ASSESSMENT OF ORAL STEREOGNOSIS AND DENTURE SATISFACTION IN OLD DENTURE WEARERS: A RETROSPECTIVE STUDY

Hina Memon[1], Muhammad Rizwan Memon[2], Naveed Memon[3], Lubna Memon[4]

Correspondence

[1]Hina Memon, Assistant Professor, Department of Prosthodontics, Liaquat University of Medical& Health Sciences, Jamshoro, Sindh

☎: +92-333-2654537

✉: dr.hinamemon@ymail.com

[2]Professor, Department of Prosthodontics, Liaquat University of Medical& Health Sciences, Jamshoro, Sindh

[3]Assistant Professor, Department of Dental Materials, Liaquat University of Medical& Health Sciences, Jamshoro, Sindh

[4]Senior Registrar, Department of Prosthodontics,Dow University of Health Sciences,Karachi

ABSTRACT

OBJECTIVES

Stereognosis has been investigated occasionally to predict the prognosis of treatment with complete dentures. This study evaluated oral stereognosis and satisfaction levels in completely edentate patients wearing prostheses for at least three months.

METHODOLOGY

From November 2014 and January 2016, data from 322 patients' follow-up visits were collected from records of the Prosthodontics department at Liaquat University of Medical and Health Sciences, Jamshoro. Denture satisfaction was assessed using a self-structured proforma, and oral stereognosis was measured using different-shaped objects made from self-cure acrylic resin, kept in the oral cavity without showing them to the patient. The frequency of qualitative variables was determined for data analysis, and a chi-square test was applied. Significant P-values were defined as those less than 0.

RESULTS

The male-to-female ratio was 1.2:1, with 50.9% wearing a prosthesis for less than a year and the minimum range being 3-6 years (13.66 %). Only 31 had stereognosis positive but were completely satisfied with their prosthesis, while 85 who were unsatisfied were found to have positive sensory perception. Statistical analysis for all groups shows a p-value of 0.000 for patient satisfaction with denture wear which is statistically significant. Most patients with the least duration of wear found their stereognosis positive and were unsatisfied with the prosthesis and vice versa. The chi-square test shows a statistically significant value for both groups of stereognosis i-e 0.0001..

CONCLUSION

Patients with the shortest period of wear were found to be more dissatisfied, but their oral perception remained intact, while those with more experience complained less but had reduced stereognosis.

KEYWORDS: *Dentures, Complete, Satisfaction, Stereognosis, Edentulous*

INTRODUCTION

Many biological and non-biologic reasons, such as caries, periodontitis, trauma, lack of oral hygiene, stress, alcohol intake, inability to receive care, patient neglect, poor socioeconomic status, and low education level, can lead to complete tooth loss.[1,2] It is estimated to be ranged from 7-69% worldwide. It affects not only mastication, esthetics, phonetics & diet but their self-esteem and psychological status resulting in a low quality of life.[3] Complete dentures are considered one of the most cost-effective and compliant treatment choices for these patients.[4] It improves pt's nutritional status, aesthetics, and phonetics, which predict patient satisfaction with prosthesis, as they consider it similar to their natural dentition in appearance and function.[5,6] The insertion of dentures results in several problems, including pain and discomfort (39.3%), looseness (33.6%), ulceration (44.2%), denture stomatitis (8.3%) and artificial tooth fractures (31.4%).[4,7,8] However,

most concerns (62.1%) are about adaptation and satisfaction, which are affected by age, gender, and previous denture experience.[10] Patients who wear complete dentures do not have periodontal receptors. Hence their oral cavity perception functions are limited compared to those who have natural teeth.[1,2] As a result, as taste perception largely depends on rehabilitation with dental prostheses, it is just as crucial as chewing function restoration.[11] Oral stereognosis is a sensory ability that refers to a patient's ability to distinguish objects in the oral cavity without using their vision.[10] Its influence, whether exaggerated or diminished, on oral tissues such as the tongue, palate, and mucous membrane affects the acceptance of prostheses by the patient. Many previous studies have reported contradicting results regarding oral stereognosis tests to trial the oral perception concerning age, gender, and adaptability to completed dentures.[12,13,14] Changes in oral sensory processes have also been observed in edentate patients, influencing the

acceptance of prosthesis.[10] Moreover, Oral stereognosis ability has investigated denture adaptation in several studies, which may contribute to a better understanding of the relationship between oral stereognosis ability and natural denture adaptation in the senior population.[15] Meenakshi S and colleagues reported that experienced denture wearers took less time to identify objects than those without experience.[4] Another study found no statistically significant difference in the scores of oral stereognosis tests among subjects with previous denture experience and those with no previous denture experience.[16] Even today, conventional complete dentures remain the most cost-effective and standard treatment option for edentate people. However, due to a lack of expertise, many practitioners rely on technicians for its fabrication, which leads to construction faults and hence affects patients acceptance of their prosthesis. Many studies have also reported mixed results for oral stereognosis and denture satisfaction concerning complete dentures.[4,10,15,16] Assessment of stereognosis in edentulous individuals who require complete denture rehabilitation will help us determine the useful information about the sensory perception of these patients and thus aid in predicting prosthesis satisfaction. It will help practitioners improve their skills, benefiting our patients.

METHODOLOGY

This retrospective cohort study included data from 322 patients follow-up visits gathered from records between November 2014 and January 2016 at Liaquat University of Medical and Health Sciences, Jamshoro using a non-probability consecutive sampling technique. This research included only those patients who had been wearing dentures for more than three months and were between the ages of 40 and 70 yrs old, both male and female. All the procedure was explained to patients in their language mode, and verbal consent was taken. During follow-up visits, dentistry satisfaction was assessed using a self-structured proforma consisting of three questions regarding stability, mastication and phonetics. Patients who answered "NO" to all three questions were completely satisfied. Patients who answered "No" to two or less than two questions were deemed moderately satisfied, whereas those who answered "Yes" to all three questions were considered fully dissatisfied. Furthermore, stereognosis was assessed using the same test conducted by Van Aken et al. to identify different shapes of objects such as triangles, squares, circles, rectangles, and semicircles fabricated with heat cure acrylic resin, with lengths of 10 mm, widths of 10 mm, and thicknesses of 3 mm secured with threads to prevent accidental swallowing and placed in the mouth

without the use of vision.[20] On a chart sheet, similar shapes were also sketched. The patient was asked to match the form of the test items in their mouth to the figure on the chart sheet. The ability to recognize shapes stereognostically was assessed using a YES or NO response. The patients who identified more than three correct shape forms were considered stereognosis ability positive, and those who identified three or fewer forms were regarded as stereognosis ability negative. The frequency of qualitative variables was determined for data analysis, and a chi-square test was applied. Significant P-values were defined as those less than 0.05.

RESULTS

Table 1: Distribution of Age with Gender

Age	Gender	
Females	Female	Male
40-50	92	64
51-60	18	78
61-70	14	56

Table 2: Distribution of Duration of Wear

Duration (Years)	F	%Age
<1	164	50.9%
1-3	66	20.4%
3-6	44	13.66%
7 Onwards	48	15%

Table 3: Distribution of Patient Satisfaction with Oral Stereognosis

	Stereognosis Present		Total
	Yes	No	
Completely Satisfied	31	124	155
Partially Satisfied	30	35	65
Un-satisfied	85	17	102

Table 4: Distribution of Duration of Prosthesis Wear with Patient Satisfaction

Duration of Wear (Year)	Completely Satisfied	Partially Satisfied	Not Satisfied
<1	29	47	88
1-3	48	9	9
3-6	40	2	2
07 Onwards	38	07	3
Chi-Square Value	1.661*	54.991*	1.371*

*p-value <0.001

Table 5: Distribution of Duration of Prosthesis Wear with Oral Stereognosis

Duration Of Wear (Year)	Stereognosis Response		Chi-Square Value	P-Value
	Positive	Negative		
< 1	95	69	56.641	0.0001
1-3	27	39		
3-6	12	32		
7 onwards	12	36		

DISCUSSION

In this study, we studied the level of satisfaction and

oral stereognosis in edentate patients who were wearing complete dentures to their experience of wear and also tried to assess the effect of satisfaction Stereognosis level interchangeably. Males accounted for 61.5% of our study's population, while females were 38.5%, with the majority of people aged 40 to 50. Compared to that, In a research of 100 patients, the bulk were between the ages of 50 and 60.[3] The discrepancy in results may be explained by the fact that females are less likely to seek treatment, particularly in this part of the world, probably due to poor education, lack of access to healthcare, strict parda and lack of female dentists. Our analysis found that out of 164 patients wearing prostheses for less than a year, 88 were completely dissatisfied with their prostheses, while only 29 were completely satisfied. As the wear duration increased over seven years, more patients showed complete satisfaction, i-e 38 compared to unsatisfied; 3 patients only. In contradiction, Hysenaj N stated that patients with new denture wearers have an overall more satisfactory rate than old denture wearers.[22] Bilhan H et al. also stated the opposite results that patients who had been wearing dentures for more than ten years had more complications 44-63% and less satisfaction towards prosthesis, while patients with five years of denture history had 40% complications and this was attributed to mucosal changes due to the long history of denture wearing.[4] Similarly, in our study, we observed that with less experience with a duration of wear, patients stereognosis ability was found to be intact, but as the experiences advance, this ability seems to be diminished. When compared to others, many conflicting results have been found. Rosetti PHO et al. stated that patients with a denture history of 8 years resulted in poor stereognosis values than patients who had been wearing for 11.5 years.[23] A study conducted by Bhandari A and colleagues collected scores of dentures experience on day one, and after six months of usage, also found different results with improvement in oral stereognosis in patients who had been wearing dentures for six months.[10] Ikebe K and colleagues stated no relationship between denture experience and oral stereognosis.[25] To the best of the wisdom, it could be explicated that as the teeth are extracted, though the tissues in the middle part of the palate have the least morphological changes, prosthesis wearing acts as an obstacle in transmitting stimuli and may eventually affect the sensory function of the oral cavity. This diminished sensory response could presume to rise with denture-wearing duration. In this analysis, we discovered that 146 people had a positive stereognosis, with 31 being satisfied and 85 not satisfied. Berry & Mahood17, Litvak et al., and Chauvin & Besette found similar results in that patient who are more unsatisfied had stereognosis-positive scores. A recent study by

Dalaya MV also supported the above studies.[18,19,24] In disparity with the above statements, Smink and Van Aken reported diverse outcomes.[20,21] Berry and Mahood stated that the reason for high perception and contrasting dissatisfaction could be an unbearable prosthesis, whereas satisfaction and poor perception could be attributed to inordinate realization.[17]

LIMITATIONS

The study's retrospective nature may lead to limitations in sample size and selection bias. The researchers may have relied on existing patient records, which could have excluded individuals who did not seek dental care or whose records were incomplete. This could limit the generalizability of the findings to the broader population of old denture wearers.

CONCLUSIONS

It was concluded that patients who were dissatisfied with their prosthesis wore it for a short time and had intact stereognosis, while patients who were satisfied with their prosthesis wore it for a longer time and had reduced stereognosis. Moreover, it was also observed that patients who were completely satisfied with their prosthesis had poor oral perception and vice versa. However, further studies need to be conducted on patients using other fixed or removable partial dentures to assess their effect on the sensory perception of patients.

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CONTRIBUTORS

1. **Hina Memon -** *Concept & Design; Drafting Manuscript; Critical Revision; Supervision; Final Approval*
2. **Muhammad Rizwan Memon -** *Data Analysis/Interpretation*
3. **Naveed Memon -** *Data Acquisition*
4. **Lubna Memon -** *Data Acquisition*