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A Study to Assess the Effectiveness of Peppermint on Oral Mucositis among Patients Receiving Chemotherapy and Radiation Therapy

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ABSTRACT

Oral mucositis is common amongwho have undergone chemotherapy and radiation therapy. A peppermint tea is one of the good treatmentoptions to the oral mucositis. The objectives of the study, to assess the level of oral mucositis before and after peppermint among patients receiving chemotherapy and radiation therapy in experimental group and control group.The design used for this study was quasi experimental design where pre and posttest only control group. The researcher selected sample in Sudha cancer centre and onco foundation, Erode Tamilnadu. The investigator selected 15 patients were control group and 15 patients are experimental group. pre and posttest assessmentdone with WHO oral mucositis scale for both groups. The result of the studyfrom the findings of the study it can be concluded that the highest percentage of patients were in the age group 50 – 60 years. Both males and females were equally affected. Oral mucositis occurred after 7-9 days of chemotherapy and radiation therapy. Mostly the duration of oral mucositis was 7-9 days. Overall difference in mean percentage for the areas of control and experimental group post test scores was 22% paired' test score control and experimental group pre and post test was 6.83 and10.43 at the level of significance P= 0.05. Unpaired' test score was2.42. At the level significance P=0.05.The conclusion of the study peppermint tea reduces the oral mucositis among chemotherapy and radiation therapy patients.

Keywords: Peppermint, Oral Mucositis, Chemotherapy & Radiation Therapy

INTRODUCTION

According to National Cancer Institute, Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. These contrast with benign tumors, which do not spread to other parts of the body. Over 100 types of cancers affect humans.

Cancer is a disease process that begins when a cell is transformed by the genetic mutation of the cellular DNA that forms clone & leads to metastasis. **J.Sorensen.**

According to Graham et al. [2022] conducted a study on healthy volunteers to establish the normal count of neutrophils in oral rinses. It was found to be compared to undetectable levels found in patients on chemotherapy.

According to Wymenga et al. 2019, revealed that the number of viable cells increases from baseline in patients receiving chemotherapy. In an attempt to understand the maturity of these epithelial cells, Papanicolaou staining technique had been performed. According to this technique, cells with orange color are considered to be mature cells; green or blue indicate immature cells; and partial orange and partial green/blue are considered to be intermediate cells.

One of the most dangerous and difficult side effects of radiation and chemotherapy for cancer patients is oral mucositis. Prophylaxis is prioritized due to the restricted therapeutic options for mucositis. Emphasis is placed on patient education regarding oral hygiene. **Maria Ines da cruz Campos 2014.**

The goal of pretreatment should be to lower systemic infection. In 2023, a projected 609,820 Americans will lose their lives to cancer, or 1670 fatalities every day.**American cancer center.**

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of peppermint on oral mucositis among patients receiving chemotherapy and radiation therapy in selected hospital, Erode.

OBJECTIVES

1. Assess the level of oral mucositis before and after peppermint among patients receiving chemotherapy and radiation therapy in experimental group and control group.

2. Determine the effectiveness of peppermint on oral mucositis among patients receiving chemotherapy and radiation therapy in experimental group.

3. Find out the association between the post test scores of oral mucositis among patients receiving chemotherapy and radiation therapy in experimental group and control group with their selected demographic variables.

MATERIALS AND METHODS: Quasi Experimental research design where pre and post test with control group design was used to evaluate the effectiveness of peppermint on oral mucositis among patients receiving chemotherapy and radiation therapy.With help of convenient sampling technique, the researcher selected the 30 samples, only experimental group receiving peppermint and 15 patients

receiving hospital routine care. WHO Oral Mucositis Grading Scale were used to assess the oral mucositis among patients receiving chemotherapy and radiation therapy. The data was analyzed by paired t-test, mean, standard deviation, unpaired through SPSS version.

Tool used for the study

There are 2 section of tools were used they are

Section A: **Demographic variables,**It consists of Age, gender, Occupation, personal habit, marital status, Cancer site, Cancer duration, Cancer treatment duration, Stage of cancer and previous hospitalization.

Section B:WHO Oral Mucositis Grading Scale

SCORING PROCEDURE:

Grade	**Score**
None	0 (none)
Oral soreness, erythema	1 (mild)
Oral erythema, ulcers, solid diet	2 (moderate)
Oral ulcers, liquid diet	3 (severe)
Oral alimentation impossible	4 (life-threatening)

ETHICAL CONSIDERATION:

1. Written permission was obtained from Director and Principal of Dhanvantri College of Nursing at Namakkal district.

2. Written consent was obtained from the Administrators, selected hospitals Erode to conduct the study.

3. Prior informed consent was obtained from head and neck cancer patients selected hospital Erode.

VALIDITY AND RELIABILITY:

The content validity of the demographic variables and WHO Oral Mucositis Grading Scale were

Validated in consultation with guide and field of experts. The experts are from the field nursing,

Medicine, Statistics, Psychology and Naturopathy. The tool was modified according to the

Suggestions and recommendations of the experts.

Period of data collection:

The data was collected from 11-04-2024 to 10-05-2024. The investigator collected the data from

Both control and experimental group.

Pre test

Written consent was obtained from the patient. The investigator administered WHO oral

Mucositis grading scale for screening the patients both control and experimental group

Patients who receiving chemo and radiation therapy to assess the level of oral mucositis.

Intervention:

Experimental group: preparation of peppermint tea, take 150 ml of water to be boiled, turn off the heat and add a handful of torn peppermint leaves to the water, Cover and steep for 5 minutes. Strain the tea and drink afterwards aadministered150 ml of Peppermint tea daily for one month

Control group: Received hospital routine care.

Post test

After 30 days the post test was conducted by using WHO oral mucositis scale was used to

evaluate the level of oral mucositis for both experimental and control group.

Results:

S.No	Demographic Variable	Experimental group (N_1= 15)		Control group (N_2= 15)	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
1	**Age in Years**				
	a. 35 – 44	7	46	6	40
	b. 45 – 54	4	27	4	27
	c. 55 – 64	4	27	5	33
2	**Gender**				
	a. Male	6	40	7	47
	b. Female	9	60	8	53
3	**Occupation**				

S.No	Demographic Variable	Experimental group (N_1= 15)		Control group (N_2= 15)	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
	a. House wife	7	47	5	33
	b. Moderate worker	0	0	0	0
	c. Heavy worker	5	33	6	40
	d. Professionals	3	20	4	27
4.	**Personal Habit**				
	a. Cigarette Smoker	7	46	6	40
	b. Alcoholic	4	27	4	27
	c. Both a and b	4	27	5	33
	d. Tobacco	0	0	0	0
	e. None	0	0	0	0
5.	**Type of cancer**				
	a. Oropharynx	2	13	1	7
	b. Buccal mucosa	6	40	5	34
	c. Floor of the mouth	4	27	5	33
	d. Tongue	3	20	2	13
	e. Nasopharynx	0	0	2	13
6	**Cancer duration (Years)**				
	a. One year	15	100	15	100
	b. 2 Years	0	0	0	0
	c. More than 2 years	0	0	0	0
7	**Cancer treatment duration (Years)**				
	a. <1 Years	11	73	12	80
	b. 1-2 Years	4	27	3	20
	c. 2-3 Years	0	0	0	0
	d. 3+ Years	0	0	0	0
8.	**Stages of cancer**				
	a. Second	12	80	11	73
	b. Third	3	20	4	27

S.No	Demographic Variable	Experimental group (N_1= 15)		Control group (N_2= 15)	
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
9	**Previous Hospitalization (Years)**				
	a. <1 Years	15	100	15	100
	b. 1-2 Years	0	0	0	0

Table 2 Frequency and percentage distribution of the experimental group pretestand post test scores of level of oral mucositis among patients receiving chemotherapy and radiation therapy(N_1=15)

Level of oral mucositis	Experimental group			
	Pre test		Post test	
	Frequency (N_2)	Percentage %	Frequency (N_2)	Percentage %
0 (None)	0	0	0	0
1 (Mild)	2	13	13	87
2 (Moderate)	5	34	2	13
3 (Severe)	8	53	0	0
4 (Life threatening)	0	0	0	0

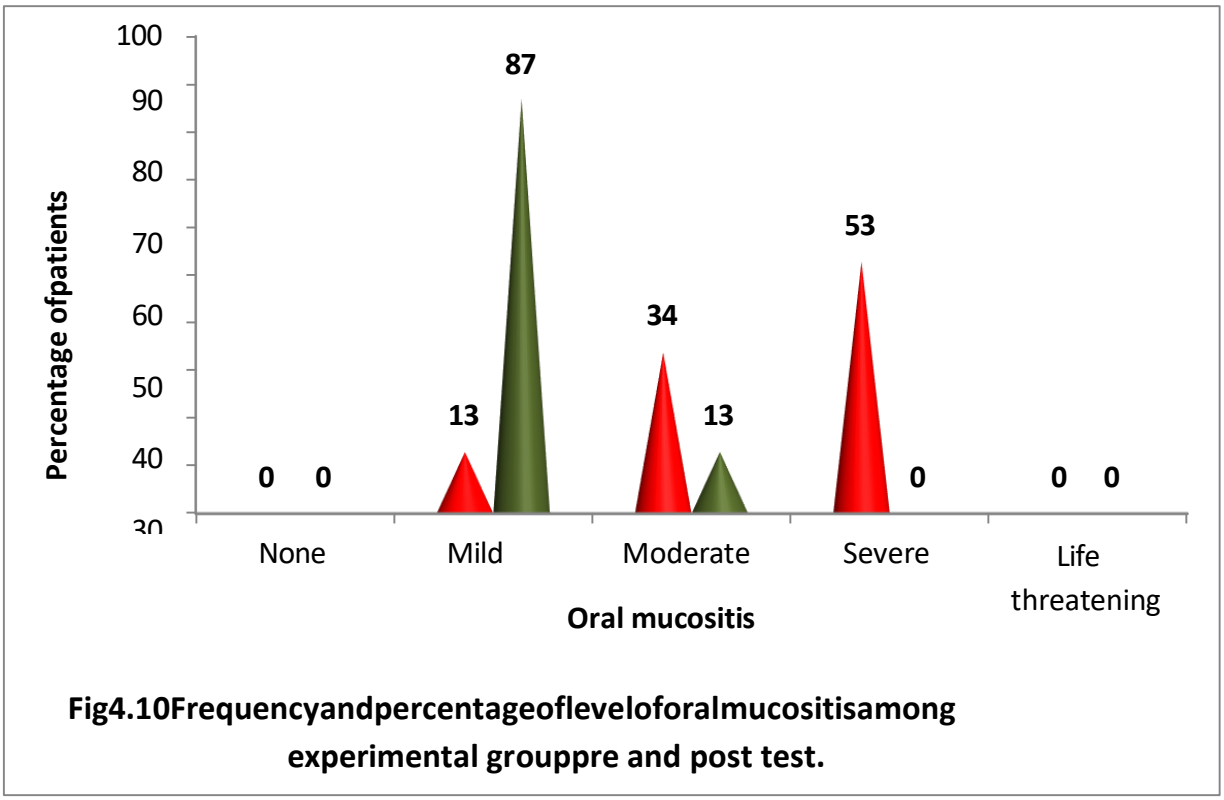

Fig4.10Frequencyandpercentageofleveloforalmucositisamong experimental grouppre and post test.

Frequency and percentage distribution of the control group pretest and post test scores of level of oral mucositis among patients receiving chemotherapy and radiation therapy (N_1=15)

Level of oral mucositis	Control group			
	Pretest scores		Post test scores	
	Frequency (N_1)	Percentage %	Frequency (N_1)	Percentage (%)
0 (None)	0	0	0	0
1 (Mild)	0	0	4	27
2 (Moderate)	1	06	10	73
3 (Severe)	7	47	1	6
4 (Life threatening)	7	47	0	0

Section C

Comparison of mean, standard deviation, and mean percentage of level of oral mucositis among experimental group and control group pre and post test.

Patients receiving chemotherapy and radiation therapy	Max scores	Pre test			Post test			Difference in mean %
		Mean	SD	Mean %	Mean	SD	Mean %	
Experimental group	5	4.5	1.5	90	3.6	1.4	72	18
Control group	5	4.5	1.5	90	2.5	1.2	50	40

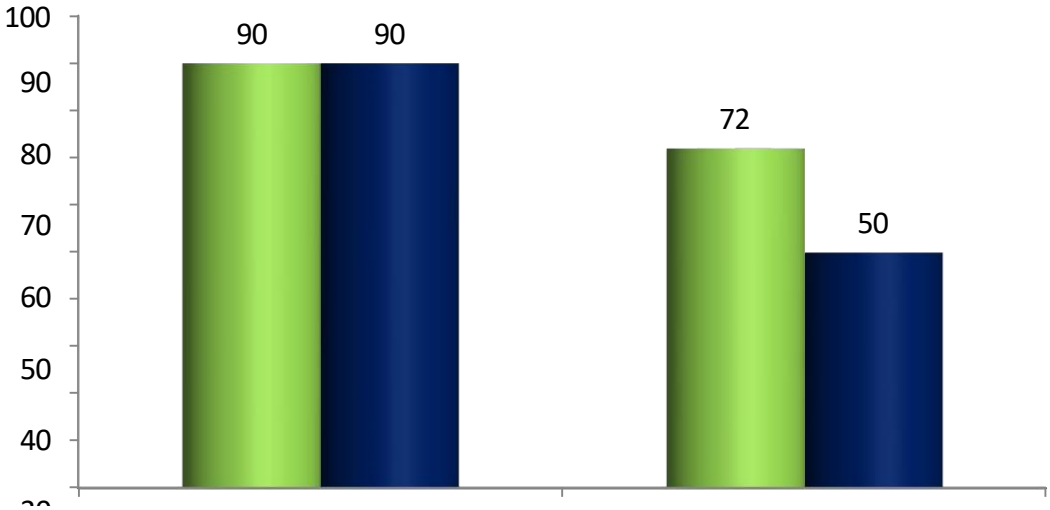

Fig :Mean percentage of level of oral mucositis among experimental group and control group pre and posttest.

Paired' test value of pre and post test scores of level of oral mucositis in control and experimental group DF =14, Table value=2.15, P<0.05 significant

Patients receiving chemotherapy and radiation therapy	Paired 't' value	Table value	Level of significant (P)
Experimental group	6.83	2.15	P < 0.05 **significant**
Control group	10.43	2.15	P < 0.05 **significant**

Chi-square value of association between control group post test scores with their demographic variables.

Demographic variables	**DF**	**χ2**	**Table value**	**Level of significance**
Age	1	0.00	3.84	P > 0.05 Not significant
Gender	1	3.50	3.84	P>0.05 Not significant
Occupation	1	1.09	3.84	P>0.05 Not significant
Personal Habit	1	4.29	3.84	P>0.05 Not significant
Cancer site	1	0.00	3.84	P>0.05 Not significant
Cancer duration	1	8.80	3.84	P>0.05 Not significant
Cancer treatment duration,	1	0.00	3.84	P>0.05 Not significant
Stage of cancer	1	0.77	3.84	P>0.05 Not significant
Previous hospitalization.	1	0.92	3.84	P>0.05 Not significant

Chi-square value of association between experimental group post test scores with their demographic variables

Demographic variables	**DF**	**χ2**	**Table value**	**Level of significance**
Age	1	0.51	3.84	P > 0.05 Not significant
Gender	1	0.51	3.84	P>0.05 Not significant
Occupation	1	2.62	3.84	P>0.05 Not significant
Personal Habit	1	1.36	3.84	P>0.05 Not Significant
Cancer site	1	0.51	3.84	P>0.05 Not significant
Cancer duration	1	6.03	3.84	P>0.05 Not significant
Cancer treatment duration,	1	0.46	3.84	P>0.05 Not significant
Stage of cancer	1	0.45	3.84	P>0.05 Not significant

Previous hospitalization.	1	0.32	3.84	P>0.05 Not significant

Discussion:

Frequency and percentage distribution of the experimental group pretest and post test scores of level of oral mucositis among patients receiving chemotherapy and radiation therapy In pretest majority (53%) of patients had severe oral mucositis and 34 % of the patients had moderate oral mucositis In posttest, most (87%) percentage of patients had mild oral mucositis .It seems that peppermint was effective in reducing the symptoms of oral mucositis among patients receiving chemotherapy andradiation therapy.

Frequency and percentage distribution of the control group pretest and post test scores of level of oral mucositis among patients receiving chemotherapy and radiation therapyIn pretest majority (47% and 47%) of patients had life threatening and severe oral mucositis In posttest, 67% percentage of patients had moderate oral mucositis, 27% of them had mild oral mucositis, only 6% of patients had severe oral mucositis. It seems that without intervention there was mild effective in the level of oral mucositis among patients receiving chemotherapy andradiation therapy

Comparison of mean, SD, and mean percentage of experimental group and control group pre and post test scores reveals that, in experimental group, pre-test mean score was (4.5 ± 1.5),which is 90%, whereas in post-test the mean score was (3.6 ± 1.4), which is 72%, showing a difference of 18% on the level of oral mucositis.

Paired' test value was 10.43, when compared to table value (2.15), it is high Pretest the mean score was (4.5 ± 1.5), which is 90%, Post test the mean score was (2.5 ± 1.2), which is 50%, Mean difference was 40 % .It seems that without intervention there was mild effective in the level of oral mucositis among patients receiving chemotherapy andradiation therapy.

Conclusion

The study concluded that peppermint is effective in reducing the oral mucositis among patients receiving chemotherapy and radiation therapy felt more comfort. There was statistically significant evidence on improvement of reducing the oral mucositis among patient receiving chemotherapy and radiation therapy.

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