealed that professional oral care was effective for reducing

infections. This shows that the importance of regular oral care in cleaning hard and soft surfaces of the oral cavity improves oral health in institutionalized elderly.

Montal S, (2006) conducted a cross sectional study on importance of oral hygiene among sample of 321 elderly patients from 2003-2004 at various geriatric services of Montpellier, France. The mean number of decayed teeth was 3.7 for men 2.8for women most of the subject needed prostheses (53%), 45.1% extractions and 30.6% conservative treatments. From above report concluded that the prevalence of edentulism was relatively low while the need for prosthodontic rehabilitation. This evaluation emphasis the care demand and need for oral hygiene for elderly institutionalised patients.

2. Literature review related to complication due to neglected oral care:

Settineri S, et.al, (2010) conducted a study on self reported halitosis and emotional state, impact of oral conditions and treatments in Italian subjects (N=1052; range 15-65years). A self reported questionnaire was used to detect the self reported halitosis and other variables possibly linked to it, and a dental anxiety scale divided into two subscales that explore a patients dental anxiety and dental anxiety concerning dentist- patient relations. The rate of self reported halitosis was 19.39%. Halitosis require professional care not only by dentists, but also psychological support as it is a problem that leads to avoidance behaviors and there by limits relationships. It also linked to poor self care.

Koeman M, et.al., (2006) conducted a study on oral decontamination with chlorhexidene reduces the incidence of ventilator-associated pneumonia. Trial medication chlorhexidene, chlorhexidene / colistin and placebo (PLAC) was applied every 6 hours into the buccal cavity. Oropharyngeal swabs were obtained daily and quantitatively analyzed for gram-positive and gram negative microorganisms.

Endotracheal colonization was monitored twice weekly. The daily risk of Ventilator associated pneumonia was reduced in both treatment groups compared with placebo group 65% confidence interval for chlorhexidene and 55% for chlorhexidene / colistin. Chlorhexidene / colistin provided significant reduction in oropharyngeal colonization with both gram negative and gram positive microorganisms. Topical oral decontamination with chlorhexidene or Chlorhexidene / colistin reduces the incidence of Ventilator associated pneumonia.

Dennesen. P, et.al, (2003) conducted a prospective study on inadequate salivary flow and poor oral mucosal status in intubated intensive care units patients at department of medical microbiology, Netherland. In this study, 24 ventilated intensive care unit patients and 20 Coronary artery bypass graft patients were included. The dental hygienist examined the presence of periodontal disease and mucositis at admission and subsequently every week during their stay in ICU. At the same time, stimulated salivary flow and salivary total immunoglobulin A output were measured. Oropharyngeal culture obtained Coronary artery bypass graft patients were examine the day before the operation, 1 day, 1 week and 2 weeks after surgery. The result showed,

a. Temporarily reduced post operative stimulated salivary flow and total salivary immunoglobin A output in coronary artery bypass graft patients and nearly absent stimulated salivary flow in intensive care unit patients.
b. Oropharyngeal colonization with potentially pathogenic micro organisms in intensive care unit and not in coronary artery bypass graft patients.
c. Increase in mucositis index and oropharyngeal colonization in intensive care unit.

Absence and adequate salivary flow in intensive care unit patients cause severe xerostomia which contribute to development of mucositis and oropharyngeal colonization with gram negative bacteria.

3. Literature review related to Mouth care solution used for oral hygiene:

Escribano M, et.al, (2010) conducted a randomize, double blinded placebo controlled clinical trial study on efficacy of a low-concentration chlorhexidine mouth rinse in non-compliant periodontitis patients attending a supportive periodontal care programme. Forty-seven patients (22 placebo and 25 test group) participated. After 3 months, plaque levels increased in the placebo group, while diminished in the test group ($p<0.001$). Similar effects were found for bleeding on probing. The other clinical parameter did not show significant differences. Microbiological variables demonstrated inter-group significant reductions in subgingival counts of fusobacterium nucleatum and prevotella intermedia and a decrease of the total bacterial counts in saliva.

Sowmya Mohan Das, (2010) conducted a study to assess the effectiveness of povidone Iodine mouth care on oral hygiene among intubated patients at selected hospital, Kerala. The study was conducted over one month 60 patients were participated among 30 patients assigned to experimental group and 30 patients were assigned to control group. Oral care given with povidone iodine solution in experimental group for four days, whereas in control group patients didn't had standard oral care as per hospital policy. The "t" value was 6.55, which is significant at $P\leq0.05$ level. The result showed there was effectiveness of povidone iodine mouthcare on oral hygine among intubated patients than control group.

Attia. ML, (2010) conducted a study on effect of coffee solution on tooth color during home bleaching application. 40 enamel slabs were obtained from seven unerupted third human molars and seven bovine incisors, which are allocated into four group, group I human control group whitened and not exposed to a coffee solution. Group II bovine control group whitened and not exposed to coffee solution. Group III human control group whitened and exposed to coffee solution. Group IV bovine teeth whitened and exposed to a coffee solution. The home bleaching procedure was performed for 28 days. Tooth color was evaluated by using photoreflectance analysis at intervals of 7, 14, 21, and 28 days and posttreatment at 7, 15 and 30 days. The result showed the teeth were exposed to a coffee solution during home bleaching treatment. The whitening effect is greater than not exposed to a coffee solution.

Wien Klin Wochenschr, (2010) conducted a randomized placebo controlled study on impact of oral health and 0.2% chlorhexidene oral gel on the prevalence of nosocomial infections in surgical intensive care patients in University Hospital, Dubrava. The study included 60 nondentulous patients consecutively admitted to the surgical ICU and requiring a minimum stay of three days. After randomization, the treatment group underwent antiseptic decontamination of dental plaque and the oral mucosa with chlorhexidene gel. The control group was treated with placebo gel. Dental status was assessed using a caries absent occluded (CAO) score, and the amount of plaque was assessed using a semi-quantitative score. The plaque score significantly increased in the control group and decreased in the treated patients. The control group showed increased colonization by aerobic pathogens throughout their ICU stay and developed nosocomial infections (26.7%) significantly more often than the treated patients (6.7%). Oral decontamination with chlorhexidene significantly

decreased oropharyngeal colonization, the incidence of nosocomial infections, length of ICU stay, and mortality in these patients.

Baca P,et.al, (2009) conducted a randomized double blind clinical trial study on effect of chlorhexidine-thymol varnish on root caries in a geriatric population. The study was conducted with 68 subjects (34 per group) at two residences in Almeria, Spain. Twenty-one subjects with 60 root caries lesion and 25 with 65 lesions, in the cervitec and placebo group respectively, completed the study. Varnishes were applied twice in the first week, 1month later, and every 3 months until the end of the study. The clinical evolution of lesions was significantly better in the cervitec group as opposed to the placebo group in terms of width, height, color, and texture. According to these results, cervitec may help to control established root lesions and reduce the incidence of root caries lesion among institutionalized elderly.

Panchabnai, T.S, (2009) conducted a study on oropharyngeal cleansing with 0.2% chlorhexidine for prevention of nosocomial pneumonia in critically ill patients on open label randomized trial with 0.01% potassium permanganate as control group oral care was given twice daily. Totally 500 patients involved 0.2% chlorhexidine solution result showed reduction of nosocomial pneumonia during the study period suggests a possible benefit of meticulous on oral hygiene in ICU patients.

Tantipong.H, (2008) conducted a randomized controlled trial study to oral decontamination with chlorhexidene solution for the prevention of ventilator associated pneumonia in intensive care units and general medical wards, patients to receive oral decontamination with cholorhexidene and normal saline solution four times per day. The result showed incidence of ventilator associated pneumonia in cholorhexidene was 4.9% (5 of 102) and incidence in normal saline group was 11.4% (12 of 105). This showed oral decontamination with cholorhexidene solution was an

effective and safe method for preventing ventilator associated pneumonia in patients in intensive care units.

Bopp.M, (2006) conducted a study on effects of daily oral care with 0.12% chlorhexidene gluconate and a standard oral care protocol on the development of nosocomial pneumonia in intubated patients in critical care units. The study was conducted over the 7 months. Intensive care unit patients were identified through screening and informed consent procedures and randomized into 1 of 2 groups. oral care given with 0.12% chlorhexidene gluconate for twice daily in experimental group. Control group received the standard oral care by hydrogen peroxide. Oral care was performed by the nursing staff. The number of persons developing nosocomial pneumonia was monitored until hospital discharge. One person out of 3 in the control group was discharged from hospital with nosocomial infection. The result revealed that twice, daily oral hygiene care with 0.12% chlorhexidene gluconate may reduce the risk of nosocomial infection in intubated patients more than the 10 times daily standard oral care with hydrogen peroxide.

C.Jayanthi, (2006) conducted a comparative study to assess the effectiveness of fresh mint versus normal saline solution on promoting oral hygiene among dependent patients. The study was conducted over one month 60 dependent patients were participated among 30 patients were assigned to experimental group and 30 patients were assigned to experimental group II. Mouth care was given daily for 5 days in both groups. The “t” value was 7.22, which is significant at $P \leq 0.05$ level.The result showed that significant effectiveness in fresh mint solution than normal saline on oral hygiene. Therefore a fresh mint solution could be provided for the dependent patients to enhance the oral hygiene level. It promotes the use of fresh mint solution to

minimize the requirement for narcotic analgesics, antiseptic and its comparatively cheap and readily available even in the local community.

Mc-Combs, (2006) conducted a study to compare the effects of 0.12 chlorhexidine and herbal oral rinse on dental plaque induced gingivitis. 63 participants were randomly assigned to one of 3 treatment group chlorhexidine herbal rinse. Participants rinsed twice daily with half ounce of allocated rinse after brushing and flossing. The result showed chlorhexidine was the only oral rinse to demonstrate a statistically significant effect on the reduction of mean gingival index, bleeding on probing and plaque index when compare to placebo.

A. Fourrier. F, et.al, (2005) conducted a double blind study on effect of gingival & dental plaque antiseptic decontamination on nosocomial infections acquired in the ICU. Antiseptic decontamination of gingival & dental plague 0.2% chlorhexidine gel or placebo gel, 3 times a day, during the entire ICU stay. Demographic and clinical characteristics, severity of condition & dental plague status score assessed all base line and until 28 days. Bacteriolgic, sapling of dental plague & saliva was done every 5 days & blood culture, tracheal aspirate, & bronchoalveolar larvae cultures were performed when appropriate. All baseline characteristics were similar between the treated & the placebo groups the incidence of nosocomical infections was 17.5 increased in the place to group. 18.4% in the placebo group & 18.4% in the plague antiseptic decontamination group difference was observed in the incidence of VAP per ventilator, mortality, length of stay, & care local, on day 10, the number of vegetal plaque cultures was significantly lower in the treated group 29% vs, 66% in placebo group at $p \leq 0.05$. Its effect was sufficient to reduce the incidence of respiratory infections due to multi resistant bacteria.

4. Literature related to nursing practice in management of oral hygiene

Dekeyser Ganz.F, et.al, (2009) conducted a study on intensive care unit nurses regarding oral care practices and the current best evidence in intensive care unit by convenience sampling technique. 28 intensive care unit nurses were participated. The survey instrument included questions about demographic and professional characteristics and a checklist of oral care practices. Nurses rated their perceived level of priority concerning oral care on a scale from 0 to 100. A score was represented the sum of 14 items related to equipment. The result revealed that the most commonly used equipment was gauze pads (84%) followed by tongue depressor (55%), chlorhexidene was most common solution used (75%), less than half (44%) reported brushing. Therefore attempts should be made to encourage all intensive care unit nurses to introduce and use evidence based oral care protocols.

Ross.A, (2007) conducted a study on impact of an evidence based practice education program on the role of oral care in the prevention of ventilator associated penumonia. The result revealed that improvement in oral health was demonstrated by a decrease in median scores on the oral assessment guide pre test 11.0, post test 9.0. The ventilator associated penumonia rates decreased by 50% following the evidence based practice education intervention. The implementation of an evidence based practice educational programme focused on patient outcome rather than a task to be performed, improved the quality of oral care delivered by the nursing staff.

Rello.J, (2007) conducted a study on oral care practices in intensive care units in 59 European intensive care units. Questionnaire was distributed to representatives of European intensive care units. Results were obtained from 59 intensive care units. In that 77% respondents reported that they had received adequate training on providing oral care. Most of them 93% expressed the desire to learn more about oral

care. Oral care was perceived to be high priority independent patients 88%. Oral care practices are carried out once daily 20%, twice 31% or three times 37%. The result reveals that oral care consider very important in intensive care units with use of solution and manual tooth brushes.

Gil-Montoya, (2006) conducted a study on oral health protocol for dependent institutionalized elderly. The study revealed that oral health protocols are mainly based on the daily removal of bacterial plaque from teeth. Cleaning oral mucosa, and oral hydration, these practices facilitated by use of electric tooth brushes and products such as chlorhexidene, fluoride and tooth paste this type of protocol showed, regular collaboration with dental professionals and provide a program of continuous training for nursing staff on oral health issues.

Hanneman. S.K, (2005) conducted a study on frequency of oral care and positioning of patients in critical care unit in University of Texas School of Nursing at Houston. The study was conducted in 9 intensive care units. The survey data from nursing personnel and bedside observational data were collected. The result revealed frequencies of oral care and use of oral products differed between non intubated and intubated patients that the mean documented frequency of care was 3.3, standard deviation 1.8, self reported frequency was 4.2. The mean documented frequency of oral care for non intubated patients was 1.8, standard deviation 1.5. Self reported frequency was 3. Nurses report more frequent oral care than is documented. It revealed that frequency of oral care and positioning will improve the oral hygiene.

CHAPTER III

METHODOLOGY

This chapter designed to evaluate the effectiveness of chlorhexidene versus hydrogenperoxide mouth care on level of oral hygiene among dependent patients. This chapter comprises research design, description of setting, variables, sample, population, sampling technique, sample size, criteria for sample selection, description of tool, validity & reliability, data collection procedure, pilot study & data analysis method.

Research Approach

Quantitative Evaluative Research Approach was adopted for this study.

Research Design

The research design selected for this study was Quasi experimental pre and posttest without control group design. The design can be represented as,

E_1 O_1 X_1 O_2

E_2 O_1 X_2 O_2

E_1: Experimental group I (Dependent patients who admitted in critical care unit of Sri Gokulam Hospital)

E_2: Experimental group II (Dependent patients who admitted in critical care unit of SKS Hospital)

O_1: Pre-test (Assessment of oral hygiene by using check list)

O_2: Post-test (Assessment of oral hygiene by using checklist)

X_1: Mouth care with chlorhexidene solution

X_2: Mouth care with hydrogen peroxide solution.

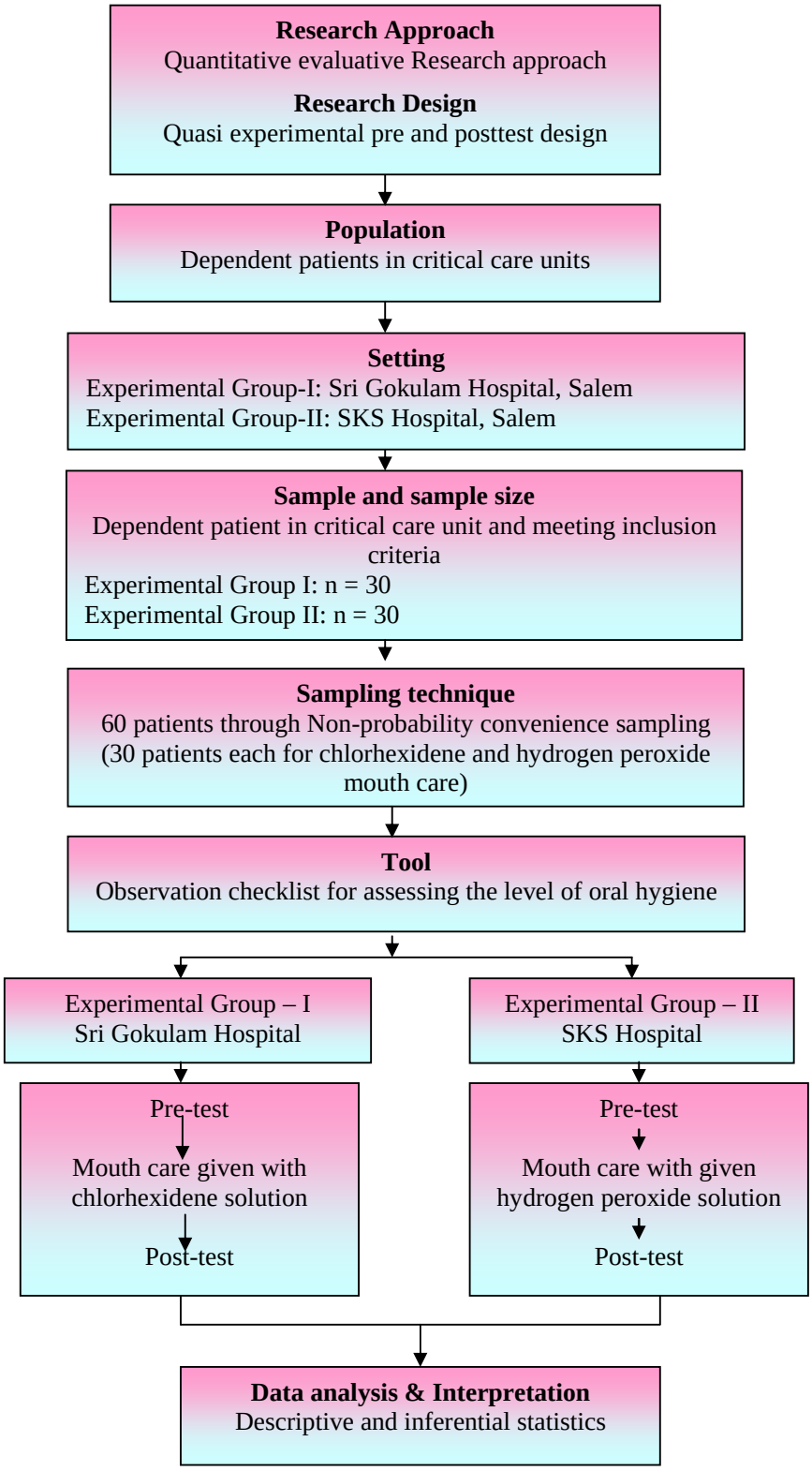


Figure – 3.1: Schematic Representation of Research Methodology

Population

In this research study population consists of patients who are admitted at Sri Gokulam Hospital and SKS Hospitals critical care units.

Description of Setting

The study was carried out in Sri Gokulam Hospital and SKS hospital, Salem. Sri Gokulam Hospital is a 330 bedded hospital. It has various departments like Critical Care Unit, Neonatal Intensive Care Unit, Trauma Intensive Care Unit and Intermediate Medical Care Unit. It is about 1 km away from New Bus stand, Salem. The monthly census report in Critical Care Unit is 40 – 50 patients per month. Another setting was SKS hospital, it is 160 bedded hospital with various department like Critical Care Unit and Neonatal Intensive Care Unit . It is about 500 meter away from New Bus Stand, Salem. The monthly census report in Critical Care Unit is 20 – 30 patients per month. The patients from Sri Gokulam Hospital was considered as experimental group I (Chlorhexidene mouth care) and patients from SKS Hospital was considered as experimental group II (hydrogen peroxide mouth care). The investigator selected these setting for the availability of the sample and the feasibility of the study.

Sampling

- **Sample:**

  Sample consists of patients who are admitted in critical care units at Sri Gokulam Hospital and SKS Hospital, Salem, during the study period and those who met inclusion criteria.

- **Sample size**

  The investigator selected 60 dependent patients among them 30 patients from Sri Gokulam Hospital were assigned to experimental group I,

(Chlorhexidene solution) and 30 patients from SKS Hospital were assigned to experimental group II (Hydrogen peroxide solution).

- **Sampling technique**

  Non probability convenience sampling technique was used in this study. The investigator selected the patients whoever admitted in critical care units during the study period and those who were fulfilling the sampling criteria.

- **Criteria for sample selection**

  The sample selection is based on following inclusion and exclusion criteria.

  Inclusion Criteria:

  1. Dependent patients aged between 20-70 years.
  2. Patients who are available during data collection period.

  Exclusion criteria:

  1. Patient who undergone oral surgery.
  2. Patient who had mandible fracture.
  3. Patient who have oral infection.
  4. Patients who have dentures.

Description of variables

Independent variable: Chlorhexidene solution and hydrogen peroxide solution.

Dependent variable : Oral hygiene among dependent patients.

Extraneous variables:

Extraneous variables are age, sex, disease condition, type of feeding, duration of hospitalization & habits.

Description of tool

It consists of following sections,

Section -A:

The demographic variables such as age, sex, diagnosis, types of feeding, duration of hospitalization, personal habits.

Section-B:

The assessment of level of oral hygiene by using observational checklist. It consists of observation of lips, teeth, gums, tongue, smell, saliva, and roof of the mouth. According to the categories the scores were given.

Table – 3.1: Scoring procedure

Category	Scoring
Lips	
Moist, smooth	5
Rough, dry	4
Rough, dry with crust formation	3
Rough, dry with crust formation tend to bleeding	2
Very dry with cracks, bleed easily	1
Teeth	
Clean no debris, no discolouration	5
Clean with mild yellow discolouration no debris	4
Yellow discolouration with minimal debris	3
Yellow discolouration with incompletely covered with debris	2
Almost completely covered with debris	1
Tongue	
Moist, roughness pink	5
Moist and mild coated	4
Dry slightly with mild coating	3
Patchy, fissured, red, coated	2
Patch that is red or white, ulcer, swollen	1

Gums	
Pink, moist, smooth, no bleeding	5
Smooth, moist with debris	4
Rough dry with debris	3
Rough, dry ulcer / red swollen, tend to bleeding	2
Very dry with bleeding, swollen, ulcer	1
Smell	
No unpleasant smell	5
Slightly unpleasant	4
Strongly unpleasant	3
Untolerable smell present	2
Foul smell present (halitosis)	1
Saliva	
Moist tissues, watery and free flowing saliva	5
Moist with slight debris	4
Moist with Moderate debris	3
Dry, sticky tissues, dry mouth, little saliva	2
Tissue parched and red very little, no saliva, saliva as thick.	1
Roof of mouth	
Moist no debris	5
Moist with debris	4
Slightly dry no debris	3
Dry and debris	2
Very dry, rough almost covered with debris	1
Total score	**35**

Scoring key

7 – 15 : Poor

16 – 24 : Average

25 – 35 : Good

Validity and Reliability of the Tool

Validity:

The tool was validated by 2 medical experts in the field of general medicine and 5 nursing experts in the field of Medical surgical nursing. Modifications given by experts were incorporated.

Reliability:

Reliability of the tool was established by inter rater method and it was found $r'=0.94$ which shows that the tool was reliable. Hence the tool was considered for proceeding.

Pilot Study

Pilot study was conducted from 27.06.11 to 03.07.11 to find out the feasibility. It was conducted after obtaining the formal permission from concern authority of the Vinayaka Mission Hospital and Pranav Hospital. Six samples were selected in both hospital by non probability convenience sampling technique, three samples were selected from Vinayaka Mission hospital, Salem for mouth care with chlorhexidene solution and three were selected from Pranav hospital, Salem for mouth care with hydrogen peroxide solution. The collected data were analysed by using descriptive statistics. The pilot study revealed that the tool was feasible and practicable.

Method of Data Collection

Ethical consideration:

Prior to collection of data written permission was obtained from Managing Director of Sri Gokulam Hospital and General Manager of SKS Hospital, Salem. Informed consent was obtained from patient relatives.

Data collection procedure:

The data was collected over a period of 4 weeks from 12.07.11 to 07.08.11. The investigator selected 60 patients, in that 30 patients from Sri Gokulam Hospital, Salem were selected for experimental group I, 30 patients from SKS Hospital, Salem were selected for experimental group II through Non probability convenience sampling technique. First the investigator introduced herself to the patients and explained the purpose of the study. After obtaining the consent from the patient relatives, the investigator assessed the pretest level of oral hygiene by using observational checklist in experimental group I and II respectively. In experimental group I mouth care given by chlorhexidene solution twice a day for 3 days. In experimental group II mouth care given with hydrogen peroxide solution twice a day for 3 day. Fourth day morning again posttest level of oral hygiene was assessed for both group by using same observational checklist. The collected data was analyzed by using descriptive and inferential statistics.

Plan for Data Analysis

Descriptive statistics (frequency, percentage, mean and SD) was used to assess the level of oral hygiene. Inferential statistics of 't' test was used to findout the effectiveness of mouth care solutions and chi-square test was used to findout the association between the level of oral hygiene and their selected demographic variables.

Summary

This chapter dealt methodology which consists of research approach, research design, population description of setting, variables, sample, sampling technique, sample size, criteria for sample selection ,description of tool, validity & reliability, data collection procedure, pilot study & data analysis method.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of chlorhoxidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients who admitted in critical care units. The collected data was tabulated, organized and analyzed by using descriptive & inferential statistics as follows,

Section-A:

Distribution of patients according to their demographic variables.

Section-B:

Distribution of patients according to pretest score on level of oral hygiene among dependent patients in experimental group I & II.

Section-C:

a) Distribution of patients according to posttest score on level of oral hygiene among dependent patients in experimental group I & II.
b) Comparing the effectiveness of chlorhexidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II.

Section-D: Hypothesis testing

a) Effectiveness of chlorhexidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II.
b) Association on level of oral hygiene among dependent patients in experimental group I & II with their selected demographic variables.

Section A

Distribution of patients according to their demographic variables

Table-4.1: Frequency and percentage distribution of patients in experimental group I and II according to their demographic variables.

n=60

S. No	Demographic variables	Experimental Group I n=30		Experimental group II n=30	
		f	%	F	%
1	Age in years				
	a.21-30	-	-	5	16.7
	b.31-40	9	30.0	7	23.3
	c.41-50	10	33.3	11	36.7
	d.51-60	9	30.0	7	23.3
	e.61-70	2	6.7	-	-
2	Sex				
	a. Male	16	53.3	17	56.7
	b. Female	14	46.7	13	43.3
3	Diagnosis				
	a. Neurological disorder.	13	43.3	9	30.0
	b. Respiratory disorder	7	23.3	6	20.0
	c. Cardiovascular disorder.	2	6.7	4	13.3
	d. Vascular disorder.	1	3.3	1	3.3
	e. Orthopedic disorder	4	13.3	6	20.0
	f. Gastro intestinal disorder	2	6.7	4	13.3
	g. Kidney disorder	1	3.3	-	-
4	Type of feeding				
	a. Oral feeding	6	20.0	11	36.7
	b. NG feeding	23	76.7	18	60.0
	c. Both	1	3.3	1	3.3
	d. Others	-	-	-	-
5	Duration of hospitalization				
	a.12-24hrs	22	73.3	18	60.0
	b.24-48hrs	7	23.3	12	40.0
	c.>48 hrs	1	3.3	-	-
6	Personal Habits				
	a. Smoking	-	-	5	16.7
	b. Alcohol intake	1	3.3	3	10.0
	c. Tobacco chewing	4	13.3	5	16.7
	d. Smoking &alcohol intake	9	30.0	5	16.7
	e. Alcohol intake & tobacco chewing	-	-	-	-
	f. Tobacco chewing &smoking	-	-	-	-
	g. All the above	6	20.0	5	16.7
	h. None.	10	33.4	7	23.3

Above table 4.1 shows that distribution of patients according to their demographic variables. In experimental group I majority of patients 10(33.3%) & experimental group II, 11(36.7%) are between 41-50yrs of years of age. Distribution of patients according to their sex majority of patients, in experimental group I, 16(55.3%) and in experimental group II, 17(56.7%) are males. In experimental group I 13(43.3) & experimental group II 9(30.0%) of them suffered with Neurological disorder. Majority of patients, in experimental group I 23(76.7%) and in experimental group II, 18(60.0%) of them had Nasogastric tube feeding. In experimental group I 22(73.3) and in experimental group II 18(60.0) all the patients are hospitalized between the duration of 12-24hrs. In experimental group I 10(33.3%) and in experimental group II 7(23.3%) of them doesn't have any personal habits.

Section-B

a) Distribution of patients according to pretest score on level of oral hygiene among dependent patients in experimental group I & II.

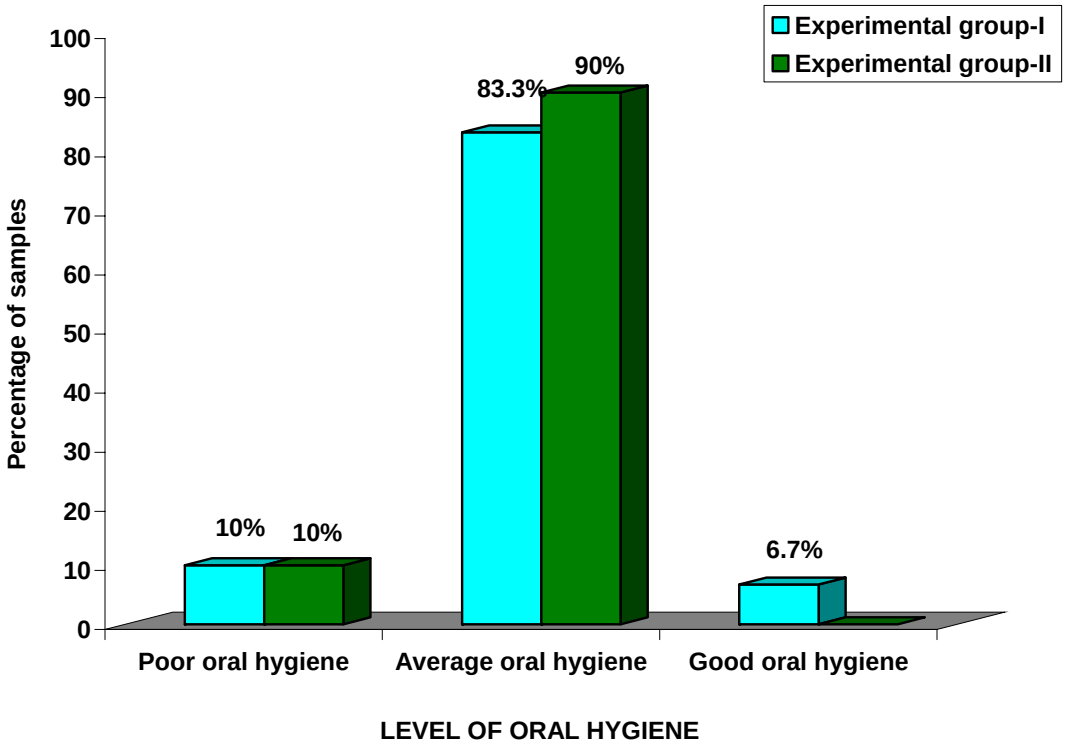


Figure-4.1: Percentage distribution of patients in experimental group I and experimental group II according to their level of oral hygiene in pretest.

The above figure on pretest level of oral hygiene among dependent patients in experimental group I and II reveals that in experimental group I 3(10%) of them had poor oral hygiene, 25(83.3%) of them had average oral hygiene, and 2(6.7%) of them had good oral hygiene. In experimental group II 27(90%) of them had average oral hygiene and 3(10%) of them had poor oral hygiene. It reveals that most of them had average oral hygiene in experimental group I and II.

Section C

Comparison of chlorhexidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II.

a) Distribution of patients according to posttest score on level of oral hygiene among dependent patients in experimental group I & II.

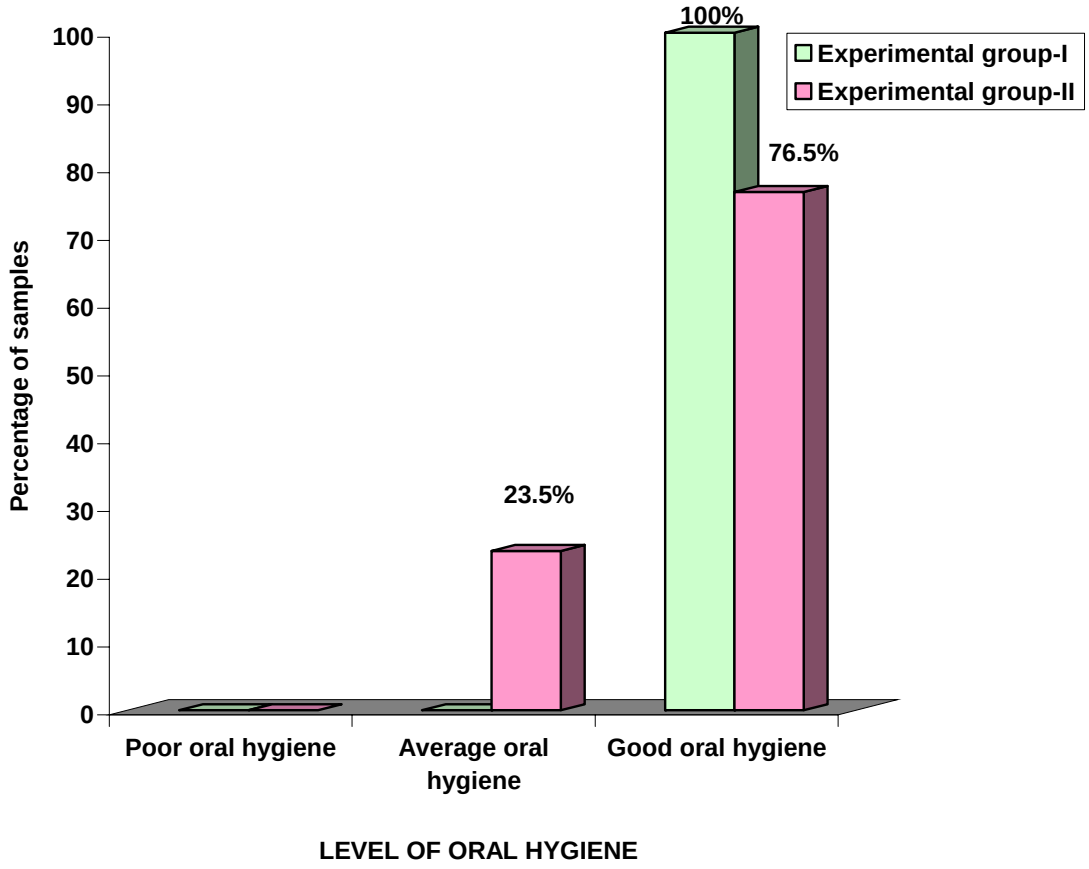


Figure-4.2: Percentage distribution of patients in experimental group –I and experimental group II according to their level of oral hygiene in posttest.

The above figure on posttest level of oral hygiene among dependent patients shows that in experimental group I 30(100%) of them had good oral hygiene, where as in experimental group II 23(76.5%) of them had good oral hygiene and 7(23.5%) of them had average oral hygiene. It shows that in experimental group I all of them had good oral hygiene whereas in experimental group II, majority of patients had good oral hygiene.

Table-4.2:

Mean, SD and mean percentage in experimental group I & II on level of oral hygiene among dependent patients before & after intervention.

n=60

Groups	Maximum score	Pretest			Post test			Difference in Mean%
		Mean	S.D	Mean %	Mean	S.D	Mean %	
Experimental group I	35	9.43	3.95	55.51	31.93	5.38	91.23	35.72
Experimental group II	35	18.83	2.64	53.8	26.23	2.78	74.94	21.14

The above table shows that, in experimental group I pretest mean, SD, score was 19.43±3.95 and mean percentage was 55.51, where as in posttest mean, SD score was 31.93±5.38 and mean percentage was 91.23. In experimental group II pretest mean, SD score was 18.83±2.64 and mean percentage was 53.8%, whereas in posttest mean, SD score was 26.23±2.78 and mean percentage was 74.94. In experimental group I difference in mean percentage is 35.72, whereas in experimental group II 21.14. It reveals that chlorhexidene mouth care was more effective than hydrogen peroxide mouth care among dependent patients.

Section - D

Hypotheses Testing

a. Effectiveness of chlorherxidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II.

Table-4.3:

Mean, Standard deviation, 't' value on level of oral hygiene among dependent patients in experimental group I & II after intervention.

n=60

Group	Mean	SD	df	Table value	't' value
Experimental group I	31.93	5.38	58	1.96	9.72*
Experimental group II	26.23	2.78			

***significant at ($p \leq 0.05$) level**

It reveals that, in experimental group I mean, Standard deviation score was 31.93±5.38, in experimental group II mean, Standard deviation score was 26.23±2.78 respectively. The 't' value was 9.72* which was significant at $p \leq 0.05$ level hence the research hypotheses H_1 was retained. It reveals that chlorhexidene mouth care among dependent patients was effective when compared to hydrogen peroxide mouth care on level of oral hygiene.

b. Association between the level of oral hygiene among dependent patients in experimental group I & II with their selected demographic variables

Table-4.4:

Chi-square test on level of oral hygiene among dependent patients in experimental group I & II with their demographic variables.

n=60

S. No	Demographic variables	Experimental group I (n=30)			Experimental group II (n=30)		
		df	χ^2	Table value	df	χ^2	Table value
1	Age in yrs	6	8.92	12.59	3	1.486	7.82
2	Sex	2	3.21	5.99	1	0.739	3.84
3	Diagnosis	12	13.46	21.03	5	4.383	11.07
4	Types of feeding	4	2.10	9.49	2	2.222	5.99
5	Duration if hospitalization	4	10.47*	9.49	1	0.988	3.84
6	Habits	8	7.787	15.51	5	2.698	11.07

***significant at ($p \leq 0.05$) level**

Above table shows that there was significant association found between the level of oral hygiene and duration of hospitalization in experimental group I. Hence H_2 was retained. But there was no significant association found between the oral hygiene with their demographic variables such as age, sex, diagnoses, type of feeding, and habit. Hence research hypothesis H_2 was rejected. ($p \leq 0.05$ level). Thus it becomes evident that the chlorhexidene mouth care was very effective on promotion of oral hygiene among dependent patients.

Summary

This chapter dealt with data analysis and interpretation in the form of statistical values based on the objectives. Frequency and percentage on level of oral hygiene among dependent patients with their demographic variables in experimental group I and II. The ‘t’ test was used to evaluate the effectiveness of chlorhexidene versus hydrogen peroxide mouth care on improving the level of oral hygiene among dependent patients. The chi-square test was used to find out the association between the level of oral hygiene among dependent patients with their demographic variables. The result showed that chlorhexidene mouth care is more effective than hydrogen peroxide mouth care.

CHAPTER V

DISCUSSION

The primary purpose of this study was to compare the effectiveness of Chlorhexidene Vs Hydrogen peroxide mouth care on level of oral hygiene among dependent patients and to find out the association between oral hygiene among dependent patients receiving mouth care with their selected demographic variables.

Description of demographic variables

Table-4.1 shows that distribution of patients according to their demographic variables. In experimental group I 10(33.33%) and experimental group II 11(36.7%) of them were age between 41-50 years. In experimental group I 16(53.3%) and experimental group II 17(56.7%) of them were males. In experimental group I 13(43.3%) and experimental group II 9(30%) of them had neurological disorder. In experimental group I 23(76.7%) and in experimental group II 18(60%) of them had nasogastric feeding. In experimental group I 22(73.3%) and in experimental group II 18(0%) of them were hospitalized between the duration of 12-24 hrs. In experimental group I 10(33.4%) and in experimental group II 7(23.2%) of them had no personal habits.

Assessment of level of oral hygiene among dependent patients in experimental group I and II.

During pretest experimental group I 83.3%, and experimental group II 90% of them had average oral hygiene.

The presenting study supported by **Kokubu.K, et.al, (2008)** conducted a study on impact of routine oral care on opportunistic pathogens in the institutionalized elderly. Twenty five elderly subjects participated in the study. Caregivers and dental hygienists cleaned the mouth by routine and professional oral care techniques

opportunistic pathogens were collected in oral cavity by using cotton swab. The species of microbes were determined. The result revealed that professional oral care was effective for reducing infections. This shows that the importance of regular oral care in cleaning hard and soft surfaces of the oral cavity improves oral health in institutionalized elderly.

Comparison of effectiveness of chlorhexidene versus hydrogen peroxide mouth care on level of oral hygiene among dependent patients in experimental group I & II.

In experimental group I pretest mean score was 19.43ss±3.95 whereas in experimental group II pretest mean score was 18.83±2.64. In experimental group I, posttest mean score was 31.93±5.38, whereas in experimental group-II 26.23±2.78. This shows that there was a significant difference between chlorhexidene and hydrogen peroxide mouth care. The calculated 't' value 9.72 was greater than tabulated value of 't' 1.96 which was significant at $P \leq 0.05$ level. Hence, hypothesis H_1 was retained. It reveals that chlorhexidene mouth care was effective than hydrogen peroxide mouth care.

The present study finding was supported by **Mc-Combs, (2006)** conducted a study to the comparative effects of 0.12 chlorhexidine and herbal oral rinse on dental plaque induced gingivitis. 63 participants were randomly assigned to one of 3 treatment group chlorhexidine herbal rinse. Participants rinsed twice daily with half ounce of allocated rinse after brushing and flossing. The result showed chlorhexidine was the only oral rinse to demonstrate a statistically significant effect on the reduction of mean gingival index, bleeding on probing and plaque index when compare to placebo.

The present study finding was supported by **Bopp.M, (2006)** conducted a study on effects of daily oral care with 0.12% chlorhexidene gluconate and a standard oral care protocol on the development of nosocomial pneumonia in intubated patients in critical care units. The result revealed that twice, daily oral hygiene care with 0.12% chlorhexidene gluconate may reduce the risk of nosocomial infection in intubated patients more than the 10 times daily standard oral care with hydrogen peroxide.

The present study finding was supported by **Panchabnai, T.S, (2009)** conducted a study oropharyngeal cleansing with 0.2% chlorhexidine for prevention of nosocomial pneumonia in critically ill patients on open label randomized trial with 0.01% potassium permanganate as control group oral care was given twice daily. Totally 500 patients involved 0.2% chlorhexidine solution result showed reduction of nosocomial pneumonia during the study period suggests a possible benefit of meticulous on oral hygiene in ICU patients.

Association between the level of oral hygiene among dependent patients in experimental group-I and II with their selected demographic variables.

There was association found between the level of oral hygiene with duration of hospitalization in experimental group I. Hence H_2 was retained at $P \leq 0.05$ level. But there was no other significant association found between the level of oral hygiene with their demographic variables such as age, sex, diagnosis, type of feeding, personal habit and duration of hospitalization.

The present study finding was supported by **Wardh.I, (2004)** conducted a study on oral bacteria and clinical variables in dependent individuals at a special facility. In this study 33 individuals were participated. An oral examination of the residents was made at the facility together with a 3 day food record and an oral

microbiological analysis. The analysis classified the residents different categories according to both and producing bacteria and the flora correlated with a reduction in general health. In this study revealed that the level of acid producing bacteria was high in 12 individuals and the microbial level according to decreased general health in 7 individuals. This study concluded that a high level of acid producing bacteria was related to functional impairment and duration of hospitalization.

Summary

This chapter dealt with discussion of the study with reference to the objective and supportive studies. All three objectives have been obtained and hypothesis H_1 is retained and hypothesis H_2 retained only between level of oral hygiene and duration of hospitalization in experimental group I.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

This chapter consists of four sections. In the first, two sections the summary and conclusion are described. The last two sections, the recommendations for further research and implications for nursing practice, nursing education and nursing administration.

Summary

A Quasi experimental design was adopted to compare the effectiveness of chlorhexidine versus hydrogen mouth care on level of oral hygiene among dependent patients. The study was conducted from 12.07.2011 to 07.08.2011 at Sri Gokulam hospital and SKS hospital, Salem. Totally 60 patients were selected through non-probability convenience sampling technique among them 30 patients from Sri Gokulam hospital were assigned to experimental group I and 30 patients from SKS hospital were assigned to experimental group II. The information related to demographic variables was obtained from the case sheet and patient relatives. The level of oral hygiene was assessed by using observational checklist. The baseline data was tabulated by frequency table. The ‘t’ test was used to evaluate the effectiveness of chlorhexidene versus hydrogen peroxide on level of oral hygiene among dependent patients and chi-square test was used to find out the association between the level of oral hygiene among dependent patients with their demographic variables. It consists of two parts, Section-A deals with the demographic characteristics of patients, Section-B consists of observational checklist to assess the oral hygiene.

The Major Findings of the Study

- In experimental group I, 10(33.3%) and experimental group II, 11(36.67%) are between the age group of 41 – 50 yrs.
- In experimental group I, 16(55.3%) and in experimental group II, 17(56.7%) of them were males.
- In experimental group I, 13(43.3%) and experimental group II, 9(30.0%) of them had neurological disorder.
- Distribution of patients according to the type of feeding, majority of patients in experimental group I, 23(76.7%) and in experimental group II, 18(60.0%) of them had nasogastric tube feeding.
- In experimental group I, 22(73.3%) and in experimental group II, 18(60.0%) most of the patients were hospitalized duration between 12 - 24 hours.
- In experimental group-I 10(33.3%) and experimental group II, 7(23.3%) most of them had no personal habits.
- In pretest experimental group I, 90% of them had average oral hygiene, whereas in experimental group II 83.3% of them had average oral hygiene.
- In posttest experimental group I, most of them 30(100%) had good oral hygiene and in experimental group II, 23(76.5%) majority of them had good oral hygiene.
- In experimental group I pretest and posttest mean scores were 19.43±3.95 and 31.93 ± 5.38, whereas in experimental group II, 18.88±2.64 and 26.23 ± 2.78.
- The 't' value was 9.72* which was significant at $P \leq 0.05$ level and the hypothesis (H_1) was retained at $P \leq 0.05$ level.
- It reveals chlorhexidine mouth care was effective than hydrogen peroxide mouth care on oral hygiene among dependent patients.

There was association found between the oral hygiene and duration of hospitalization in experimental group I. Hence H_2 was retained at $P \leq 0.05$ level.

Conclusion

The comparative study to evaluate the effectiveness of chlorhexidene versus hydrogen peroxide mouth care among dependent patients in selected hospitals, Salem. The findings of the study revealed that there is improved oral hygiene who received mouth care with chlorhexidene solution than who received hydrogen peroxide solution. In experimental group I there was association between the level of oral hygiene and duration of hospitalization.

Implications

Nursing practice:

- Nurses can use chlorhexidine mouth care in order to maintain the oral hygiene and prevention of nosocomial infection among dependent patients.
- Periodic appraisal should be conducted for all nursing personnel to empower their knowledge and skill about prevention of oral care related complication.
- Hospital institution committee should teach the hospital staff about proper technique of oral care to improve the level of oral hygiene.
- Awareness can be created among student nurses on importance of chlorhexidene mouth care.

Nursing Education:

- Nurse educator should provide teaching regarding evidence based care technique.
- Inservice education can be conducted to nursing personnel and help nurses to gain knowledge on oral care through chlorhexidene solution.

- Educator can encourage students to bring out innovative and creative ideas pertaining management of oral hygiene.
- Periodic conferences, seminars and symposium can be arranged regarding physical therapies to update nursing professional about its importance.
- Nurse educator can encourage the students to do a project on improper oral care complication.

Nursing Administration:

- Nursing administrator can plan and organize continuing education programme and inservice education programme on using chlorhexidene mouth care.
- Public programme can be arranged regarding the importance of chlorhexidene oral care on oral hygiene.
- Nurse administrator can arrange refreshment courses for new health team member to re-orient about the skills in doing oral care among dependent patients.

Nursing Research:

- Findings of this study can be utilized for conducting further observational study on oral hygiene.
- A observational study can be conducted to determine improper oral care complications.
- A study can be conducted to know the effectiveness of protocol based oral care.
- Disseminate the findings through conferences, seminars, publication in journals and worldwide web.

Recommendations

- A comparative study can be conducted with chlorhexidene for one group and other solution for another group.
- Similar studies can be conducted with the more samples on a long term basis.
- A study can be conducted at various setting to identify the factors influencing improper oral care related complications.
- Protocol can be prepared for providing oral care with chlorhexidine mouth care.

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ANNEXURE – A

LETTER SEEKING PERMISSION TO CONDUCT THE RESEARCH STUDY

From

Mrs. Rajeswari. G,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I, **Mrs.Rajeswari.G,** II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfilment for the award of M.Sc. (Nursing) Degree.

Topic: ""A Comparative Study To Evaluate The Effectiveness Of Chlorhexidene Versus Hydrogen Peroxide Mouth Care On Level of Oral Hygiene Among Dependent Patients At Selected Hospitals, Salem".

I request you to kindly do the needful.

Thanking you.

Date : 13.07.2011
Place : Salem

Yours sincerely,

(Mrs.Rajeswari.G)

ANNEXURE - B

LETTER GRANTING PERMISSION TO CONDUCT A RESEARCH PROJECT

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550,2272240,2272250 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH PROJECT

Date : .....

To

12.07.11

The General Manager,
SKS Hospital,
Salem.

Respected Sir/Madam,

Sub: Permission to conduct research project – reg.

This is to introduce **Mrs. G. Rajeswari,** a final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing. She is to conduct research project which is to be submitted to the Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirement for the award of M.Sc (Nursing) Degree.

Topic: "A Comparative Study To Evaluate The Effectiveness Of Chlorhexidene Versus Hydrogen Peroxide Mouth Care On Oral Hygiene Among Dependent Patients At Selected Hospitals, Salem''.

I request you to kindly permit her to conduct a research project in your esteemed Hospital from 13-07-11 to 09-08-11. She will adhere to the Hospital policies and regulations.

Thanking you

Yours sincerely

(Dr. A. Jayasudha)
PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

Permitted for the Study

CN. Rama Rao
GENERAL MANAGER

S.K.S. HOSPITAL INDIA (P) LTD. SALEM-4.

LETTER GRANTING PERMISSION TO CONDUCT A RESEARCH PROJECT

From

Mrs.G.Rajeswari,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Managing Director,
Sri Gokulam Hospital,
Salem.

Through

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project – request – reg.

I, **G.Rajeswari,** II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfilment for the award of M.Sc. (Nursing) Degree.

Topic: "A Comparative Study To Evaluate The Effectiveness Of Chlorhexidene Versus Hydrogen Peroxide Mouth Care On Level of Oral Hygiene Among Dependent Patients At Selected Hospitals, Salem".

Kindly permit to conduct a research project in your esteemed institution, from 11-7-11 to 7-8-11 with adherence to the hospital policies and regulations.

Thanking you,

Yours Obediently,

Place : Salem
Date :

(**G.RAJESWARI)**

ANNEXURE - C

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOL

From

Mrs. G. Rajeswari,
Final Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To,

Through Proper Channel
Respected Madam,

Sub: Requesting the opinion and suggestions of experts for establishing content validity of the tool.

I, **Mrs. G. RAJESWARI** a Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, have selected the below mentioned statement of the problem for the research study to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as partial fulfilment for the award of Master Of Science in Nursing.

Topic: "A Comparative Study To Evaluate The Effectiveness of Chlorhexidine Versus Hydrogen Peroxide Mouth care On Oral Hygiene Among Dependent Patients at Selected Hospitals, Salem".

I request you to kindly validate the tool developed for the study and give your expert opinions and suggestions for necessary modifications.

Thanking you

Yours Sincerely,

Place : Salem
Date :

(Mrs. G.RAJESWARI)

Enclosure:

1. Certificate of validation
2. Tool for collection of data
3. Criteria checklist for evaluation of tool.
4. Content of mouth care procedure

ANNEXURE - D

TOOL FOR DATA COLLECTION

SECTION – I: DEMOGRAPHIC VARIABLES

Introduction to participants:

The personal information collected from informant by structured interview schedule and case sheet. The data given by you will be kept confidential.

Sample No: ☐

1. Age in years

a) 21 – 30 ( )

b) 31 – 40 ( )

c) 41 – 50 ( )

d) 51 – 60 ( )

e) 61 – 70 ( )

2. Gender

a) Male ( )

b) Female ( )

3. Diagnosis ……..

a) Neurological disorder. ( )

b) Respiratory disorder ( )

c) Cardiovascular disorder. ( )

d) Vascular disorder. ( )

e) Orthopedic disorder ( )

f) Gastro intestinal disorder ( )

g) Kidney disorder ( )

4. Types of feeding

a) Oral feeding ( )

b) NG feeding ( )

c) Both ( )

d) Others ( )

5. Duration of hospitalization

a) 12 - 24 hours ( )

b) 24 – 48 hours ( )

c) > 48 hours ( )

6. Personal Habits

a) Smoking ( )

b) Alcohol intake ( )

c) Tobacco chewing ( )

d) Smoking & Alcohol intake ( )

e) Alcohol intake & Tobacco chewing ( )

f) Tobacco chewing and smoking ( )

g) All the above ( )

h) None ( )

SECTION – B

CHECKLIST TO ASSESS THE ORAL HYGIENE

Category	5	4	3	2	1	1st day	4th day
Lips	Moist, smooth	Rough, dry	Rough, dry with crust formation	Rough, dry with crust formation tend to bleeding	Very dry with cracks, bleed easily		
Teeth	Clean no plaque, no discolouration	Clean with mild yellow discolouration no plaque	Yellow discolouration with minimal plaque	Yellow discolouration with incompletely covered with plaque	Almost completely covered with plaque		
Tongue	Moist, roughness pink	Moist and mild coated	Dry slightly with mild coating	Patchy, fissured, red, coated	Patch that is red or white, ulcer, swollen		
Gums	Pink, moist, smooth, no bleeding	Smooth, moist with debris	Rough dry with debris	Rough, dry ulcer / red swollen, tend to bleeding	Very dry with bleeding, swollen, ulcer		
Smell	No unpleasant smell	Slightly unpleasant	Strongly unpleasant	Untolerable smell pleasant	Foul smell present (halitosis)		
Saliva	Moist tissues, watery and free flowing saliva	Moist with slight debris	Moist with Moderate debris	Dry, sticky tissues, dry mouth, little saliva	Tissue parched and red very little, no saliva, saliva as thick.		
Roof of mouth	Moist no debris	Moist with debris	Slightly dry no debris	Dry and debris	Very dry, rough almost covered with debris		
TOTAL SCORE = 35							

Scoring key

7 – 15 - Poor ; 16 – 24- Average; 25 – 35 – Good

ANNEXURE - E

PROCEDURE FOR MOUTH CARE

Introduction:

Oral hygiene provide a healthy state of the mouth, teeth, gums and lips. Poor oral care along with physical condition causes diminishes salivary production. Oral hygiene enhances well being comfort and it exclude foods preventing plaque formation, and promotes healthy periodontal structure.

Meaning

Mouth care is a procedure to clean the teeth, tongue, gum and tissues, and roof of mouth by using specific solution.

Definition

Performing mechanical cleansing of the teeth and mouth for an dependent patient.

Common oral problems

- Gingivitis (Gums)
- Glossitis (Tongue)
- Stomatitis (mucus membrane of the mouth)
- Bleeding gums
- Halistosis (bad odour)
- Cheliosis (lips)
- Pyorrhea (pus formation in the sockets of teeth)

Assessment

- Check the oral cavity by using checklist
- Check the general condition of the patient (wholly dependent patient)

Purpose

- To promote oral hygiene
- To clean the oral cavity
- To prevent complication
- To promote comfort and well being

Indication

- Seriously ill patients
- Unconscious patients
- Patient with artificial airway
- Wholly dependent patients.

Frequency

Twice a day for 3 days

Solutions used for mouth care

1. Chlorhexidene mouth wash solution 0.2%

   1:1 - 15ml of solution + 15ml of water

2. Hydrogen peroxide solution

   1:8 – 3.5ml of hydrogen peroxide + 26.5ml of water

Equipment

A tray containing

- Face towel
- Antiseptic solution
    a. Hydrogen peroxide solution
    b. Chlorhexidine solution
- Kidney tray
- Clean gloves

- Padded tongue blade
- Mouth gag

A sterile tray containing

- Artery forceps
- Dissecting forceps
- Gauze pieces
- Small bowel for preparing solution

Preparation of patient

- Assess the patient oral hygiene
- Test for presence of gag reflex by placing tongue blade on back half of tongue.
- Explain the procedure to the patient.
- Pull curtains, for provide privacy.
- Raise bed to comfortable working level
- Arrange all articles by bedside
- Position the patient onside, head turned towards me.
- Place the towel and mackintosh under the patients head and spread one towel over chest and an emesis basin under the chin.

Procedure

- Wash hands and don gloves
- Lower the side rails on the working side.
- Separate the upper and lower teeth with tongue depressor.
- Take gauze piece with the dissecting forceps.
- Wrap the gauze piece around the artery forceps.
- Moisten the gauze piece with mouth wash solution.

- Swab each tooth gently but firmly and clean all the sides of the tooth, clean chewing surface first and then, inner and outer surface from gum to crown.
- Clean lower teeth on both sides followed by upper teeth on both sides.
- Gently swab root of the mouth, gums and inner side of cheeks.
- Clean the tongue from back to front using artery forceps covered with gauze
- Clean the teeth and tongue in similar way using plain water.
- Clean the lips with wet gauze.
- Clean the tongue and roof of the mouth inside the cheeks.
- Finally, wipe and dry the patient's lips and chin; make the patient comfortable.

After care

- Position the patient in comfortable position.
- Clean and Replace all the articles in a assigned place.
- Wash the hands.

ANNEXURE - F

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool developed by **Mrs. G. RAJESWARI,** I-year M.Sc Nursing Student of Sri Gokulam College of Nursing, Salem (Affiliated to Dr.M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A Comparative Study To Evaluate The Effectiveness of Chlorhexidine Versus Hydrogen Peroxide Mouth care On Level of Oral Hygiene Among Dependent Patients at Selected Hospitals, Salem**".

Date:

Place:

Signature:

Name:

Designation:

Seal:

ANNEXURE-G

LIST OF EXPERTS

1. **Dr.Mrs.K.Selvakumari, M.D.,**
   Consultant Physician,
   Sri Gokulam Hospital,
   Salem.
2. **Dr.Senthilkumaran, M.D., A & E.,**
   Consultant & Incharge,
   Department of Emergency and Critical Care Medicine,
   Sri Gokulam Hospital,
   Salem.
3. **Prof. Mrs.K.S.Pushpalatha, M.Sc(N), Ph.D.,**
   Associate Professor,
   Shanmuga College of Nursing,
   Salem.
4. **Dr. A.Porkodi, Ph.D (N).,**
   Associate Professor,
   Sri Ramachandra College of Nursing,
   Chennai.
5. **Mrs.Geetha, M.Sc (N),**
   Associate professor,
   Vivekanantha College of Nursing,
   Erode.
6. **Mrs.Lakshmi Prabha, M.Sc (N),**
   Associate Professor,
   Vinayaka Mission College of Nursing,
   Salem.
7. **Mrs. Sumathi, M.Sc (N),**
   Associate Professor,
   Vinayaka Mission College of Nursing,
   Salem.

ANNEXURE - H

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled "**A Comparative Study To Evaluate The Effectiveness of Chlorhexidine Versus Hydrogen Peroxide Mouth care On Level of Oral Hygiene Among Dependent Patients at Selected Hospitalsss, Salem"** by **Mrs. Rajeswari.G,** It has been checked for accuracy and correctness of English language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

Signature with Date

S. MUTHUVAPPA
M.Com., M.Ed.,
HEADMASTER
MUNICIPAL PRIMARY SCHOOL
GRIBLESPET, ARAKKONAM

ANNEXURE - I

PHOTOS