

A Study to Assess Effectiveness of Topical Application of Pure Honey on Radiation Induced Mucositis in Patient Receiving Radiation Therapy at Selected Hospitals of Amritsar

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Abstract

Cancer refers to a condition of malignant neoplasia, involving unregulated cell growth. It is usually treated with chemotherapy and/or radiation therapy. Chances of survival with the disease vary greatly by the type and location of cancer and the extent of the disease at the start of treatment. Most patients develop the most troublesome and debilitating side effects of radiotherapy. Studies have shown that 80% of patients receiving radiation therapy develop oral mucositis. For reducing these complications complementary therapies can be used. Topical application of honey can help to reduce the severity and pain of mucositis. A study to assess the effectiveness of topical application of pure honey on radiation induced mucositis in patients receiving radiation therapy at selected hospitals of Amritsar was done to evaluate the effectiveness of an interventional strategy on oral mucositis among patients receiving radiation therapy. The research design adopted for this study was quasi experimental with one experimental and control group; samples size was 100 patients receiving radiation therapy, selected purposively. A modified WHO oral mucositis assessment scale was selected for the study. The result of the study have shown that the overall pre test means found to be 3.36 with SD 0.741 as compared to overall post test mean 1.68 noticed as with SD 0.646 in experimental group. In control group, overall pre test mean found to be 2.66 with SD 0.621 as compared to overall post test mean noticed as 2.72 with SD 0.654. Thus it is inferred that honey applications has a significant effect in reducing oral mucositis among patients receiving radiation therapy.

Keywords: Oral mucositis, radiation therapy, honey

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INTRODUCTION

Cancer is a disease involving uncontrolled proliferation of cells, leading to formation of malignant tumours, which may invade other parts of the body through the circulatory or the lymphatic system. Tumours can either be malignant or they can be benign, i.e., they do not invade neighbouring tissues nor spread throughout the body. There are over 200 different known cancers that can affect humans [1-3].

Chemotherapy and/or radiation therapy are most widely used for the treatment of cancer, however, there are several side effects associated with these therapies. Oral mucositis is one such complication in cancer patients undergoing chemotherapy and/or radiation therapy [4-6].

Complementary and alternative medicines or CAMS refer to the wide range of treatments that are not conventionally

prescribed by most doctors. These should always be used in combination to the conventional treatment as has been advised by the doctors, rather than replacing them with such complementary treatments. Although most of the complementary therapies generally do not cause any harm, they, however, are not completely safe as they have not been tested thoroughly as compared to the conventional medicines. The types of complementary therapies include: hydrotherapy, massage therapy, magnetic therapy, acupuncture, meditation, yoga [2, 6-8].

NEED FOR THE STUDY

Cancer is a major health problem that occurs in people of all ethnicities and is marked by uncontrolled and unregulated proliferation of cells.

It is the second largest cause of death after heart disease. According to WHO, worldwide cancer incidence rate is estimated as seven million with an annual mortality of about five millions, by the year 2015. 2/3 of all; cancer causes severe life threatening problems in the developing countries. Cancer was estimated to account for almost 6% of the entire global burden of the disease [1-3].

Research study conducted by Lalla, and Brennan shows that seventy-five percent of the patients received one radiation treatment per day, for 5 days each week, lasting an average of 6.4 weeks (range 3 to 16 weeks). However, 27% were hospitalized due to treatment complications, such as dehydration, inability to eat or drink, mouth pain, extreme weakness, and fatigue.

Usually hospitals are not focussing on complementary treatment. The investigator felt that there is a need to do some intervention to reduce the oral mucositis among head and neck cancer patients undergoing radiation therapy [6]. After reviewing related literature, the

investigator came to know that pure honey has a good effect in reducing oral mucositis symptoms among head and neck cancer patients undergoing radiation therapy [2]. So the researcher planned to conduct a study by using pure honey in reducing the oral mucositis among head and neck cancer patients undergoing radiation therapy.

OBJECTIVES

1. To assess the pre interventional degree of oral mucositis in experimental group and control group.
2. To implement the topical application of pure honey in experimental group.
3. To assess the post interventional degree of oral mucositis experimental group.
4. To compare pre and post interventional oral mucositis in patient receiving radiation therapy among experimental and control group.
5. To determine the association of oral mucositis with selected demographic variable in experimental group.

RESEARCH METHODOLOGY

A quasi experimental and evaluative approach is adopted to assess the effectiveness of topical application of pure honey on radiation induced mucositis in patients receiving radiation therapy at selected hospitals of Amritsar as it helps to find out the relationship among these variables and also to find out association of oral mucositis with selected demographic variables in experimental group.

The population of this study were cancer patients receiving radiation therapy in oncology department of Guru Nanak Dev Govt. Hospital Amritsar. The sample size comprised of 100 patients. Non probability -purposive sampling technique was used to select the samples for the study. WHO standardised tool was used to assess the purpose of present study. The instruments consisted of:

Tool-I

Demographic variables consisted of six items i.e. age, gender, education, occupation, duration of illness and duration of treatment.

Tool-II

WHO Standardized Modified Oral Mucositis Scale. It is a five point scale that

includes different parameters to assess the degree of oral mucositis.

RESULTS

To assess the effectiveness of topical application of pure honey induced mucositis in patient receiving radiation therapy.

Demographic Characteristics of the Clients

Table 1: Frequency and Percentage Distribution of Demographic Characteristics of Clients having Oral Mucositis.

(N=100)

Sr. No.	Demographic Variables	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
1.	Age				
a.	20–30 year	13	26%	11	22%
b.	31–40 year	12	24%	11	22%
c.	41–50 year	21	42%	23	46%
d.	51–60 year	4	8%	05	10%
2.	Gender				
a.	Male	34	68%	18	36%
b.	Female	16	32%	32	64%
3.	Education				
a.	Illiterate	23	46%	19	38%
b.	Primary education	14	28%	13	26%
c.	Higher secondary	9	18%	14	28%
d.	Graduate and above	4	8%	04	8%
4.	Occupation				
a.	Employed	22	44%	21	42%
b.	Unemployed	28	56%	29	58%
5.	Duration of Illness				
a.	7 days to 1 month	12	24%	17	34%
b.	1 month to 6 month	11	22%	10	20%
c.	6 month to 1 year	17	34%	14	28%
d.	More than 1 year	10	20%	9	18%
6.	Duration of Treatment				
a.	1 month	10	20%	18	36%
b.	>1 month	15	30%	12	24%
c.	>2 month	25	50%	20	40%

Table 1 depicts classification of subjects according to age, gender, education, occupation, duration of illness and duration of treatment. It represents distribution of subjects according to age. Present study revealed that maximum number of samples 21(42%) belong to age group included 41–50 in experimental group and 23(46%) in 31–35 in control group. While minimum samples 4(8%) were included in 51–60 years age in experimental group and 5(10%) samples in control group.

Above Table 1 illustrates that experimental group contains more number of males i.e. 34(68%) as compared to control group which have 18(36%) males. Number of females also varies in both groups, i.e. 16(32%) in experimental group and 32(64%) in control group.

Based on education maximum number of samples 23(46%) belong to illiterate group in experimental group and 19(38%) in control group. While minimum samples

4(8%) included in graduate and above in experimental group and 4(8%) in graduate and above in control group. It represents the occupation maximum number of samples 28(56%) belong to unemployed subjects in experimental group and unemployed 29(58%) in control group. While minimum 22(44%) in employed i.e. experimental group and 21(42%) employed in control group.

As described in duration of illness maximum sample 17(34%) belongs to 6 month to 1 year in experimental group and 17(34%) belongs to 1 day to 1 month in control group. While minimum 10(20%) belongs more than 1 year in experimental group and more than 1 year is 9(18%) in control group. It is revealed that most of the samples have >2 month duration of treatment in both groups i.e. 25(50%) while minimum samples were having 1 month duration 10(20%) in experimental group and >1 month 12(24%) in control group.

Table 2: To Assess the Pre Interventional Degree of Oral Mucositis in Experimental Group and Control Group.

Variable	Experimental Group (n=50)	Control Group (n=50)
Mean	3.36	2.66
Mean Percentage	6.72%	5.32%
Standard Deviation	0.741	0.621

Table 2 shows that mean in experimental group is 3.36 with mean percentage is 6.72% and standard deviation is 0.741 and in control group mean is 2.66 with mean

percentage 5.32% as standard deviation is 0.621. So mean is higher in experimental group as that of control group.

Table 3: To Assess the Post Interventional Degree of Oral Mucositis in Experimental Group.

Variable	Experimental Group (n=50)	Control Group (n=50)
Mean	1.68	2.72
Mean Percentage	3.36%	5.44%
Standard Deviation	0.646	0.654

The Table 3 above shows that mean in post interventional degree of oral mucositis in experimental group is 1.68 with mean percentage 5.44% and standard deviation

is 0.646 as compared to control mean is 2.72 with mean percentage 5.44% and SD is 0.654.

Table 4: To Assess the Pre Test Degree of Oral Mucositis among Patients Receiving Radiation Therapy in Experimental Group

Grading Score	Experimental Group (n=50)		Control Group (n=50)	
	Frequency	Percentage	Frequency	Percentage
1	5	10%	3	6%
2	16	32%	16	32%
3	18	36%	24	48%
4	11	22%	7	14%

Table 5: To Assess the Post Test Degree of Oral Mucositis among Patients Receiving Radiation Therapy in Experimental Group

Grading Score	Experimental Group (n=50)		Control Group (n=50)	
	Frequency	Percentage	Frequency	Percentage
1	5	10%	4	8%
2	20	40%	17	34%
3	17	34%	23	46%
4	8	16%	6	12%

Experimental Group

Table 6 reveals the findings that the mean of pretest is 3.36 and mean percentage is 6.72% with SD 0.741 as compared to post test mean is 1.68 with mean percentage is

3.36% and SD 0.646. The calculated value of paired t-test (2.42) is greater than the tabulated t-value (2.02). So result is significant at 0.05 level.

Table 6: To Compare Pre and Post Interventional Degree of Oral Mucositis in Patient Receiving Radiation Therapy among Experimental and Control Group.

(N=50)

Variable	Mean	Mean %	SD	Paired T test	Table Value
Pre test	3.36	6.72%	0.741	2.42*	2.02
Post test	1.68	3.36%	0.646		

*Significant at 0.05 Level.

Control Group

Table 7 explains that in control group the pretest mean is 2.66 with mean percentage 5.32% and SD is 0.6218 and post-test mean score is 2.72 with mean percentage is 5.44% and SD is 0.654. The data subjected for statistical analysis paired t-test show a significant difference ($p < 0.05$). The calculated value of paired t-test is 2.38 greater than the tabulated t-value (2.02). So result is significant at 0.05 level.

Overall post test scores on oral mucositis in experimental group and control group are established in Table 8. It can be seen from the findings that the post test of experimental group to be 1.68 with SD 0.646 as compared post test in control group to be 5.44 with SD 0.654. The data subject for statistical unpaired t-test showed a highly significant difference ($p < 0.05$) existing post test score.

Table 7: Comparison between Pre Test and Post Test mean scores and its percentage in Control group

(N=50)

Variable	Mean	Mean %	SD	Paired T test	Table Value
Pre test	2.66	5.32	0.6218	2.38*	2.02
Post test	2.72	5.44	0.654		

*Significant at 0.05 Level

Table 8: Comparison between Post Test scores on Oral Mucositis in experimental and control group

Variable	Mean	Mean %	SD	Unpaired t Test	Table Value
Post test Score of Experimental	1.68	3.36	0.646	8.25*	2.02
Post test Score of Control group	2.72	5.44	0.654		

*Significant at 0.05 Level.

Pre Experimental Group

Table 9 shows that the chi square values were calculated to find out the association of oral mucositis with selected demographic variable in pre experimental group related to age of subjects (24.11), gender (5.05), education (12.25), occupation (4.413), duration of illness (18.48) and association with duration of treatment (6.12).

The table above presents the association of oral mucositis with selected demographic

variable in pre experimental group. The impact of age and duration of illness on degree of oral mucositis found to be significant as the calculated value was more than tabulated value. Hence the research hypothesis was accepted at 0.05 level of significance. Chi square test result depicts impact of education, occupation, duration of treatment on the degree of oral mucositis and effectiveness of pure honey is non-significant. Hence the hypothesis is rejected at 0.05 level of significance.

Table 9: Association of Oral Mucositis with Selected Demographic Variables in Experimental Group.

N=50

Sr. No	Demographic Variables	Categories								Chi Square	Df	Table Value
		No Effect		Mild Effective		Moderate Effective		Highly Effective				
		F	%	F	%	f	%	f	%			
1.	Age									24.11 (S)	9	16.92
	a)20–30	0	0	5	10	4	8	4	8			
	b)31–40	2	4	4	8	2	4	4	8			
	c)41–50	1	2	6	12	11	22	3	6			
	d)51–60	2	4	1	2	1	2	0	0			
2.	Gender									5.05 NS	3	7.82
	a) Male	5	10	11	22	13	26	5	10			
	b) Female	0	0	5	10	5	10	6	12			
3.	Education									12.25 NS	9	16.92
	a) Illiterate	1	2	6	12	12	24	4	8			
	b) Primary Education	3	6	5	10	1	2	5	10			
	c) Higher Secondary	0	0	4	8	4	8	1	2			
	d) Graduate and above	1	2	1	2	1	2	1	2			
4.	Occupation									4.413 NS	3	7.82
	a) Employed	3	6	6	12	6	12	8	16			
	b) Unemployed	2	4	10	20	12	24	4	8			
5.	Duration of											

	Illness									18.48 NS	9	16.92
	a) 7 days to 1 month	2	4	4	8	4	8	2	4			
	b) 1 month to 6 months	1	2	3	6	4	8	3	6			
	c) 6 months to 1 year	2	4	6	12	6	12	3	6			
	d) more than 1 year	0	0	3	6	4	8	3	6			
6.	Duration of Treatment									6.12 NS	6	12.59
	a) 1 month	0	0	5	10	3	6	2	4			
	b) >1 month	2	4	2	4	8	16	3	6			
	c) >2 month	3	6	8	16	7	14	7	14			

(S*)=Significant; (NS) =Non Significant; F=Frequency; Df= Degree of Freedom.

Table 10: Association of Oral Mucositis with Selected Demographic Variable in Experimental Group.

(Post Experimental)

N=50

Sr. No.	Demographic Variables	Categories								Chi Square	df	Table Value
		No effect		Mild		Moderate		Severe				
		f	%	f	%	f	%	F	%			
1.	Age									13.48 NS	9	16.92
	a) 20–30	3	6	5	10	4	8	1	2			
	b) 31–40	1	2	1	2	8	16	1	2			
	c) 41–50	3	6	10	20	7	14	1	2			
	d) 51–60	0	0	4	8	0	0	1	2			
2.	Gender									2.245 NS	3	7.82
	a) Male	5	10	12	24	15	30	2	4			
	b) female	2	4	8	16	4	8	2	4			
3.	Education									13.68 NS	9	16.92
	a) Illiterate	4	8	9	18	6	12	4	8			
	b) Primary Education	2	4	8	16	4	8	0	0			
	c) Higher Secondary	0	0	3	6	6	12	0	0			
	d) Graduate and above	1	2	0	0	3	6	0	0			
4.	Occupation									11.28 NS	3	7.82
	a) Employed	0	0	12	24	10	20	0	0			
	b) Unemployed	7	14	8	16	9	18	4	8			
5.	Duration of Illness									16.55 NS	9	16.92
	a) 7 days to 1 month	3	6	5	10	3	6	1	2			
	b) 1 month to 6 months	2	4	4	8	5	10	0	0			
	c) 6 months to 1 year	1	2	3	6	10	20	3	6			
	d) more than 1 year	1	2	8	16	1	2	0	0			
6.	Duration of Treatment									21.39	6	12.59
	a) 1 month	1	2	2	4	7	14	0	0			

b) >1 month	4	8	1	2	8	16	2	4	S		
c) >2 months	2	4	17	34	4	8	2	4			

(S*)=Significant; (NS) =Non Significant; F=Frequency; P=Percentage; df=Degree of Freedom.

Table 10 showed that the chi square values were calculated to find out the association of oral mucositis with selected demographic variable in post experimental group related to age of subjects (13.48), association with gender (2.24), association with education (13.68), association with occupation (11.28), association with duration of illness (16.55) and association with duration of treatment (21.39).

The association of oral mucositis with selected demographic variable in post experimental group.

The impact of occupation and duration of treatment found to be significant at level of 0.05 hence the hypothesis is accepted. Chi square test result depicts impact of gender, education, duration of illness is to be non significant at level of 0.05.

IMPLICATIONS

The implications of findings have been discussed in relation to nursing service, nursing administration nursing education and nursing research.

Nursing Service

1. The research findings can be used to inform the decisions, actions and interrelated with clients.
2. Research findings will also help to eliminate nursing action that do not achieve desired outcome.
3. The research findings can be used for discussing the implications and relevance of research findings with client.
4. Nurses will be able to assess degree of oral mucositis, its risk factors and preventive measures among cancer patients based on the research findings.
5. Nurses will be able to apply the best possible therapy in terms of action,

cost and availability to relieve oral mucositis.

Nursing Administration

Nurse as an administrator plays an important role in educating the professionals such as mass health education in hospitals.

1. The nurse administrator will be able to formulate policies, protocols, system of care in collaboration with the multidisciplinary team based on the research findings.
2. These research findings will help the administrator to replace the previous practices with these cost effective therapies.
3. Nurse administrator can use these findings in clinical seminars and staff education programmes topical application of pure honey.
4. These findings help the hospital administrator to evaluate the quality of care and honey application protocols.

Nursing Education

This study can be useful in nursing education through following ways:

1. The division used in the tool can be useful in academic curriculum for the sake of tests, exams practical and viva-voice.
2. The statement can be further intensified to educate the student nurses regarding honey application on oral mucositis.
3. The research work can be used in community health nursing to teach nursing students regarding honey application on oral mucositis induced by radiation therapy.
4. The findings can be used to teach the students regarding oral mucositis and effective nursing care.

5. The findings can be used for co curricular activities like seminars, panel discussions and debates etc.
6. The nurse educator can teach the students and clients related to the research.

Nursing Research

1. The research findings can be used by the new students in their research work.
2. The research work will help to attend research presentation at professional conference.
3. The tool used in the present study will be used as original or modified for further research.
4. Further research can be conducted by taking more variables for better results.
5. Conceptual framework for the study can be used for future research.

RECOMMENDATIONS

On the basis of the study that had been conducted certain suggestions are given for further studies:

1. A similar study can be undertaken on large sample for better generalization.
2. A similar study can be under taken by adopting an experimental factorial design for better results.
3. A similar study can be conducted by taking other topical therapies along with this therapy for better results.

CONCLUSION

The major goal of nursing practice is to identify the nursing practices that makes differences in health care status of individuals and are cost effective.

The study was conducted to assess the effectiveness of topical application of pure

honey induced mucositis in patient receiving radiation therapy at selected hospitals of Amritsar.

On the basis of study following conclusion was made: The result of study conclude that mean in pretest is 3.36 and standard deviation 0.741 and in post test mean is 1.68 and standard deviation is 0.646 in experimental group, thereby it is proved that effectiveness of honey has significant effect in oral mucositis.

In control group, overall pre test mean found to be 2.66 with SD 0.6218 as compared overall post test mean noticed as 2.72 with SD 0.654. Thus it is inferred that there is no significance.

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