The Effect of Comprehensive Oral Care Program on Oral Health and the Quality of Life in Patients Undergoing Radiotherapy for Head and Neck Cancer

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**Summary**

Hye-Ju Lee, Dong-Hun Han, Jin-Ho Kim, et al. performed a quasi-experimental case-control study on head and neck (HNC) patients undergoing radiotherapy to aid in reducing the oral side effects that occur post-treatment with the use of a comprehensive oral program. The study took place at the Department of Radiology Oncology at Seoul National University in Seoul, South Korea, and was published in the journal *Medicine* in April 2021(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8078395/>)

The author conducted the study with 61 participants in total. The control group consisted of 31 patients and the experimental group contained 30 patients. All participants were provided with oral hygiene instruction during the study but the experimental group was additionally given sodium fluoride solution and topical varnish fluoride during 3 follow-up visits. A questionnaire to measure the quality of life was also administered during every follow-up appointment. Based on the results from the oral program, there was a decrease in salivary flow among both groups. The control group experienced an increase in dental caries while the experimental group experienced a decrease in gingival inflammation, plaque scores, swallowing, speech problems, and bleeding on the probe (BOP). Overall, there is a positive relationship between high-quality oral care and the quality of life for HNC patients undergoing radiotherapy

**Article Information**

Title: “The Effect of Comprehensive Oral Care Program on Oral Health and the Quality of Life in Patients Undergoing Radiotherapy for Head and Neck Cancer”

Authors: Hye-Ju Lee, Dong-Hun Han, Jin-Ho Kim, et al.

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**Study Analysis**

**Study Type**

 Researchers conducted a quasi-experimental case-control study that consisted of a non-randomized control and experimental group. The control group was said to be both nonequivalent and non-synchronized. This study was conducted at the Department of Radiology Oncology at Seoul National University in Seoul, South Korea. Participants were recruited to conduct the study from November 1, 2013, till October 31, 2015. The study participants recruited during the first year were a part of the control group and those recruited in the second year were a part of the experimental group.

**Study Purpose**

 The objective of the study was to examine the effects a comprehensive oral care program has on patients diagnosed with head and neck cancer (HNC) that are undergoing radiotherapy. The study seeks to prove that the oral care program improves their quality of life by reducing the oral symptoms that appear in HNC patients undergoing radiotherapy. HNC is a term used to describe areas of cancer found in the larynx, pharynx, oral cavity, nasal cavity, paranasal sinuses, and salivary glands. Radiotherapy is commonly used to treat patients with HNC by decreasing the size of tumors and depleting cancer cells. The disadvantage of radiotherapy is that radiation is exposed to the mucous membrane, salivary, bone, and muscles. This causes oral complications such as mucositis, xerostomia, trouble swallowing, speech problems, and dental caries. All of these complications increase the patient's risk of periodontal disease. Therefore researchers aim to investigate how the implementation of a comprehensive oral care program can positively impact the quality of life in HNC patients.

**Experimental design**

Originally 92 participants were recruited for the study but patients were excluded from the study if they had less than 20 teeth, had recurrent HNC, were mentally incapacitated, or had a serious illness. The first set of participants (31) was recruited from November 1, 2013, to October 31, 2014, and was assigned to the control group. The second set (30) of participants was recruited from November 1, 2014, to October 31, 2015, and assigned to the experimental group. Once the study participants were assigned to their group they were not told about the in-depth procedures done on each patient a part of the oral program. A trained research assistant. who was a registered dental hygienist for 5 years, was provided during the study to educate the participants and retain accurate measurements of what was needed to conduct the study.

All participants received 4 full sessions of oral hygiene care. The first two sessions were carried out before and immediately after the participants underwent radiotherapy. Then the third session took place 3 months after radiotherapy and the last session was conducted 6 months after radiotherapy. The experimental group's treatment plan differed from the control group's treatment plan. All patients received an oral health care plan consisting of oral health education provided by a dental hygienist. Patient education allows the clinician to inform HNC patients about the importance of good oral hygiene techniques and how they can reduce the symptoms derived from radiotherapy.

In addition to the oral health education proper brushing and flossing methods were demonstrated to the patients during all 4 sessions. Only patients that were in the experimental group were given 0.05% sodium fluoride solution to use daily and 5% fluoride varnish application was applied during the first three visits. These patients were instructed to rinse with 10-15mL of solution daily, for 1 minute, 30 minutes after brushing. Lastly, patients were given a questionnaire during follow-up appointments. The questionnaire was made by European Organization for Research and Treatment of Cancer Quality of Life Questionaire H&N 35 to help researchers evaluate the severity of patient symptoms post-radiotherapy and oral program.

The patients' plaque score, experience of dental caries, BOP, and salivary flow rate were examined by a dentist from the beginning to the end of the study. Researchers also interviewed participants based on their level of education, age, site of the tumor, employment status, and whether they smoke or drink. The study analysis was completed with the use of normal distribution to determine the effects that the oral program had on the participant's oral health based on bleeding on the probe, dental caries, and salivary flow rate. An analysis to compare questionnaires between both groups was also conducted.

**Results**

Researchers began collecting results by first comparing the control and experimental group. More than half of the patients were male and smokers. 75.4% of them received more than a high school education, and the patient’s tumor sites were mainly located in the oral cavity. The authors later determined that there was no statistical significance between the two groups. According to a table constructed on the oral health status of patients, there was an increase in caries among the control group (P= 0.006). The experimental group recorded a significant decrease in BOP (P=0.004) and Plaque scores ( P less than 0.001). Both groups experienced a decrease in salivary flow. Lastly, the questionnaire based on the symptoms scale scores revealed only a significant beneficial change in swallowing, speech problems, and sexuality among the experimental group.

**Conclusion**

The study reveals that a comprehensive oral program could improve the quality of life in HNC patients and possibly prevent tooth decay. This information allows clinicians to further educate patients undergoing radiotherapy about the oral side effects and the steps they can take to prevent discomfort. Strategies include proper oral hygiene, frequent dental appointment (every 3-6 months), and the implementation prescribed of fluoride. Some limitations found in the study included a small sample size, short follow-up periods, lack of knowledge when it came to diet, and oral self-care. Long-term clinicians need to have thorough knowledge about the oral side-effects of radiotherapy in order to enforce a proper oral care and aid in improving the quality of life for HNC patients.

**Your Impression**

 HNC patients that are undergoing treatment develop oral side effects that create daily challenges. For example, trouble swallowing, speech problems, and xerostomia (dry mouth) were a few difficulties mentioned in the study that have been reduced. Although the study was not randomized and contained a small sample it was still able to provide accurate evidence pertaining the positive effects of a comprehensive oral program. I am open to learning about how the addition of diet and meticulous oral care may a play role in the severity level of oral side effects post-radiotherapy. Therefore, the significance of this study is that it allows healthcare providers to promote proper oral home care and treatment, to benefit the lives of HNC patients undergoing treatment.