

# The Effectiveness of Chewing Gum versus Cryotherapy on Salivary Volume

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Original Research

## The Effectiveness of Chewing Gum versus Cryotherapy on Salivary Volume among Patient with Head and Neck Cancer Undergoing Radiotherapy

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### ABSTRACT

**Introduction:** Hyposalivation is a common problem experienced by head and neck (H&N) cancer patients undergoing radiotherapy. Hyposalivation can cause negative effects on the physical aspects of making oral mucositis, pain during eating and talking as well as psychological effects that cause feeling of discomfort sadness and, ultimately, depression. Many nonpharmacological interventions can be done for hyposalivation that occur in patients, among which are chewing gum and cryotherapy because they are easy to do, easy to access, inexpensive and have minimal side effects. However, the effectiveness of these interventions is not yet clear. Hence, this study is aimed to determine the effectiveness of chewing gum versus cryotherapy to increase salivary volume in H&N cancer patients undergoing radiotherapy.

**Methods:** A quasi-experimental time series group design to determine the most effective time to influence the increase in salivary volume. This research was conducted on 36 respondents H&N cancer undergoing radiotherapy with four times measurement are pretest-posttest on the 3rd, 5th, and 7th day of intervention between February and March 2020. Subjects were chosen using consecutive sampling. Chewing gum group will chew gum six (6) pieces/day and cryotherapy group will suck on ice cubes five (5) minutes before and after radiotherapy. The spitting method was used to collect saliva and the data were analyzed using General Linear Model-Repeated Measure (GLMRM).

**Results:** Chewing gum is more effective to increase salivary volume than cryotherapy. The GLMRM within subjects at four (4) times measurement showed a significant difference between chewing gum and cryotherapy group with p value <0.05 on the 7th day. Subjects in the chewing gum group had better salivary volume increment than cryotherapy group.

**Conclusion:** This study showed that chewing gum is more effective to increase salivary volume on patient H&N cancer undergoing radiotherapy because chewing gum has higher salivary volume increment than cryotherapy groups.

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### INTRODUCTION

Head and neck cancer is a tumor that arises in the nasal cavity, mouth, oropharynx, nasopharynx, salivary glands, paranasal sinuses, hypopharynx, and larynx (NIH, 2019). Radiotherapy is one of the three most common treatments for head and neck cancer and requires discipline and a long time (Laursen et al., 2018). Radiotherapy is a cancer treatment that uses high-energy X-rays or other types of radiation to kill cancer cells or keep cancer cells from growing (NIH, 2019). The safe dose of the parotid gland is

26Gy, the safe dose of the submandibular gland is 39Gy and a 30Gy dose for minor salivary glands remains safe (Siddiqui & Movsas, 2017). Radiotherapy doses of 60-70Gy can cause prolonged and severe problems in the mouth (Villa & Sonis, 2015). Radiotherapy can shrink and kill tumor cells (Santoso, Surarso, & Kentjono, 2009). but it has the most frequent side effects experienced by patients, namely hyposalivation, thickened saliva, mucosal infections, pain and taste sensory dysfunction (Epstein et al., 2017). Epstein et al. (2017) state radiation can cause problems in the mouth.

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### KEYWORDS

chewing gum; cryotherapy; salivary volume; radiotherapy

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