



## A STUDY TO ASSESS THE EFFECTIVENESS OF TOPICAL APPLICATION OF HONEY ON RADIATION-INDUCED ORAL MUCOSITIS AMONG CANCER PATIENTS IN A SELECTED HOSPITAL AT DELHI, NCR

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### ABSTRACT:

**Aim-** The objective of the study is to assess the effectiveness of topical application of honey on reducing radiation-induced oral mucositis among cancer patients in experimental group.

**Materials and Methods-** A quasi experimental pretest posttest design and non probability purposive sampling technique was used for study. The sample consists of 30 Head and neck cancer patients with radiation induced oral mucositis (15 for experimental group and 15 for control group) at Delhi state cancer institute, Delhi, NCR. A pre assessment was done on the 1st day for both group and honey application was given for 2 times a day 15 minutes before and after radiation therapy continuously till 10 days in the experimental group and on the 11 day post assessment was done in both groups. The assessment tool was WHO oral mucositis grading scale. The statistical analysis was done by 't' test and fisher's exact test.

**Results-** The finding shows that in experimental group (60%) had grade 2 oral mucositis before intervention. After intervention, majority of sample (53.3%) had grade 1 oral mucositis, which was lower as compared to control group. There was significant difference between mean post test scores of cancer patient with oral mucositis in experimental group (1.06) and in control group (2.33) and obtained unpaired 't' value (5.12) was higher than the tabulated value (2.05) for df (28) at 0.05 level of significance.

**Conclusion-** The study revealed that honey application was effective for reducing radiation induced oral mucositis among head and neck cancer patients.

### KEYWORDS:

HONEY APPLICATION, RADIATION INDUCED ORAL MUCOSITIS, HEAD AND NECK CANCER PATIENT.

### INTRODUCTION

"Life shrinks or expands in proportion to one's courage."

**According to WHO** Cancer is the second most common cause of death globally, accounting for an estimated 9.6 million deaths in 2018. Lung, prostate, colorectal, stomach and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, cervical and thyroid cancer are the most common among women. Over the coming decades, it is projected that low and middle-income countries will be hit the hardest by the continued increase in cases and deaths. Many of those cases can be prevented, or at the very least treated effectively when there is an early diagnosis.

**The International Agency for Research on Cancer (IARC), IARC World Cancer Report 2020** presents the most comprehensive, up-to-date science on cancer prevention, including statistics, causes, and mechanisms, and how this can be used to implement effective, strategies for cancer prevention and early detection. Priority was given to recent epidemiological findings that have contributed to

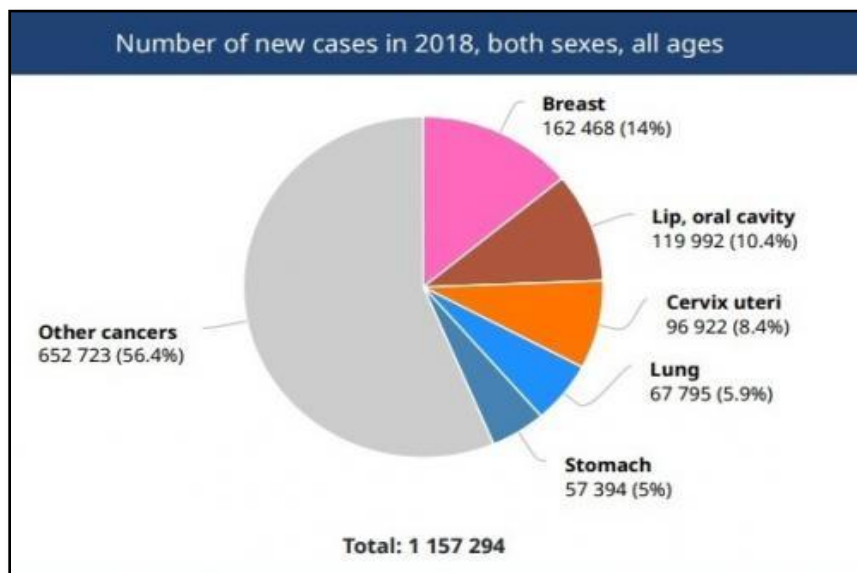
an increased understanding of etiology or, in some rare cases, prevention. In this context, WHO unveils cancer control measures that could save 7 million lives. The predicted global cancer burden by 2040 is expected to exceed 27 million new cancer cases per year, a 50% increase on the estimated 18.1 million cancers in 2018, with the greatest increase in countries with low or medium Human Development Index (HDI).

Radiotherapy (RT) is the treatment of cancer and other diseases with ionizing radiation. Radiation damages both cancer cells and normal cells. Patients with oral mucositis (OM) experience inflammation and ulceration of the mouth's mucosal lining. Radiation-induced oral mucositis shows hyperkeratosis of the oral mucosa after the dose of 10–20 Gy. Erythema is the first clinical sign seen on the oral mucosa, and severity of mucositis reaches at a dose of 30 Gy. After the completion of radiotherapy, the symptoms abate in 2–6 weeks. The accumulative dose of radiation for the primary treatment of head and neck cancer treatment is 60–70 Gy, depending on the irradiation of the tumor.

### NEED OF THE STUDY

India had an estimated 1.16 million new cancer cases in 2018, according to a report by the World Health Organization (WHO), which said that “one in 10 Indians will develop cancer during their lifetime and one in 15 Indians will die of cancer”. The World Cancer Report said that according to the estimated cancer burden in India in 2018, there are about 1.16 million new cancer cases, 784,800 cancer deaths, and 2.26 million 5-year prevalent cases in India’s population of 1.35 billion. In India, the six

most common cancer types were breast cancer (162,500 cases), oral cancer (120,000 cases), cervical cancer (97,000 cases), lung cancer (68,000 cases), stomach cancer (57,000 cases), and colorectal cancer (57,000). Together, these account for 49 per cent of all new cancer cases. There will be an estimated 12% rise in cancer cases in India in next five years, according to the Indian Council of Medical Research (ICMR).



According to the estimates of the National Cancer Registry Programme Report 2020, released by the ICMR in association with National Centre for Disease Informatics & Research (NCDIR) Bengaluru, there will be about 13.9 lakhs cancer cases in 2020 which is likely to increase to 15.7 lakhs by 2025, based on current trends.

In 2020, tobacco related cancers are estimated to contribute 3.7 lakhs (27.1%) of the total cancer burden. Among women, breast cancers are estimated to contribute 2.0 lakhs (14.8%) and cervix cancer are estimated to contribute 0.75 lakhs (5.4%), whereas for both men and women, cancers of the gastrointestinal tract is estimated to contribute 2.7 lakhs (19.7%) of the total cancer burden, according to the report.

## STATEMENT OF PROBLEM

**“A study to assess the effectiveness of topical application of honey on radiation-induced oral mucositis among cancer patients in a selected hospital at Delhi, NCR.”**

## OBJECTIVES

- To assess the effectiveness of topical application of honey on reducing radiation-induced oral mucositis among cancer patients in experimental group as evidence by WHO oral mucositis grading scale.
- To determine the association between radiation-induced oral mucositis in experimental group with selected demographic variables.

To determine the association between radiation-induced

oral mucositis in control group with selected demographic variables.

## HYPOTHESIS

**H<sub>1</sub>:** There will be a significant reduction in radiation-induced oral mucositis among cancer patients in experimental group as evidence by WHO oral mucositis grading scale at 0.05 level of significance.

**H<sub>2</sub>:** There will be a significant association between radiation-induced oral mucositis among cancer patients in experimental group with the selected demographic variables at 0.05 level of significance.

**H<sub>3</sub>:** There will be a significant association between radiation-induced oral mucositis among cancer patients in control group with the selected demographic variables at 0.05 level of significance.

## METHODOLOGY

**Research approach:** The research approach adopted for this study was Quantitative approach.

**Research design:** Quasi experimental with Pre test post test research design was used for the study.

**Setting of the study:** The study was conducted at Delhi State Cancer Institute, Delhi, NCR.

**Sample and sample size:** Sample comprised of Head and neck cancer patients who are having radiation-induced oral mucositis at Delhi state cancer institute, Delhi NCR, who met the inclusion criteria.

Samples were divided into two groups:

Experimental Group- 15 Head and neck cancer patients

Control Group - 15 Head and neck cancer patients

**Sampling technique:** Non- probability purposive sampling technique was used for study.

### CRITERIA FOR SAMPLE SELECTION

#### INCLUSION CRITERIA:

- ❖ Both male and female head and neck cancer patients undergoing radiation therapy with radiation- induced oral mucositis.
- ❖ Patients above 20 years of age
- ❖ Cancer patients with oral mucositis 1st, 2nd and 3rd grade
- ❖ Cancer patient with non-diabetic and no allergies.
- ❖ Those who were present during the study and those who were willing to participate in the study.

#### EXCLUSION CRITERIA:

- ❖ Patients those who were critically ill.
- ❖ Patients below 20 years of age
- ❖ Cancer patient with diabetes and any allergies.
- ❖ Those who were not willing to participate in the study
- ❖ Those who were not present during the study

#### DESCRIPTION OF TOOL:

##### Tool - 1: Demographic data

It consists of age, gender, qualification, occupation, frequency of mouth care, personal habits, duration of cancer, and stage of cancer, type of treatment received, duration of received radiation therapy, total dose of radiation received and any previous knowledge on honey application.

##### Tool -2: WHO oral mucositis grading scale

WHO oral mucositis grading scale was used to assess the radiation-induced oral mucositis in head and neck cancer patients before and after the intervention.

**Ethical Clearance:** Obtained from institutional Ethics Committee. Anonymity and confidentiality of the participant has been maintained.

#### PLAN FOR DATA ANALYSIS

The collected data was organized, tabulated and analyzed through descriptive and inferential statistics including 't'-test and fisher exact test.

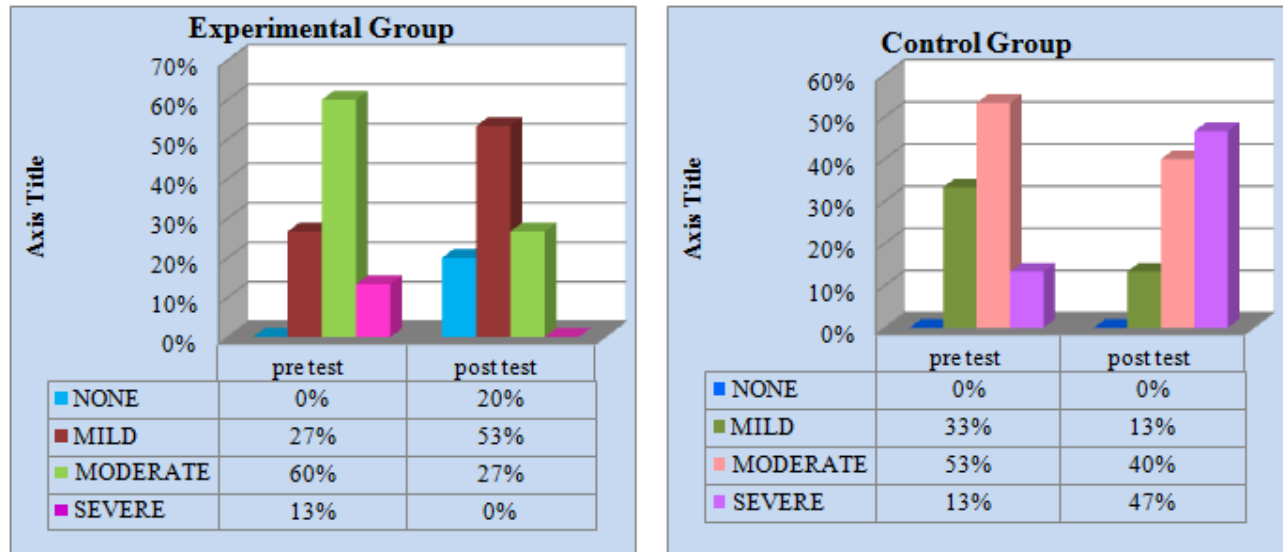
### RESULT & DISCUSSION

**Section I-** Frequency and percentage distribution of demographic data of patients with oral mucositis in experimental and control group.

In experimental group majority of 8(53.33%) patients were in the age group of >50 years and in control group majority of 6(40%) patients were in the age group of 40-49 years. In gender male patients i.e. 13 (86.66%) and female patients i.e. 2 (13.33%) in both group. Marital status of patients in experimental group 12 (80%) and in control group 14 (93.33%). Qualification level of cancer patients that majority were having Bachelor's degree i.e. 7 (46.66%) in experimental group and in control group majority were having secondary qualification i.e. 9(60%). Occupation of cancer patients in experimental group were unemployed 9(60%), 7(46.66%) unemployed in control group. Frequency of mouth care in experimental group that is 8 (53.33%) patient and in control group 11 (73.33%) were doing every time after eating. Majority of patients were having personal habits i.e. 9 (60%) smoking in experimental group, 8(53.33%) any of above two in control group. In experimental group, duration of cancer majority were having <1year i.e 13 (86.66%) and 11 (73.33%) in control group. In experimental group patients were having 2nd stage cancer i.e. 10 (66.66%) and in control group 7(46.66%) patients were having 2nd stage and 3rd stage of cancer each. In types of treatment chemotherapy and radiation received in experimental group 10(66.66%) patients, and in control group 8(53.33%) patients. Majority patients were in 2-4 weeks duration of received radiation therapy i.e. 8 (53.33%) in experimental group and 9 (60%) in control group. In experimental group majority patients i.e 9 (60%) were received >60Gy total dose of radiation therapy and in control group 10 (66.66%) were received 60-50Gy total dose of radiation therapy. All 30 patients in both groups were not having any previous knowledge on honey application.

**Section II-**Frequencies and percentage distribution of pre-test and post test of oral mucositis in experimental group and control group.

**FIGURE 1 - DATA PRESENTED IN THE BAR DIAGRAM SHOWS THAT FREQUENCIES AND PERCENTAGE DISTRIBUTION OF PRE-TEST AND POST TEST OF ORAL MUCOSITIS IN BOTH GROUPS.**



In experimental group: Pre-test majority of patient i.e. 9 (60%) were having moderate oral mucositis, 4 (26.66%) mild oral mucositis and 2(13.33%) were having severe oral mucositis. Whereas in Post Test 8 (53.33%) were having mild oral mucositis, 4 (26.66%) were having moderate oral mucositis and 3(20%) were having no oral mucositis.

In control group: Pre-test majority of patient i.e. 8 (53.33%) were having moderate oral mucositis, 5 (33.33%) mild oral mucositis and 2(13.33%) were having severe oral mucositis. Whereas in Post Test 7 (46.66%) were having severe oral mucositis. Whereas in Post Test 7 (46.66%) were having moderate oral mucositis and 2 (13.33%) were having mild oral mucositis.

**SECTION III- MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND PAIRED “T” VALUE OF EXPERIMENTAL AND CONTROL GROUP**

S.NO	GROUP	MEAN	MD	SD	PAIRED ‘t’ VALUE	TABLE VALUE
1	EXPERIMENTAL GROUP	1.86	0.80	0.61	7.48	2.15
	Pre assessment	1.06				
2	CONTROL GROUP	1.80	0.53	0.65	-----	
	Pre assessment	2.33				
	Post assessment					

df (14)= 2.15 at 0.05 level of significance

The Data presented in table indicated that the mean post assessment oral mucositis grading of cancer patients was (1.06) which is lower than the mean pre assessment oral mucositis grading of cancer patients was (1.86),with the

mean difference of 0.80. The calculated “t” value is 7.48 which is greater than the table value at 0.05 level of significance at df (14) in experimental group.

**SECTION IV- MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND UNPAIRED “T” VALUE OF EXPERIMENTAL AND CONTROL GROUP**

S.NO	GROUP	MEAN	MD	SD	UNPAIRED ‘t’ VALUE	TABLE VALUE
1	EXPERIMENTAL GROUP	1.06	1.27	0.67	5.12	2.05

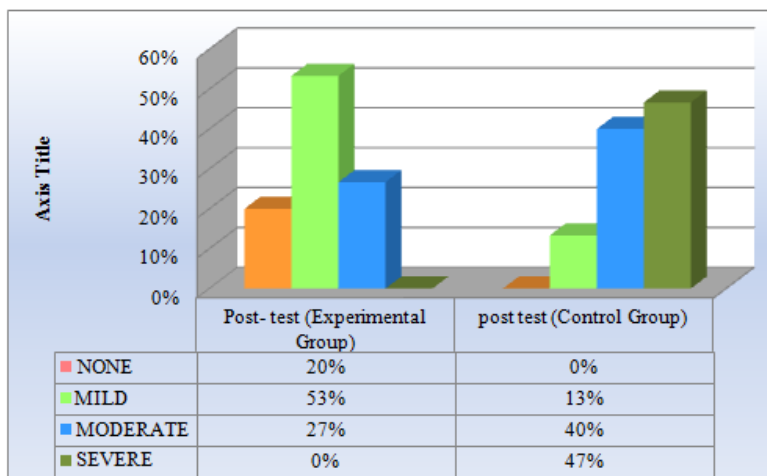
2	CONTROL GROUP	2.33		0.69		
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df (28)= 2.05 at 0.05 level of significance

The Data presented in table shows that in experimental group mean post test of radiation- induced oral mucositis (1.06) in cancer patient is less than control group mean post test of radiation- induced oral mucositis (2.33), with the mean difference of 1.27. The calculated unpaired't' value is 5.12 at 0.05 level of significance which is the

higher than the table value at df (28). Hence null ( $H_{01}$ ) hypothesis is rejected and research ( $H_1$ ) hypothesis is accepted. Thus it was evident that the topical application of honey was effective in reducing radiation induced oral mucositis among cancer patient in experimental group.

**FIGURE 2 - DATA PRESENTED IN THE BAR DIAGRAM SHOWS THAT FREQUENCIES AND PERCENTAGE DISTRIBUTION OF POST TEST OF ORAL MUCOSITIS IN EXPERIMENTAL AND CONTROL GROUP.**



**SECTION V-**

- Findings related to association between radiation-induced oral mucositis among cancer patients in experimental group with the selected demographic variables.
- Findings related to association between radiation-induced oral mucositis among cancer patients in control group with the selected demographic variables.

It was found from the fisher’s exact test that the demographic variables age, gender, Qualification, Occupation, Frequency of mouth care, Personal habits, Duration of cancer, Stage of cancer, Type of treatment received, Duration of received radiation therapy, Total dose of radiation received and any previous knowledge on honey application were non- significant between post test score with demographic variables in both groups. As the calculated ‘P’ value obtained is greater than 0.05. Hence, null ( $H_{02}$ ) hypothesis and null ( $H_{03}$ ) hypothesis is accepted and research ( $H_2$ ) hypothesis, ( $H_3$ ) hypothesis is rejected.

**CONCLUSION:**

The findings of the study have depicted that honey application is effective in reducing the severity of oral mucositis in patients receiving radiation. Oral honey application can be used as a means of health promotion on oral mucositis among cancer patients. Oral honey application also helps to improve the dietary intake of the patient. Effective intervention for the prevention or treatment of mucositis, an integrated standard approach to oral care should be used. Establishment of such a standard can serve as the first step toward improved oral care practices. Education of staff, patients, and family members

should be incorporated in this approach.

**RECOMMENDATION:**

- ❖ A similar study can be replicated on large sample size to generalize the finding.
- ❖ The study can be also conducted in children’s and teenage group of people.
- ❖ A similar study can be conducted in different settings like nursing homes, community, slum areas.
- ❖ Doctors can recommend to the patients regarding honey application for early prevention of oral mucositis in order to prevent discomfort.
- ❖ Nurses can include the topical honey application in routine oral care protocol before and after radiation therapy.
- ❖ In service education can be conducted regarding benefits of honey
- ❖ Care giver can be educated on the importance of honey application on oral mucositis to the patients.

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**CONFLICT OF INTEREST:**

There are no conflicts of interest.

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