



## EFFECTIVENESS OF OIL PULLING THERAPY IN REDUCTION OF RADIATION INDUCED XEROSTOMIA AMONG PATIENTS WITH HEAD AND NECK CANCER RECEIVING RADIATION THERAPY

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### ABSTRACT

Hyposalivation is a common sequel in patients undergoing irradiation for malignant tumors of the head & neck. The lack of salivary secretions impacts the ability to eat, sleep, speak, and swallow. It is the responsibility of oncology nurse to play a critical role in the prevention, identification, and management of side effects, including xerostomia. The main objectives are to assess the pretest level of radiation induced xerostomia among patients with head and neck cancer in experimental and control group and to determine the effectiveness of oil pulling therapy in reduction of radiation induced xerostomia among patients with head and neck cancer in experimental group. Quasi experimental with experimental and control group, pretest-posttest design was chosen for the study. A total of 40 head and neck cancer patients receiving radiation therapy were selected by using purposive sampling technique from Erode Cancer Centre, Erode. The patients were divided into groups, 20 in experimental group and 20 in control group. Descriptive and inferential statistics were used to analyze the data collected. The study results showed that there was a significant improvement in the mean score of radiation induced xerostomia (i.e. - 3.05) among head and neck cancer patients on radiation therapy, who were receiving oil pulling therapy than those who were not. There is a significant decrease ( $P=0.0001$  which is  $<0.001$ ) in the level of xerostomia among head and neck cancer patients on radiation therapy, who are receiving oil pulling therapy than those who are not. The study indicates that oil pulling therapy is a simple applicable method for the prevention of radiation induced xerostomia.

**KEYWORDS:** *Xerostomia, oil pulling therapy, head and neck cancer, radiation therapy*



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## INTRODUCTION

Head and neck cancer is the sixth most common cancer worldwide. Worldwide head and neck cancer statistics indicate that there are about 640,000 cases of head and neck cancer per year, resulting in approximately 350,000 deaths per year.<sup>1</sup> The standard therapy to treat head and neck cancer includes chemotherapy, radiation therapy, surgical treatment and biological therapy. But radiation therapy is the main treatment modality for head and neck cancer.<sup>2-3</sup> Because salivary glands are radiosensitive, hyposalivation is a common sequel in patients undergoing irradiation of malignant tumors of the head & neck. There is extensive evidence that the irradiation volume of the salivary glands and the total radiotherapy dose strongly influence the extent of salivary dysfunction after irradiation.<sup>4-5</sup> The most common complication of radiation therapy is xerostomia (dry mouth). It has been estimated that 90% of cases develop xerostomia as a complication for head and neck cancer. Xerostomia is the most prominent complication in patients with head and neck cancer, because radiation therapy usually involves administering a high dose to salivary glands bilaterally. In a survey, investigators observed that 64% of long-term survivors experienced a moderate to severe degree of xerostomia. Traditionally, the term has been used to describe both the subjective feeling of dry mouth, i.e. the patient's own conception of dry mouth, as well as the objectively assessed signs suggesting dry mouth.<sup>6-7</sup> The symptoms associated with xerostomia affect the patient's usual activities of daily living. The symptoms of xerostomia include sticky, dry feeling in mouth and tongue, cracked lips, difficulty in chewing, swallowing, tasting, or talking, mouth sores, frequent bad breath and sore throat. A common consequence of head and neck irradiation, xerostomia can greatly diminish the patient's quality of life. A study was done to assess the severity of xerostomia and its effect on QoL and it proved that the decrease in saliva saliva and xerostomia that resulted from radiotherapy plays an important role in worsening QoL among patients who undergo radiation therapy for head and neck cancers.<sup>8-9</sup> When the radiation dose reaches 1,000 cGy, the patient may begin to experience mild to moderate dryness of the mouth. This symptom may progressively worsen over the course of therapy and continue for more than 6 months after treatment has been completed. If the radiation dose exceeds 4,000 cGy, xerostomia may become a chronic problem, and when radiation therapy is combined with chemotherapy, xerostomia may be exacerbated. A 50% to 60% decrease in salivary flow occurs during the first week of beginning radiotherapy.<sup>10</sup> This manifests as xerostomia in patients which has a major impact on their quality of life by adversely affecting their speech, chewing and swallowing.<sup>11-12</sup> An assessment of the oral cavity for the presence of xerostomia includes inspection of the lips, tongue, gingiva, mucous membranes and teeth. The author has identified that the cancer patients suffered with severe xerostomia as one of the adverse effects of radiation therapy while visiting oncology ward. Oncology nurses are at the forefront of delivering the bulk of the treatment and care required by cancer patients. Among their many responsibilities, oncology nurses play a critical role in the prevention, identification, and

management of side effects, including xerostomia. Nursing interventions for xerostomia are aimed at increasing patient comfort, maintaining mucosal integrity, preventing infections, sustaining nutrition, and increasing the tolerance of therapy. Assessing the patient prior to treatment concerning eating, chewing, mouth-care practices, and comfort is crucial. The new trend of complementary and alternative medicine has grown dramatically over the past several years. Oil Pulling Therapy is a type of complementary and alternative therapy which helps to reduce the degree of xerostomia as a complication of radiation therapy. Oil pulling therapy is the rinsing of the mouth with the vegetable oil (refined sesame oil) for therapeutic purposes which has been proved to have healing and moisturising effect, thereby symptoms of xerostomia being reduced. The possible benefits of oil pulling for oral health include overall strengthening of the teeth, gums and jaws, prevention of diseases of the gums and mouth such as cavities and gingivitis, prevention of bad breath, potential holistic remedies for bleeding gums, prevention of dryness of the lips, mouth and throat. During treatment, the mouth is routinely examined for inflammation and potential infections.<sup>13-14</sup>

## RESEARCH METHODOLOGY

A formal permission was obtained from Human Ethical Clearance Committee. The study was done as quantitative approach. Quasi experimental with experimental and control group, pretest-posttest design was chosen for the study. The study was done in Erode Cancer Centre, Erode, Tamil Nadu, India. Forty patients with head and neck cancer receiving radiation therapy who met the inclusion criteria were selected by using purposive sampling technique and they were divided as 20 patients in experimental group and 20 patients in control group. Oil pulling therapy procedure was explained to the patients in experimental group and they were asked to do return demonstration. The patients were instructed to follow the therapy for 3 times in a day for 30 days and they were observed and assessment was done after 30 days

### **Criteria for Sample Selection**

#### **Inclusion Criteria**

1. Patients with head and neck cancer who are in the age group of 25-65 years.
2. Both female and male patients undergoing radiation therapy in outpatient department.
3. Patients with manifestation of mild to moderate xerostomia using Groningen Radiation Induced Xerostomia scale.
4. Patients receiving radiation therapy from 4<sup>th</sup> phase.

#### **Exclusion Criteria**

1. Patients not willing to participate.
2. Patients who are critically ill.
3. Pilot study samples were excluded from the study.

## DATA COLLECTION TOOL

### **Part - I**

The demographic data was developed by the investigator with the consultation of experts in various

fields like medical oncology, radiation oncology, Nursing. Demographic data include age, gender and phase of radiation therapy.

**Part - II**

It consists of standardized tool Groningen Radiation Induced Xerostomia Scale to assess the degree of xerostomia according to the scores under different

situations and conditions. It is the questionnaire with 20 statements. It's a 4 point likert scale. Read each statement and select the appropriate response to indicate how u feels right now, that is, at this very moment. 1-Not at all, 2-a little bit, 3-quite a bit, 4-Very much. The total score range of 1-56 where 1-14 indicate - Normal, 15-28 indicate - Mild, 29-42 indicate - Moderate, 43-56 indicate – severe.

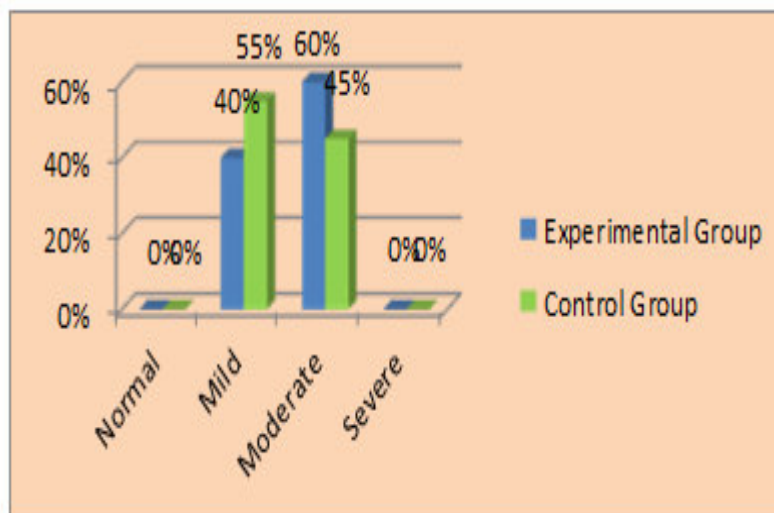
**ANALYSIS AND INTERPRETATION**

**Table 1**  
**Frequency and percentage distribution of demographic variables among head and neck cancer patients in experimental group and control group**

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
<b>1. Age in years</b>				
a) 25 – 35 yrs	0	0%	0	0%
b) 36 – 55 yrs	13	65%	4	20%
c) 56 – 65 yrs	7	35%	16	80%
<b>2. Gender</b>				
a) Male	13	65%	15	60%
b) Female	7	35%	5	40%
<b>3. Phase Radiation Therapy</b>				
a) 4 <sup>th</sup> phase	7	35%	5	25%
b) 5 <sup>th</sup> phase	7	35%	7	35%
c) 6 <sup>th</sup> phase	5	25%	6	30%
d) 7 <sup>th</sup> phase	1	5%	1	5%
e) 8 <sup>th</sup> phase	0	0%	1	5%

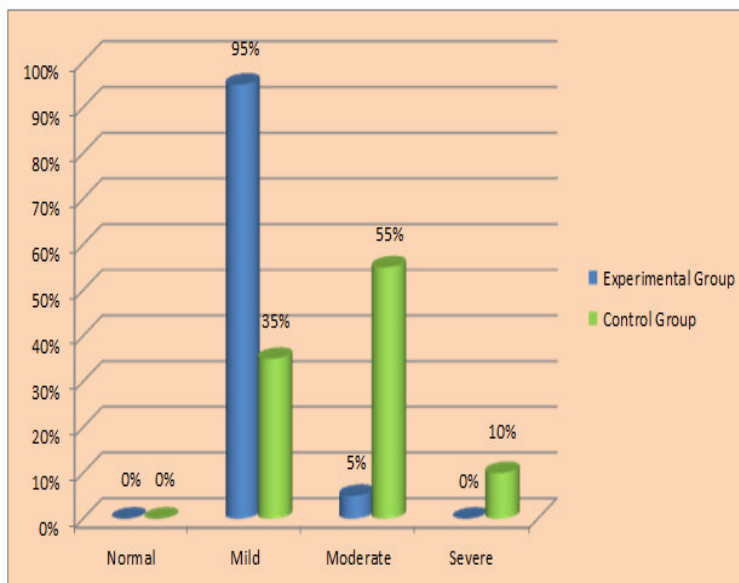
The above table reveals that in experimental group, 13 (65%) of the participants were in the age group of 36-55 years and in control group, 16 (80%) were in the age group of 56-65 years. Regarding gender in experimental group, 13 (65%) of the samples were males and in control group, 15 (60%) of the samples were males. Most of the patients are in the 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> phase i.e. 35%, 35% and 25% respectively in experimental group and 25%, 35% and 30% respectively in control group.

**Figure 1**  
**Level of radiation induced xerostomia among head and neck cancer patients in pretest for experimental group and control group**



**Figure 2**

**Level of radiation induced xerostomia among head and neck cancer patients in posttest for experimental group and control group**



**Table 2**  
**Effectiveness of oil pulling therapy in reduction of radiation induced xerostomia among head and neck cancer patients in experimental group**

EXPERIMENTAL GROUP						Paired t test P value
Pre test		Post test		Effective score		
Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
27.50	4.29	24.45	4.09	3.05	0.20	t = 13.658 P = 0.0001***

Note: \*\*\* - P<0.001 Level of Significant

**MAJOR FINDINGS OF THE STUDY**

1. In experimental group, out of 20 samples, 8 samples (40%) had mild xerostomia and 12 samples (60%) had moderate xerostomia in pre test. In control group, out of 20 samples, 11 samples (55%) have mild xerostomia and 9 samples (45%) had moderate xerostomia in pre test.
2. In experimental group, out of 20 samples, 19 samples (95%) had mild xerostomia and 1 sample (4%) had moderate xerostomia in post test. In control group, out of 20 samples, 7 samples (35%) had mild oral mucositis, 11 samples (55%) had moderate oral mucositis and 2 samples (10%) had severe xerostomia in post test.
3. Oil pulling therapy was found to be effective in reducing the level of xerostomia in head and neck cancer patients undergoing radiation therapy. It was statistically significant at P < 0.001.
4. There was no significant association between level of xerostomia with age, gender and phase of radiation therapy.

**CONCLUSION**

There is a significant decrease (P=0.0001 which is <0.001)

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in the level of xerostomia among head and neck cancer patients on radiation therapy, who are receiving oil pulling therapy than those who are not. This indicates that oil pulling therapy is a simple applicable method for the prevention of radiation induced xerostomia.

**RECOMMENDATIONS OF THE STUDY**

1. The information regarding the usage and advantage about oil pulling therapy can be educated to the public and other health professionals through the conference, seminars, workshop and health education.
2. A similar study can be conducted on a large number of samples.
3. Other alternative therapies can also be studied for reducing xerostomia.
4. This study can be conducted as a comparative study.
5. This study can be conducted in time series research design.

**CONFLICT OF INTEREST**

Conflict of interest declared none.

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