



## EFFECT OF APPLICATION OF HONEY ON RADIATION INDUCED ORAL MUCOSITIS – A QUASI EXPERIMENTAL STUDY.

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### ABSTRACT

**INTRODUCTION:** Head and neck cancer are the common carcinoma of the oral cavity, and radiation therapy is an important treatment modality. Oral mucositis is an important complication of radiation therapy. This study was adopted to find out the effect of honey on radiation induced oral mucositis among patients undergoing radiation therapy in selected Hospital, Kolkata.

**MATERIALS AND METHODS:** This was a quasi experimental study among 60 patients, (experimental group 30, control group 30) who had undergone radiation therapy related head and neck cancer. A semi structured interview schedule and WHO oral mucositis scale were used to collect data.

**RESULTS:** The study findings showed that most of the participants in experimental group (46.6%) and control group (53.3%) had grade 1 oral mucositis before intervention. After intervention, majority of participants (43.3%) in experimental group had no oral mucositis. Where as (40%) participants in control group had developed grade 2 oral mucositis. The findings also showed that the application of honey was effective in reducing radiation induced oral mucositis in experimental group as evident from 't' value of 3.16 [ 't' df(29)=2.76 ] at 0.01 level of significance.

**CONCLUSION :** The study showed the effect of honey on radiation induced oral mucositis is effective.

### KEYWORDS :

#### INTRODUCTION

Head and neck cancer are the common carcinoma of the oral cavity, pharynx and larynx as well as other tumours that affect the head and neck.[1] The most common sites of head and neck cancer are oral cavity (48%), following larynx (25%) and then the oropharynx (10%). [2]

According to WHO, which estimated that 84 million people will die of cancer between 2005 and 2015 without intervention. The world wide cancer incidence rate is estimated as seven million with in annual mortality of about five millions, and it is projected by the year 2015. [3] A report was published on **ResearchGate (January 2013)** conducted by **Manik Rao Kulkarni**, Head and Neck Cancer Burden in India suggest that Magnitude of problem in India: Overall, 57.5% of global head and neck cancers occur in Asia especially in India. Head and neck cancers in India accounted for 30% of all cancers. In India, 60 to 80% of patients present with advanced disease as compared to 40% in developed countries.[30]

**American cancer society (2006)** reported that 1,399,790 new cancer cases were diagnosed in the United States and an estimated 5, 64,830 deaths occur as a result of cancer. World Health Organization reported that India has highest cancer rate in the world.[3]

The treatment modalities for cancer depends on the type and extent of cancer, which include some combination of surgery, radiation therapy, chemotherapy. Radiation therapy is most preferable treatment modalities of head and neck cancer.50% of all cancer patient receives radiation therapy.

Every therapy has its own effects and complications. The complications of radiation therapy are dry mouth, mouth and gum sore ,stiffness of jaw, GI mucosa inflammation, difficulty in swallowing, cough, rectal bleeding, impotency. The most common side effect is oral mucositis. Oral mucositis manifested by erythema, inflammation, ulceration, and haemorrhage in the mouth and throat, and it significantly impairs chewing and swallowing.[4]

Current radiation therapy protocols have an oral mucositis incidence of 85% to 100% . The incidence of oral mucositis can approach 90% to 100% in patients receiving aggressive radiation therapy. Symptoms can develop 2 to 10 days after the start of therapy and can last 2 to 3 weeks or more.[5]

#### MATERIALS AND METHODS

A quasi experimental study was conducted among head and neck cancer patients, who had undergone radiation therapy and had radiation induced oral mucositis. in department of radiotherapy in culcutta medical college and hospital, Kolkata. The sampling

technique was non probability purposive sampling technique.

The sample size was 60, 30 for experimental group and other 30 for control group. We included the patients who developed grade I, II, III radiation induced oral mucositis. And excluded patients who are having diabetes mellitus, and having corticosteroid therapy and already developed radiation induced grade IV oral mucositis. Semi structured interview schedule on demographic variables and disease profile and WHO oral mucositis assessment scale.

Face to face, interview was conducted to collect the background data and recording to be done. Observation of oral mucositis was done by WHO oral mucositis assessment scale on 1<sup>st</sup> day and 16<sup>th</sup> day of radiation therapy. The experimental group was given 15 ml honey to rinse the mouth for 2 minutes; 15 minutes before and after the radiation therapy for 15 days.

The obtained data were scrutinized, categorized, organized and presented according to the study objectives using descriptive and inferential statistics. Inferential statistical methods were used to find any association. P value less than 0.05 was consider as significant.

#### RESULTS

Out of 60 subjects, in experimental group 23.33% were from 41-50 years of age. And in control group 36.66% were from 31-40 years of age group. And also in control group 86.66% were male and in control group 80% were male in gender.

In experimental group, the majority that is 46.66% had grade 1 oral mucositis, 40% had grade 2 and 13.33% had grade 3 oral mucositis respectively whereas in control group, 53.33% had grade 1 oral mucositis, 33.33% had grade 2 and 13.33% had grade 3 oral mucositis respectively.

Client with grade 0 and grade 4 oral mucositis were not included in the present study as grade 0 indicates no oral mucositis and grade 4 indicates sever oral mucositis.

In experimental group, after application of honey, 43.33% participants had grade 0 oral mucositis, 23.33% participants had grade 1 and grade 2 oral mucositis respectively and 10 % participants had grade 3 oral mucositis where as in control group 40% of the participants had grade 2 oral mucositis, 23.44% had grade 3, 20% had grade 1, 10% had grade 0 and 06.66% participants were developed grade 4 oral mucositis.

So, the study findings showed that in experimental group, who had oral mucositis before the intervention, after intervention 43.33%

participants had grade '0' oral mucositis which means their oral mucositis healed completely.

**Table 1 Mean, median, mean difference, standard deviation, SE<sub>MD</sub>, and paired 't' value of pre test and post test of Oral mucositis assessment score in experimental group.**

n1 = 30

Oral mucositis score	Mean	Mean Difference	SD	SEMD	t value
Pre test	1.67	0.60	0.71	0.18	3.16 **
Post test	1.07		1.05		

't' df(29)=2.76, p<0.01

The data presented in table 1 indicates that the mean post test score of oral mucositis (1.07) was lower than mean pre test score of oral mucositis (1.67) with the mean difference of 0.60 which is statistically significant as evident from the 't' value of 3.16 at df(29) at 0.01 level of significance.

**Table 2 Mean, mean difference, standard deviation, SEMD, and unpaired 't' value of post test score of Oral mucositis assessment score in experimental group and control group**

n = 60 (30+ 30)

Oral mucositis score	Mean	Mean Difference	SD	SEMD	t value
Experimental group	1	0.97	1.05	0.28	3.53 ***
Control group	1.97		1.07		

't' df(58)=3.46, p<0.001

The data presented in table 2 indicates that the mean post test score of oral mucositis (1) in experimental group was lower after the application of honey than post test score of oral mucositis in control group (1.97) with the mean difference of 0.97 which was statistically significant as evident from the 't' value of 3.46 at 0.001 level of significance.

Further application of honey on radiation induced oral mucositis was found to be effective in reducing oral mucositis among participants in experimental group than in control group as evident from 't' value of 3.53 ['t' df(58)=3.46] at 0.001 level of significance.

**CONCLUSION:**

In this study, basis of the data analysis and interpretation the following conclusion were drawn. According to study findings, the participants who were having radiation induced oral mucositis grade 1, 2, and 3. Application of honey was found effective in reducing radiation induced oral mucositis.

The study is useful clinical practice, Oral application of honey is a cost effective and easily implemented nursing intervention that is well tolerated by patients. In consideration of the valid body of knowledge about application of honey it is time for applying them to the practice and oncology nurses are crucial to application of the evidence in those areas.

Oral application of honey is simple and effective method which can be used to reduce oral mucositis. Nurses caring for patients treated with radiation therapy should place high priority to prevent oral mucositis by implication of honey. The practice of this method helps to reduce consumption of opioids. Practicing evidenced based practice like application of honey in oral mucositis will make working more efficient and cost effective. Therefore, in the hospital as well as in the community settings a nurse can provide awareness regarding side effects of radiation therapy and its management technique like for oral mucositis application of honey or others related the side effects.

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**CONFLICT OF INTEREST :** Nil

**ETHICAL CLEARANCE :** Obtained from institutional Ethics Committee.

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