

## A Study to Evaluate Effectiveness of Application of Ice Cubes on Oral Mucositis among Clients Receiving Cancer Chemotherapy in Yashoda Hospitals, Twin Cities, A.P.

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### Abstract

A Study To Evaluate Effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy in Yashoda Hospitals, twin cities, A.P. This study was undertaken by Miss. Sunitha Elizabeth Chacko in partial fulfillment of the requirement for the degree of master science in nursing under Dr. N.T.R. University of Health Sciences Gunadala, Vijayawada, and Andhra Pradesh. *Objectives of the study:* 1. To assess the severity of oral mucositis among experimental and control group by pre test. 2. To assess the effectiveness of ice cubes application on severity of oral mucositis among experimental group by post test. 3. To evaluate the severity of oral mucositis by application of ice cubes to the experimental group by post test. 4. To assess the severity of oral mucositis in control group by post test. 5. To find out the post test association between the severity of oral mucositis among experimental and control group with selected demographic variables. The research approach adopted for the study was evaluative approach and the research design adopted was quasi-experimental design. 40 oral mucositis clients, among which 20 oral mucositis clients who receiving cancer chemotherapy are in experimental group and 20 in control group, by using Purposive sampling. by using questioning method with structured questionnaire and assesses the severity of oral mucositis, by using WHO five point observation check list and assessed satisfactory level of clients who are receiving cancer chemotherapy, by using Smitten Satisfactory scale. The reliability of the tool was tested by using spearman brown split half method and it was found in experimental group to be  $r=0.9$  and control group  $r=0$ . On the first day experimental group and control group severity of oral

mucositis was assessed by using WHO grading scale. Application of ice cubes to the 20 experimental groups 5 minutes before the administration of chemotherapy for 30 minutes where as 20 control group didn't receive any intervention. Severity of oral mucositis will assess from day 1 to 5. Among 5 days score, 5th day score is taken as final observational score of severity of oral mucositis in both experimental and control group. Data were analyzed by SPSS version - 15, paired and unpaired 't' test was used for finding the effectiveness and Chi square test was used for finding out the association between severity of oral mucositis and selected demographic variables. The calculated value of 't' (13.5427) is greater than the tabulated value of 't' (2.0244) at 5% level of significance with 38df by means that researcher can conclude that there is significance difference between experimental group and control group among clients who are having oral mucositis and who are receiving chemotherapy. Hence it is concluded that after applied ice cubes on oral mucositis among clients receiving cancer chemotherapy of the clients have been decreased the severity level. This positive result is a clear indication that effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy.

**Keywords:** Chemotherapy; mucositis.

### Introduction

Chemotherapy is the specific treatment of cancer, where the specific anti neoplastic agents are used. These agents interfere with the cellular function, including replication. Mucositis is the main adverse effect of the chemotherapy drugs. Oral mucositis refers

to the inflammation and ulceration that occurs in the mouth and throat. The discomfort can range from mild to severe.

Mild discomfort is a change in the way the mouth feels. It is easily treated and quick to heal. Moderate discomfort is considered to be redness and open sores in the mouth. Severe mucositis involves many sores in the mouth, bleeding, and severe pain. None of these discomfort levels are pleasant. Each can cause other problems including difficulty in swallowing, talking, eating, and infection. For most cancer treatment, about 5-15% of patients get mucositis. However, with 5-fluorouracil (5-FU), up to 40% get mucositis, and 10-15% get grade 3-4 oral mucositis. Irinotecan is associated with severe GI mucositis in over 20% of patients. 75-85% of bone marrow transplantation recipients experience mucositis, of which oral mucositis is the most common and most debilitating, especially when melphalan is used.

Role of nurse in clients with oral mucositis is essential. The nurse should teach the importance of oral hygiene, salt mouth wash, oral administration of medications. The nurse should encourage to avoid complications like Sores or ulcerations on oral cavity.

#### **Objective of the Study**

1. To assess the severity of oral mucositis among experimental and control group by pre- test.
2. To assess the effectiveness of ice cubes application on severity of oral mucositis among experimental group by post -test.
3. To assess the severity of oral mucositis in control group by post- test.
4. To find out the post-test association between the severity of oral mucositis among experimental and control group with selected demographic variables.

#### **Research Hypothesis**

There is significant difference between the experimental group and control group among clients who are having oral mucositis and who are on chemotherapy after application of ice cubes.

#### **Delimitation of the Study**

The present study is delimited to:

1. Patients age between 20 to 70 years and who are admitted in the hospital.

2. Patients who are having oral mucositis.
3. Patients who are not present at the time of data collection.

#### **Research Design & Setting**

In this study the researcher used *Quasi Experimental Research Design* which consists of control group, intervention but there is no randomization.

The setting of the study consists of Yashoda Hospitals, Twin cities; A.P. Yashoda Hospitals was established by Dr. G. Surender Rao in Somajiguda, Hyderabad as a small clinic in 1989. With a combined capacity of about 1200 beds, 600 specialists, 1,500 nurses and 4,000 paramedical and other support staff; Yashoda Group treats roughly about 3 lakh people annually. A slightly higher volume compared to other private healthcare organization in Andhra Pradesh.

#### **Description of Variables**

In the present study investigator has identified independent variable, dependent variable and few extraneous variables.

#### **Independent Variable**

The independent variable of present study is effectiveness of ice cube application.

#### **Dependent Variable**

The dependent variable of present study is Oral Mucositis among Clients Receiving Cancer Chemotherapy

#### **Extraneous Variable**

Extraneous Variable which influence the severity of oral mucositis are age, religion, marital status, occupation, income of the family, diagnosis, period of illness, oral hygiene, nutritional status.

#### **Methods and Materials**

In the present study the sample are 40 cancer chemotherapy clients who are having oral mucositis. For this study *purposive sampling technique* is used for choosing the sample. It is one of the non – probability sampling methods, which is based on researchers knowledge.

### **Criteria for Sample Selection**

Criteria specify the characteristics that the people in the population, must possess. The purpose is to control extraneous variable as possible. Hence, the criteria for sample selection for the study are:

#### *Inclusion Criteria*

1. Clients between age group from 20 to 70years.
2. Who are willing to participate in the study.
3. Who are available at the time of data collection.

#### *Exclusion Criteria*

1. Who are undergoing for radiation therapy.
2. Clients who are not having oral mucositis.
3. Clients who are not present at the time of data collection.

### **Method of Data Collection**

In the present study the investigator collects data regarding demographic variables by using questioning method with structured questionnaire and assesses the severity of oral mucositis, by using WHO five point observation check list and assessed satisfactory level of clients who are receiving cancer chemotherapy, by using Smitten Satisfactory scale.

### **Development and Description of Tool**

A search of literature will be for the purpose of developing appropriate tools to assess the severity of oral mucositis of clients who are receiving cancer chemotherapy by five point observation checklist. It has three parts:

**Part I:** Includes a structured questionnaire which deals with demographic data of clients such as age, religion, marital status, parity education, occupation, income of the family, diagnosis, Habits, oral hygiene, nutritional status, period of illness.

**Part II:** WHO Grading Scale to assess the severity of oral mucositis.

**Part III:** Smitten Satisfactory scale to know the satisfaction levels of clients regarding ice cubes application.

#### *Score Interpretation*

In this study, categorization of severity oral mucositis was done through WHO Grading Scale.

0 : No sign and symptoms

1: Painless ulcers

2: Able to eat

3: Unable to eat

4: Severe

### **Pilot Study**

Pilot study is a small scale version (or) trail run of major study is to obtained information regarding accessibility and feasibility of the study. The principle focus is the assessment of adequacy of measurement.

Pilot study was conducted to find out feasibility of the study. Yashoda Hospital, Malakpet was selected for pilot study. Total 10 clients with oral mucositis those who are receiving cancer chemotherapy were selected by purposive sampling; permission of the study was obtained from the superintendent of the hospital.

The samples for pilot study possess the same characteristics as that of the sample for final study. As a part of the investigators educational pursuit the pilot study conducted in. The pilot study was conducted in the month of January 02.01.2013 to 10.01.2013 study the effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy, to ensure the practicability, feasibility of the study, and appropriateness of the study and to plan for statistical analysis of the data. Statistical analysis was made with the help of Karl Pearson correlation coefficient. The calculated r value of Experimental group is 0.9 and control group is 0.7. Hence the study was found to be feasible, practicable and appropriate.

### **Data Collection Procedure**

The present study was conducted in Yashoda hospital, secunderabad. Data was collected from 16 .01.2013 to 16.02.2013. The written permission was obtained from the director of Yashoda Hospital and the data collection was planned as per the time of administration of chemotherapy and convenient time of the clients. The investigator introduced her and the purpose of study was explained to the clients in order to obtain maximum co operation from them and their willingness to participate in the study was ascertained. The respondents were assured the anonymity and confidentiality of the information provided by them and informed consent was taken. On the first day experimental group and control group severity of oral mucositis was assessed by using WHO grading scale. Application of ice cubes to the 20 experimental groups 5 minutes before the

administration of chemotherapy for 30 minutes where as 20 control group didn't receive any intervention. Severity of oral mucositis will assess from day 1 to 5. Among 5 days score, 5<sup>th</sup> day score is taken as final observational score of severity of oral mucositis in both experimental and control group.

**Plan for Data Analysis**

After collecting, data will be analyzed by using descriptive and inferential statistics ie; mean , standard error and paired " t" test for obtained scores in pre test and post test. The analysis and interpretation of the data was presented in three parts.

**Part I:** Distribution of cancer chemotherapy clients with oral mucositis according to demographic data.

**Part 2:** Description and comparison of pretest and post test scores of severity of oral mucositis clients who are receiving cancer chemotherapy between experimental and control group.

**Part 3:** Description of the post test association between severity of oral mucositis of clients who are receiving cancer chemotherapy and selected variables.

**Part 4:** Description of satisfactory scale of oral mucositis clients who are receiving cancer chemotherapy regarding ice cubes application.

*Ethical Consideration*

- The research title and objectives were approved by the research committee.
- Permission for the study was obtained from director, Medical superintendent, nursing superintendent Yashoda hospital.
- An informed consent was also obtained from the respondents after proper explanation about the purpose, usefulness and implication of the study

and assurance was given about the confidentiality of their response.

- Clients had the right to quit the study at any point.

*The data analysis was based on the following hypothesis*

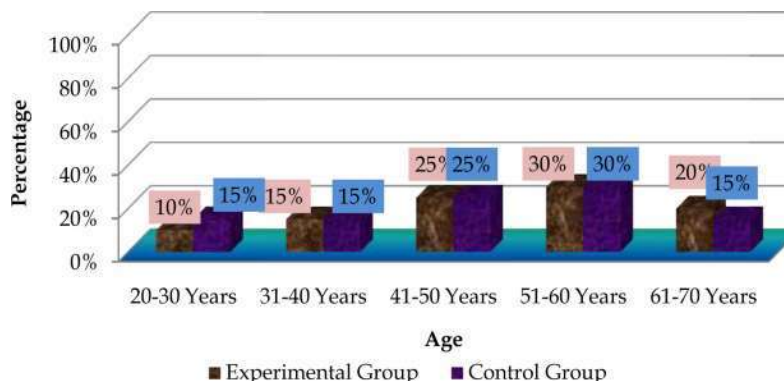
- H<sub>1</sub>: There is significant difference between the experimental group and control group among oral mucositis clients who are on cancer chemotherapy after application of ice cubes.
- The data was entered in the master sheet for analysis and interpretation. Descriptive and inferential statistical procedures such as frequencies, percentages, mean, and standard deviation, Chi square and paired t-test were used.

*Data was presented in following headings.*

- *Section A:* Frequency and percentage distribution of oral mucositis clients who are receiving cancer chemotherapy according to demographic data.
- *Section B:* Frequency and percentage distribution of severity level of oral mucositis clients in the experimental group in pre test and post test on application of ice cubes on oral mucositis among experimental group.
- *Section C:* Association between severity level of oral mucositis clients and selected demographic variables.
- *Section D:* Frequency and percentage distribution of satisfactory level of clients in experimental and control group on oral mucositis among clients receiving cancer chemotherapy.

**Section A**

Demographic data of the sample includes age, gender, religion, marital status, education,



**Fig.1:** Percentage distribution of clients according to Age

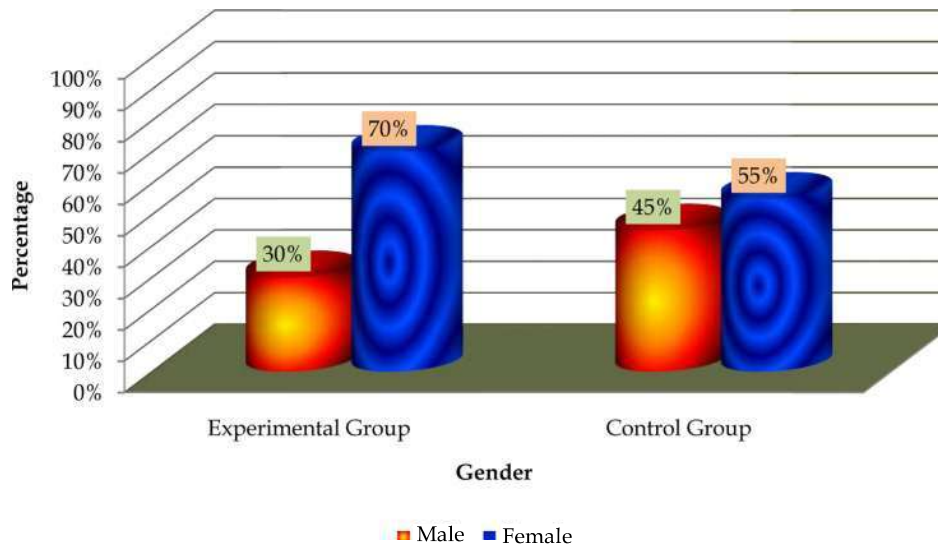


Fig. 2: Percentage distribution of clients according to Gender

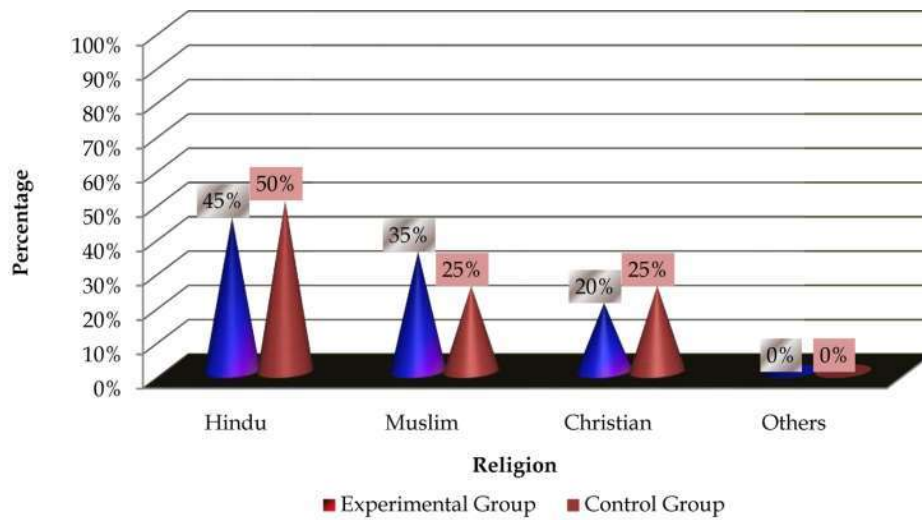


Fig. 3: Percentage distribution of clients according to Religion



Fig. 4: Percentage distribution of clients according to Marital status

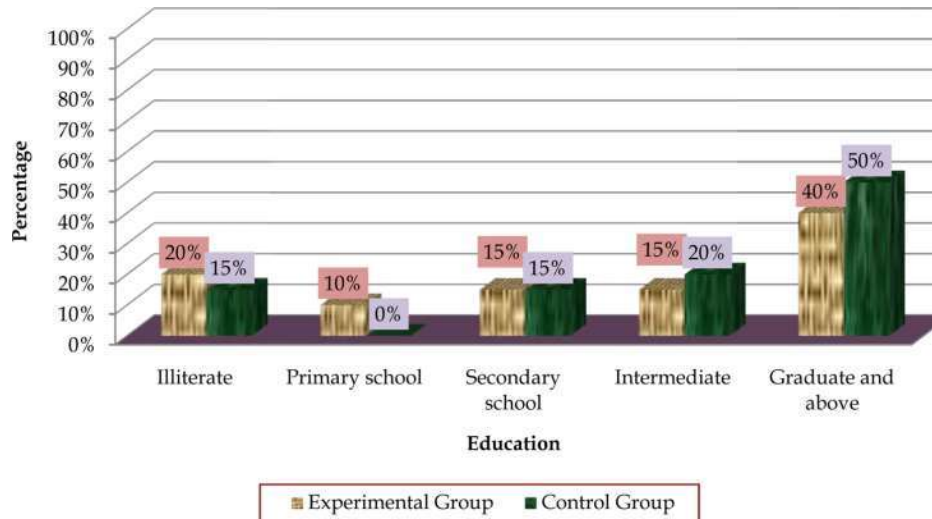


Fig. 5: Percentage distribution of clients according to Education

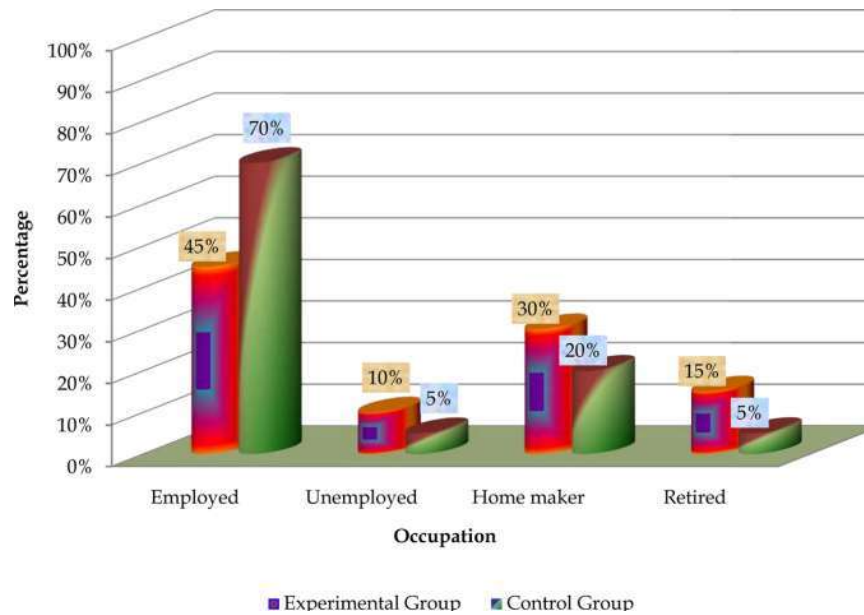


Fig. 6: Percentage distribution of clients according to Occupation

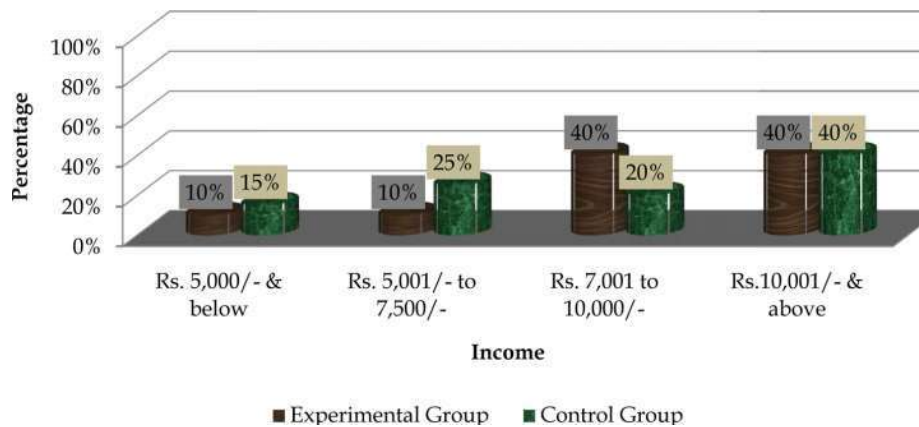


Fig. 7: Percentage distribution of clients according to Income

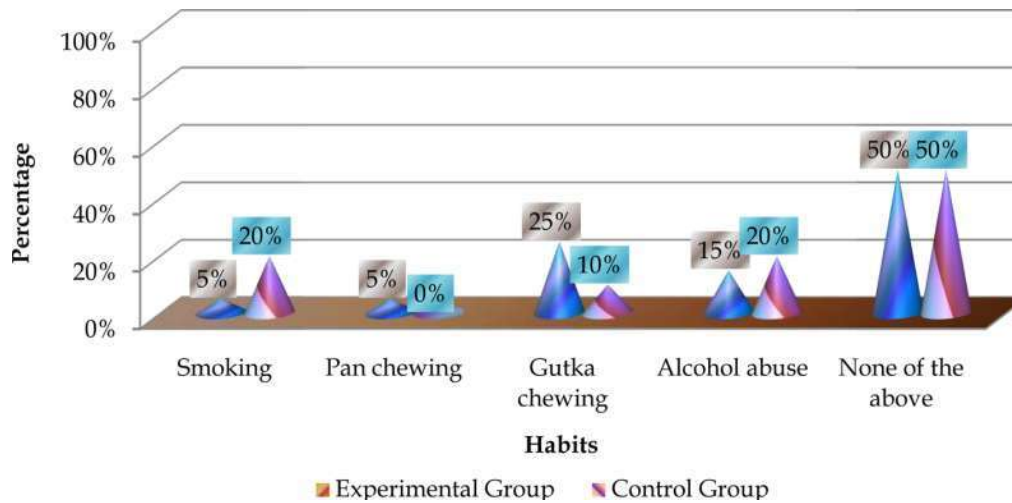


Fig. 8: Percentage distribution of clients according to Habits

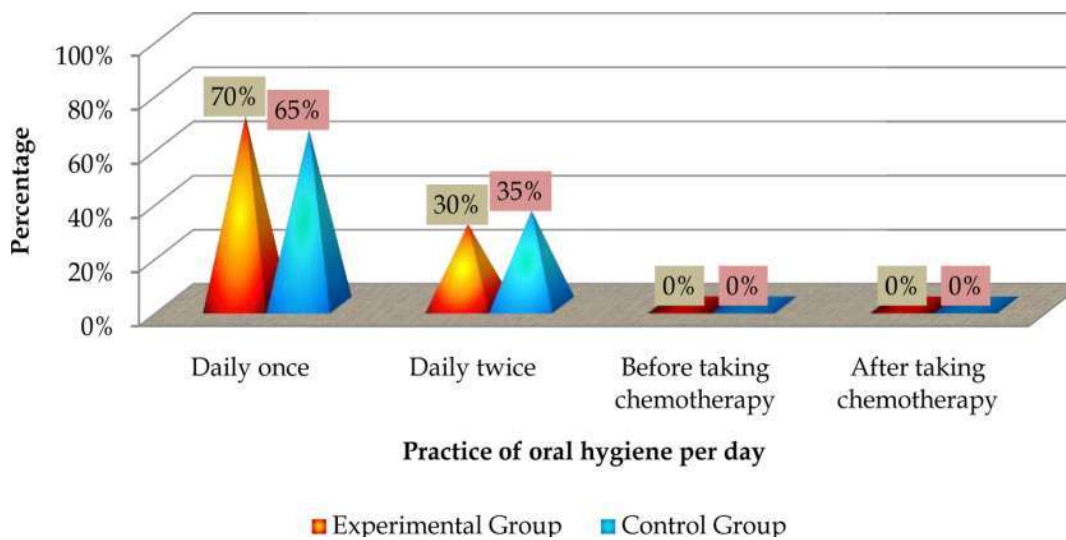


Fig. 9: Percentage distribution of clients according to Practice of oral hygiene per day

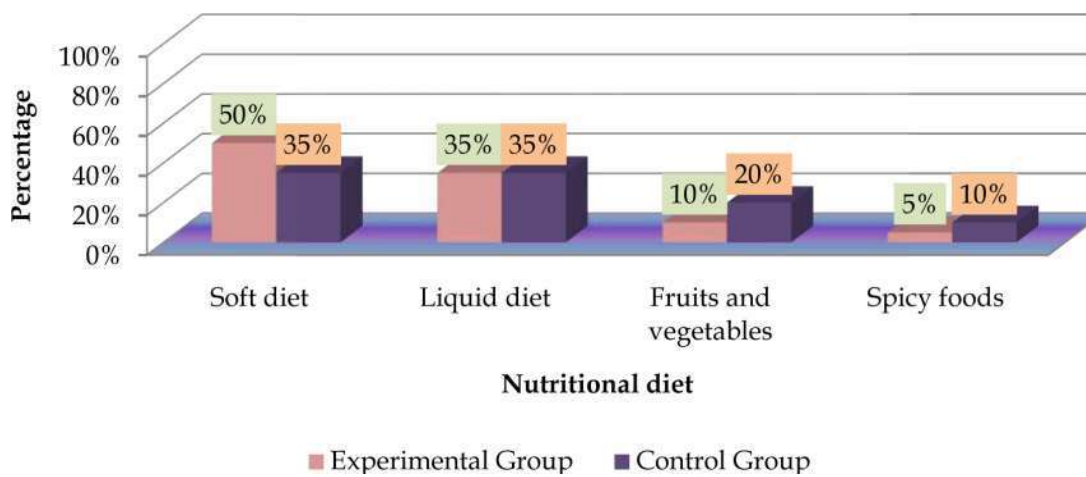


Fig. 10: Percentage distribution of clients according to Nutritional diet

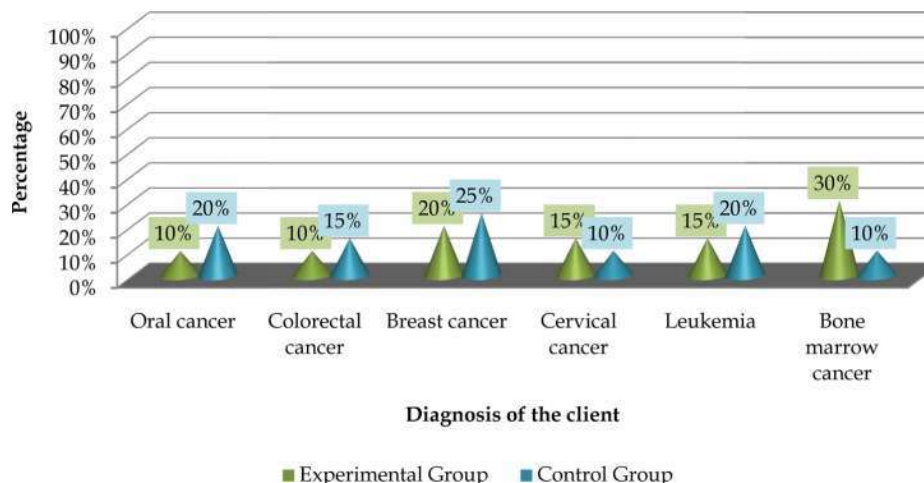


Fig. 11: Percentage distribution of clients according to Diagnosis of the client

Table 1: Frequency and percentage distribution of severity level of clients in pre test and post test on application of ice cubes on oral mucositis among clients receiving cancer chemotherapy (N=20+20)

Level of Severity	Experimental Group				Control Group			
	Pre test		Post test		Pre test		Post test	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
No sign and symptoms (0)	0	0%	5	25%	0	0%	0	0%
Painless ulcers (1)	0	0%	10	50%	0	0%	0	0%
Able to eat (2)	10	50%	5	25%	10	50%	0	0%
Unable to eat (3)	10	50%	0	0%	10	50%	7	35%
Severe (4)	0	0%	0	0%	0	0%	13	65%
Total	20	100%	20	100%	20	100%	20	100%

occupation, income of family per month, habits, practice of oral hygiene per day, nutritional diet, diagnosis of the client, family history of cancer and period of illness. The data was presented in Graphs 1-9.

The table 1 shows that frequency and percentage based on severity level of the clients about application of ice cubes on oral mucositis among clients receiving cancer chemotherapy.

In experimental group no sign and symptoms severity level were found nil in pre test where as in post test 5 (25%) were no sign and symptoms, in pre test painless ulcers severity level were not found where as 10 (50%) were found painless ulcers severity level in post test, 10 (50%) were able to eat severity level in pre test where as in post test 5 (25%) were able to eat severity level, 10 (50%) were unable to eat severity level in pre test where as in post test it's not found, in pre test and post test severe severity level were not found. These differences indicated that effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy.

In control group pretest and post test no sign and symptoms and painless ulcers severity levels were not found, 10 (50%) were able to eat severity level in pre test where as in post test able to eat severity level were not found, 10 (50%) were unable to eat severity level in pre test where as in post test 7 (35%) were unable to eat severity level, in pre test severe severity level were not found, where as in post test 13 (65%) were severe severity level.

The table 2 shows that the experimental group mean was 2.5 and control group mean was 2.5. Standard deviation of experimental group was 0.5130 and control group standard deviation was 0.5130. This is clearly indicated that the clients having the same level of severity of oral mucositis in experimental and control group by pre test.

The table 3 shows that in post test the experimental group mean was 1.00 and control group mean was 3.65. Standard deviation of experimental group was 0.7255 and control group standard deviation was 0.4894.

The calculated value of 't' (13.5427) is greater than the tabulated value of 't' (2.0244) at 5% level of



significance with 38df by means that researcher can conclude that there is significance difference between experimental group and control group among clients who are having oral mucositis and who are receiving chemotherapy.

Hence it is concluded that after applied ice cubes on oral mucositis among clients receiving cancer chemotherapy of the clients have been decreased the severity level. This positive result is a clear indication

that effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy.

The formulated hypothesis (H<sub>1</sub>) for the present study "There is a significant difference between the experimental group and control group among clients who are having oral mucositis and who are receiving chemotherapy" has been accepted.

**Table 2:** Experimental and Control group mean and SD on application of ice cubes on oral mucositis among clients receiving cancer chemotherapy in pre test (N=40)

Pre test	Experimental Group		Control Group	
	Mean	SD	Mean	SD
	2.5	0.5130	2.5	0.5130

The table 4 shows that the pre test mean was 2.5 and post test mean was 1.00. Standard deviation of pre test was 0.5130 and post test standard deviation was 0.7255.

The calculated value of 't' (13.0767) is greater than the tabulated value of 't' (2.0930) at 5% level of significance with 19 df, by means that researcher

can conclude that there is significance difference between pre test and post test among clients who are having oral mucositis and who are receiving chemotherapy. Hence it is concluded that after applied ice cubes on oral mucositis among clients receiving cancer chemotherapy of the clients have been decreased the level of severity. This positive

**Table 3:** Experimental and Control group mean and SD on application of ice cubes on oral mucositis among clients receiving cancer chemotherapy in post test (N=40)

Post test	Experimental Group		Control Group		t - test value
	Mean	SD	Mean	SD	
	1	0.7255	3.65	0.4894	13.5427
df=38	Table t-value 2.0244		p<0.05		

**Table 4:** Pre test and post test mean, SD and paired t-test of significance on application of ice cubes on oral mucositis among clients receiving cancer chemotherapy in experimental group (N=20)

Experimental Group	Pre test		Post test		Paired t test value
	Mean	SD	Mean	SD	
	2.5	0.5130	1	0.7255	13.0767
df=19	Table t-value 2.0930		p<0.05		

**Table 5:** Frequency and percentage distribution of satisfactory level of clients in experimental and control group on application of ice cubes on oral mucositis among clients receiving cancer chemotherapy (N=40)

Clients Options	Experimental Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Very Dissatisfied	0	0%	0	0%
Dissatisfied	0	0%	0	0%
Neither satisfied nor dissatisfied	0	0%	6	30%
Satisfied	17	85%	14	70%
Very satisfied	3	15%	0	0%
Total	20	100%	20	100%

result is a clear indication that effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy.

The table 5 shows that very dissatisfied, dissatisfied and very satisfied were found nil in experimental group and control group. 3(15%) were

neither Very satisfied in experimental group where as in control group 6 (30%) were neither satisfied nor dissatisfied. 17(85%) were satisfied in experimental group where as in control group 14(70%) were satisfied.

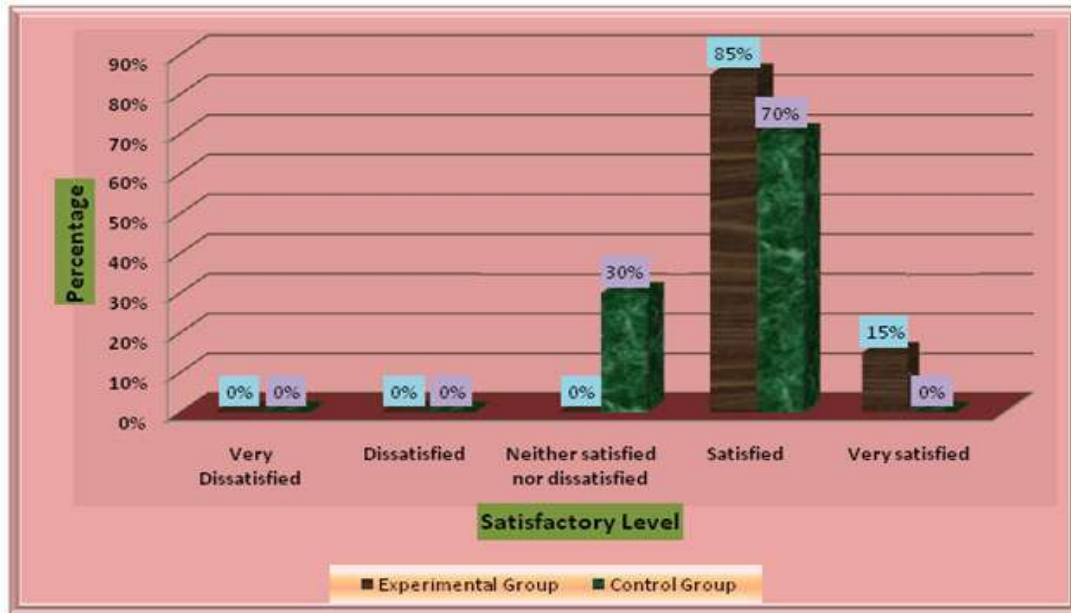


Fig. 12: Percentage distribution of clients according to Diagnosis of the client

This satisfactory level indicated that effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy. (Graph 12).

### Conclusion

The aim of the study was to assess the effectiveness the severity of oral mucositis of clients who are receiving cancer chemotherapy by application of ice cubes and to reduce the complication of chemotherapy.

The following conclusion was drawn from the result of the study.

1. Most of the oral mucositis clients who are receiving cancer chemotherapy had server oral mucositis before the application of ice cubes into the oral cavity could be introduced.
2. The application of ice cubes into the oral cavity among oral mucositis of clients who are receiving cancer chemotherapy facilitated them to reduce the severity of oral mucositis.

3. Post-test oral mucositis score in the experimental group was found to be low while in the control group the post-test score was gained.
4. When compared the post-test score of oral mucositis among control group and experimental group the t value was highly significant and for both in experimental group. It showed that after the implementation of the application of ice cubes into the oral cavity there was a significant reduces the severity of oral mucositis in the experimental group.
5. Reduce the severity of oral mucositis in oral mucositis clients who are receiving cancer chemotherapy will benefit them to follow this in their life to prevent complication of chemotherapy.

### Findings of the Study

The findings show that there was a significant difference in pre testand post test scores in different areas. The obtained 't' test value for overall oral mucositis clients who are receiving cancer chemotherapy. The clients with oral mucositis among who are receiving cancer chemotherapy

significantly improved from application of ice cubes to oral cavity on day 1 to day 5. The findings show that the experimental pretest mean was 2.5 and post mean of experimental group was 1. The control group pre test mean was 2.5 and post test mean of control group was 3.65. The calculated value of 't' (13.0767) is greater than the tabulated value of 't' (2.0930) at 5% level of significance with 19 df, by means that researcher can conclude that there is significance difference between pre test and post test among clients with oral mucositis and who are receiving chemotherapy.

#### *Implications*

The findings of the study have the following implications in, Nursing practice, Nursing Education, Nursing administration, Nursing Research.

#### *Nursing Practice*

Health services are an essential component of society. The nurse play pivotal role in the delivery of the health care to the entire individual including cancer clients. She can educate the cancer clients and family members regarding prevention of oral mucositis and other complication. The role of hospital personnel is to conduct educational programmes related to complication of cancer chemotherapy and its management. Since oral mucositis clients in selected cancer hospitals, it feasible and easily approachable, and effort should be made to educate them regarding application of ice cubes to oral mucositis, so that they can disseminate the same knowledge to their friends and colleagues.

#### *Nursing Education*

Nurses who are equipped with update knowledge regarding application of ice cubes to oral mucositis clients who are receiving cancer chemotherapy, which help them in preventing complications of chemotherapy, during the basic nursing education courses, students may be given clinical assignments. The activities may involve find out the special needs of clients with oral mucositis who are receiving cancer chemotherapy. Plan and implement varies are the key personnel in imparting education to over health personnel. There is also need for in service education programme for the health care provides for preparing them to function effectively as a counselor.

#### *Nursing Administration*

Nursing Administrators need to plan staff

development programmes on application of ice cubes to oral mucositis clients who are receiving cancer chemotherapy. Thus the staff can be informed prevention of complications of cancer chemotherapy, which can help in educating the clients with oral mucositis who are receiving cancer chemotherapy.

#### *Nursing Research*

Research helps nurses to take appropriate decisions on the care of the oral mucositis clients who are receiving cancer chemotherapy and encourage applying ice cubes to the oral cavity during chemotherapy.

#### *Limitations*

- The results are limited to the clients with oral mucositis who are receiving cancer chemotherapy in selected hospitals.
- Effectiveness of application of ice cubes on oral mucositis among clients receiving cancer chemotherapy by the investigator only with help of observation checklist.
- The findings cannot be generalized as the size of the sample is very small.
- The study was limited to clients with oral mucositis according to grade 2 and grade 3 WHO oral mucositis grade scale who are receiving cancer chemotherapy.

#### *Recommendations*

- A similar study can be replicated on a large scale and for longer period for more reliability and effectiveness.
- Another study can be done with larger sample.
- A similar study can be conducted to assess the effectiveness of sodium bicarbonate mouth wash, floured ice cubes on oral mucositis clients among who are receiving cancer chemotherapy.
- Randomization of the groups needs to be done.

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