

Evaluation of the Effect of Xerostomia and Hyposalivation on Oral Health Related Quality of Life among Polymedicated Patients

ABSTRACT

Aim: To evaluate the effect of xerostomia & hyposalivation on oral health related quality of life among polymedicated patients.

Study Design: A descriptive cross sectional study.

Place and Duration of Study: Saliva samples were obtained from the participants and Questionnaires were answered in the Department of Oral Medicine & Radiology, Lenora Institute of Dental Sciences, Andhra Pradesh, from 12th Oct 2021 to 25th Nov 2021.

Methodology: A total of 62 polymedicated subjects who are regularly administered with any two of the following medications: anticonvulsants, antidepressants, oral hypoglycemics, antihypertensives, antihistamines for more than 1 year were randomly selected. The stimulated and unstimulated salivary flow rates of subjects were recorded using sialometry. The subjects further answered Oral Health Impact Profile Questionnaire (OHIP-14sp) and all the obtained values were analyzed using Spearman correlation test with a significant P value of 0.05 and SPSS version 23. **Results:** The presence of hyposalivation and xerostomia was observed in majority of the study population. Patients with hyposalivation revealed a mean score of 9.50 ± 3.25 and 15.0 ± 6.8 with the OHIP and SXI questionnaires respectively, with a P value of .10 which was considered statistically significant.

Conclusion: The correlation of SXI and OHIP-14sp scores with the prevalence of xerostomia and hyposalivation suggests the need for preventive measures related to oral health among polymedicated patients.

Keywords: Hyposalivation, Oral health, Polymedication, Questionnaires

1. INTRODUCTION

Saliva is a biochemically complex fluid containing proteins, lipids, electrolytes, and buffers which play a vital role in maintaining the oral health. It preserves dentition, inhibits the growth of microorganisms, lubricates and protects the oral mucosa from trauma, and facilitates mastication, deglutition, and speech. [1] Hyposalivation and xerostomia are the most common features associated with polymedication. Consequently, the oral signs and symptoms of hyposalivation and xerostomia extend far beyond those of simple dryness, with a negative impact on patients' quality of life. [2]

The oral signs and symptoms of hyposalivation and xerostomia may exert a negative impact on patients' quality of life. [3] Thus, the present study was aimed to evaluate the effect of xerostomia & hyposalivation on Oral health-related quality of life among polymedicated patients.

2. MATERIAL AND METHODS

The study was conducted in the Department of Oral Medicine and Radiology, Lenora Institute of Dental Sciences, Rajahmundry, East Godavari district, Andhra Pradesh for a period of 2 months. The study protocol was approved by the institutional ethical committee, following the Helsinki rule of declaration, and informed consent was obtained from the participants. A pilot study was conducted and sample size was calculated by purposive sampling to determine the confidence level. A total of 62 polymedicated patients were included in the study that were regularly administered at least two of the following medications: anticonvulsants, antidepressants, oral hypoglycemics, antihypertensives, and H1 antihistamines. Subjects under use of any medication other than anticonvulsants, antidepressants, oral hypoglycemics, antihypertensives and antihistamines or under irregular medication for the above mentioned conditions, with history of

radiation therapy or chemotherapy were excluded from the study. 1% citric acid solution, graduated test tubes, latex gloves and funnel were used for the saliva collection procedure.

2.1 Methodology

All the subjects participating in the study have been explained about the study in their known language; An informed consent was obtained from the subjects and were asked to abstain from eating for 2 hours before sample collection. Saliva was collected using spit technique. The subjects were instructed to spit in a sterile graduated container for one minute and the rate of unstimulated salivary flow was measured. Then, salivary flow was stimulated with 1% citric acid solution. Two drops of solution was poured onto the dorsum of the tongue and the patients were asked to swallow immediately. The subjects were then instructed to spit in a sterile graduated container for the next one minute. (Figures 1 and 2)

Hyposalivation was considered if the unstimulated salivary flow rate was $<0.1\text{ml/min}$ and stimulated salivary flow rate was $<0.7\text{ml/min}$. [4] Further, the subjects were asked to answer the Oral Health Impact Profile questionnaire which was given by University of North Carolina and the Summative Xerostomia Inventory questionnaire given by W.M Thomas and the responses were recorded.



Figure 1: Graduated test tube showing normal salivation ($>0.7\text{ml}$ stimulated saliva)



Figure 2: Graduated test tube showing hyposalivation ($<0.1\text{ml}$ unstimulated saliva)

The obtained values were tabulated and statistically analysed with SPSS software version 23.0 (IBM, Chicago, USA) using Spearman correlation test where the P value of $<.05$ was considered statistically significant for correlation between xerostomia, hyposalivation and oral health related quality of life.

3. RESULTS

The sample included 62 subjects with ages ranging from 20 years to 80 years, among which 43% were males with a mean age of 44.18 years and 67% were females with a mean age of 38.72 years, and 33% were males with a mean age of 39.7 years which reflected a slight female predilection.

The prevalence of hyposalivation was 69.4% based on the unstimulated saliva and 56.5% based on the stimulated saliva in the study population. On observation of unstimulated saliva, hyposalivation was found in 43 subjects (69.4%) and on examination of stimulated saliva, hyposalivation was found in 35 subjects (56.5%).

The overall SXI-PL scores ranged from 2 to 8 with a mean of 7.95 ± 3.87 . The mean score of SXI-PL was higher in patients with hyposalivation (9.50 ± 3.25). The results demonstrate a statistically significant correlation between SXI-PL scores and hyposalivation ($P = .0126$) (Table 1). The symptom that indicated higher severity of xerostomia was "My mouth feels dry" (73%), followed by "I have difficulty swallowing certain foods" (68%).

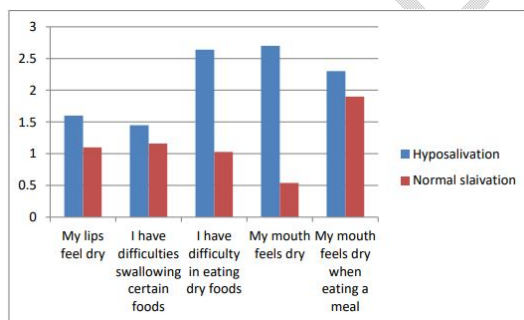
The overall OHIP-14sp scores ranged from 25 to 40, with a mean of (10.20 ± 7.35) . The mean score of OHIP-14sp was higher in patients with hyposalivation (15.0 ± 6.8). The results demonstrate a statistically significant correlation between OHIP-14sp scores and hyposalivation ($P = .061$) (Table 1). The dimension of OHIP-14sp with higher impact was "Physical Disability", with diet being unsatisfactory and having had to interrupt meals because of problems with teeth, mouth or dentures.

The correlation between OHIP-14sp mean scores and unstimulated saliva scores obtained a Rho value of $-.705$ and P value $.021$ and with stimulated saliva resulted in Rho value of $-.661$ and P value $.010$ which was considered statistically significant. The distribution of mean scores of SXI and OHIP symptoms for normal and hyposalivation have been depicted in the figure 3a and 3b.

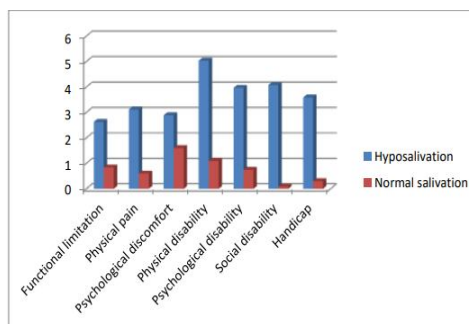
Table 1: Distribution of mean scores of SXI-PL and OHIP-14sp for various salivary flow conditions.

Questionnaires	Hyposalivation	Normal salivation	Total	P value
SXI-PL	9.50 ± 3.25	4.10 ± 1.25	6.53 ± 2.65	.0126
OHIP-14sp	15.0 ± 6.8	15.0 ± 6.8	5.40 ± 9.60	.010

* $p < 0.05$ was considered statistically significant.



(a)



(b)

Fig 3: (a) Distribution of mean scores of SXI-PL symptoms for various salivary flow conditions. (b) Distribution of mean scores of OHIP-14sp symptoms for various salivary flow conditions.

3.1 Discussion

Salivary flow rate is altered with administration of various drugs like antidepressants, oral hypoglycemics, antihypertensives and antihistamines, etc. [5] But knowledge on the effect of drugs on salivary flow rate remains equivocal in spite of several studies which have been conducted in this regards. Hence, the present study investigated whether the salivary flow rate would be altered among polymedicated patients and assessed the prevalence of xerostomia.

Several studies which were done on salivary flow rate estimated hyposalivation in 60% of population. [6] The present study showed a significant decrease in salivary flow rate among 69% of the population. In various studies which are done

to determine the association between xerostomia, hyposalivation and medications, significant association is seemed to be common. [2,4,8]

Studies done to assess the oral health-related quality of life appraised by OHIP-14 illustrate that physical disability components of the OHRQoL are the major problems associated with polymedication. [7] The present study illustrated the dimension of OHIP-14sp with higher impact was “physical disability”. Putten et al. [4] reported that the most severe symptom of xerostomia in a Dutch population was “my mouth feels dry”. In the present study, significant association was observed with the symptom “my mouth feels dry” among 73% of the subjects.

4. CONCLUSION

- The present study suggests that, xerostomia and hyposalivation have an effect on oral health related quality of life.
- Subjective feeling of dry mouth and objective salivary flow rate were independently associated with Oral health related quality of life.
- The present study further revealed that, a decrease in resting saliva, high prevalence of xerostomia, have a negative impact on Oral health related quality of life among polymedicated patients.
- Continuous oral health education and preventive/interventional measures such as frequent drinking of water, fluoride application treatments should be promoted among polymedicated patients.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this research work and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

“All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.”

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