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COMPARATIVE ANALYSIS OF PATIENT SATISFACTION AND FUNCTIONAL OUTCOMES BETWEEN CONVENTIONAL COMPLETE DENTURES AND OVERDENTURES: A PROSPECTIVE CLINICAL STUDY

Dental Science

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ABSTRACT

Aim: This prospective clinical study intends to compare patient satisfaction and functional results between overdentures and traditional full dentures. **Method:** A total of 74 edentulous people were rounded up and randomly assigned to the CCD and OD groups. The Visual Analogue Scale (VAS) was used to measure overall satisfaction, particle size distribution analysis to measure masticatory efficiency, speech evaluations to measure speech function, and a comfort assessment questionnaire to measure comfort levels. **Result:** The OD group's VAS scores for overall satisfaction were significantly higher than those for the CCD group (mean: 8.6). When compared to the CCD group, masticatory efficiency in the OD group significantly improved (mean: 82.6%). The OD group's speech assessment results were noticeably better than the CCD group's (mean: 7.8) (8.5). Additionally, the OD group's comfort ratings were much greater (mean: 8.6). Additionally, the OD group had less difficulties than the CCD group (6 instances vs. 10, or 16.2% vs. 27.0%), highlighting the benefit of overdentures in reducing denture-related issues. **Conclusion:** These results highlight the major benefits of implant-supported overdentures over traditional full dentures, including increased patient satisfaction, enhanced masticatory performance, improved speech function, greater comfort, and a lower incidence of problems. The study's findings give doctors important information to consider when making judgements about better patient care and prosthodontic treatment plans.

KEYWORDS

Over denture, Complete denture, Patient Satisfaction, Mastication, Speech

INTRODUCTION:

The two different forms of dental prosthesis used to replace lost teeth and restore oral function and appearance are an overdenture and a conventional complete denture (CCD).[1] Both solutions replace missing teeth, although their benefits, attaching strategies, and designs vary.[1,2] The simplicity and affordability of a CCD are among its main benefits. It's a good alternative for those who have lost every tooth in an arch and don't have enough bone density or any healthy teeth left to support dental implants. CCDs let patients to confidently eat, speak, and smile by restoring the mouth's look and functionality. However, if the underlying bone and soft tissues deteriorate over time, they can need relining or periodic adjustments to maintain a suitable fit.[2] A conventional complete denture (CCD), sometimes known as a denture or simply a removable prosthesis, replaces every tooth in either the maxillary or mandibular arches.[3] Initial impressions, secondary impressions, bite registration, wax setup try-ins, and the final installation of the finished denture are normally all steps in the process of getting a CCD.[4,5] The denture is comprised of a sturdy acrylic substance that resembles the look and feel of real teeth and gums. Suction and the mouth's inherent shapes are what keep CCDs in place.[5,6] A removable dental prosthesis called an overdenture, on the other hand, fits over any natural teeth or dental implants that are still present. An overdenture is intended to conserve and use the remaining healthy teeth or implants for support and retention, unlike a CCD, which replaces all the teeth in an arch.[7,8] The overdenture is constructed in such a way that it may attach to attachments on the remaining natural teeth or implants, strengthening the overall fit and function and adding stability.[9,10] As opposed to a CCD, an overdenture has a number of benefits. An overdenture offers improved stability and retention by using the remaining natural teeth or implants as support, which enhances the wearer's capacity to chew and talk comfortably.[11,12] This design also aids in maintaining the jaw's bone mass by reducing bone resorption, which frequently takes place following tooth loss. When opposed to having all of the remaining teeth extracted for a CCD, overdentures are frequently thought of as a more conservative treatment choice that promotes long-term dental health.

METHODOLOGY:

Study Design:

This study employed a prospective, randomized, controlled clinical trial design to compare patient satisfaction and functional outcomes between conventional complete dentures (CCD) and implant-supported overdentures (OD).

Participant Recruitment:

Edentulous individuals seeking complete denture treatment were recruited from dental clinics and institutions for 6 month from January 2023 to July 2023. Participants were informed about the study objectives, procedures, potential risks, and benefits, and their informed consent was obtained. The estimated minimum sample size for each group was approximately 27 participants.

Randomization:

Participants were randomly assigned to either the conventional complete denture group (CCD) or the overdenture group (OD) using a computer-generated randomization sequence. Randomization was stratified based on age, gender, and baseline oral health status to ensure balanced groups.

Intervention:

- *CCD Group:* Participants in this group received conventional complete dentures following standard prosthodontic procedures. The dentures were fabricated using conventional techniques, and adjustments were made as necessary to achieve proper fit and comfort.
- *OD Group:* Participants in this group received implant-supported overdentures. The number and location of dental implants were determined based on a standardized protocol. Dental implants were placed by experienced oral surgeons or periodontists. Overdentures were fabricated using attachments that provide retention and stability.

Data Collection:

Sociodemographic information was gathered, including age, gender, educational level, and occupation. Assessment of oral hygiene, gum health, and presence of any residual teeth or pathology was done. Functional Parameters: A Visual Analog Scale (VAS) questionnaire was administered at each follow-up visit to assess overall satisfaction with

denture function, aesthetics, and comfort. Participants were asked to chew standardized test foods (e.g., almonds, carrots), and the particle size distribution of the chewed food was measured. Participants' speech was recorded and evaluated for any speech-related issues or improvements. Participants self-reported comfort levels, including any sore spots or discomfort. Any complications related to denture use (e.g., sore spots, denture breakage) or implant-related issues (e.g., implant mobility, peri-implant inflammation) were documented.

Statistical Analysis:

Data were analyzed using appropriate statistical methods. Descriptive statistics (mean, standard deviation, frequency) for baseline characteristics were calculated. Independent t-tests or Mann-Whitney U tests were used for continuous variables (e.g., masticatory efficiency, comfort) between CCD and OD groups. Chi-square tests were performed for categorical variables (e.g., patient satisfaction) between groups.

Ethical Considerations:

The study was conducted in accordance with ethical guidelines and after approval from the institutional ethical committee. Informed consent was obtained from all participants.

RESULT

Table 1 includes the demographic data of study participants assigned in both groups

Table 1: Demographic data:

Demographic Characteristic	Conventional Complete Dentures (CCD)	Overdentures (OD)
Age (years)	Mean: 68.5	Mean: 67.8
	SD: 6.2	SD: 6.5
Gender (Male/Female)	Male: 18 (48.6%)	Male: 19 (51.4%)
	Female: 19 (51.4%)	Female: 18 (48.6%)
Education Level	Mean: 11.2 years	Mean: 11.8 years
	SD: 2.1	SD: 2.3
Occupation	Professional: 14 (37.8%)	Professional: 16 (43.2%)
	Blue-collar: 12 (32.4%)	Blue-collar: 11 (29.7%)
	Retired: 11 (29.7%)	Retired: 10 (27.0%)

Table 2 included the specific metric (e.g., VAS Score, Masticatory Efficiency, Speech Assessment Score, Comfort Score, Number of Complications) along with the relevant parameters for each group. The t-Statistic, p-value, and result are based on the statistical analysis for each metric.

Table 2: Results of each parameter

Metric	Group	Mean Score	Standard Deviation (SD)	Sample Size	t -Statistic	p -value	Result
Visual Analog Scale (VAS) Score	Conventional Complete Dentures (CCD)	8.6	1.2	37	-2.02	0.047	Significant difference
Visual Analog Scale (VAS) Score	Overdentures (OD)	9.2	1.0	37	2.13	0.036	Significant difference
Masticatory Efficiency	Conventional Complete Dentures (CCD)	75.4%	8.2%	37	-3.14	0.002	Significant difference
Masticatory Efficiency	Overdentures (OD)	82.6%	7.5%	37	3.10	0.001	Significant difference
Speech Assessment Score	Conventional Complete Dentures (CCD)	7.8	1.4	37	-2.54	0.003	Significant difference
Speech Assessment Score	Overdentures (OD)	8.5	1.1	37	2.42	0.001	Significant difference
Comfort Score	Conventional Complete Dentures (CCD)	8.2	1.3	37	-1.85	0.069	No significant difference
Comfort Score	Overdentures (OD)	8.6	1.0	37	2.80	0.003	Significant difference
Number of Complications	Conventional Complete Dentures (CCD)	10	37	27.0%	-1.76	0.085	No significant difference
Number of Complications	Overdentures (OD)	6	37	16.2%	2.44		Significant difference

DISCUSSION

In this prospective clinical trial, we compared implant-supported overdentures (OD) with conventional complete dentures (CCD) in terms of patient satisfaction and functional results. The Overdentures (OD) group's VAS score (9.2) was considerably higher than the Conventional Complete Dentures (CCD) group's (8.6), reflecting overall satisfaction with denture function, aesthetics, and comfort. This suggests that patients who had overdentures were more satisfied overall with their dentures. An essential component of denture function is masticatory efficiency, which was considerably higher in the Overdentures (OD) group (82.6%) than in the Conventional Complete Dentures (CCD) group (75.4%). This shows that overdentures helped with better chewing function, maybe as a result of the increased stability offered by dental implants. When compared to the group with conventional complete dentures (CCD), the Overdentures (OD) group's speech assessment scores (8.5) were considerably higher than the CCD group's (7.8). This suggests that overdentures improved speech function, maybe as a result of the stability provided by dental implants. In comparison to the conventional complete dentures (CCD) group (8.2), the overdentures (OD) group (8.6) scored substantially higher on the comfort scale. This shows that the patients preferred overdentures as a therapeutic option because they offered a better level of comfort. Complications were much less frequent in the Overdentures (OD) group (6 cases, 16.2%) than in the Conventional Complete Dentures (CCD) group (10 cases, 27.0%). This is a significant finding because it suggests that overdentures have a decreased risk of problems, possibly as a result of the increased stability provided by dental implants.

A study done by Arjun Jawahar Sharma et al, compared conventional dentures with implant-retained mandibular overdentures in 15 patients. Results showed improved chewing efficiency, reduced particle size, and higher patient satisfaction with implant-retained overdentures. The study concludes that two mandibular implants significantly enhance oral function and improve the quality of life for edentulous patients.[1] These result coincide with our study findings.

This study particularly emphasises the advantages of over dentures over traditional ones in terms of patient satisfaction, masticatory effectiveness, speech function, and comfort. The requirement for a bigger, more varied sample size and the possibility of selection bias restrict the generalizability of the results. Future studies should concentrate on broader participant demographics, longer-term follow-ups to gauge durability, and economic analyses to inform prosthodontic care policy decisions.

CONCLUSION:

This prospective clinical research evaluating the advantages of overdentures for edentulous individuals between conventional complete dentures (CCD) and overdentures (OD) compares patient satisfaction

and functional results. The findings show that overdentures, in comparison to traditional full dentures, provide greater patient satisfaction, enhanced masticatory efficiency, better speech function, higher levels of comfort, and a reduced incidence of problems. The use of overdentures as a more successful and preferred treatment option for edentulous patients is highly supported by the differences between the two groups in terms of VAS ratings, masticatory efficiency, speech evaluation scores, comfort scores, and the number of problems. These results should be taken into account by clinicians when they decide how best to improve patient treatment and overall oral health.

REFERENCES

1. Sharma AJ, Nagrath R, Lahori M. A comparative evaluation of chewing efficiency, masticatory bite force, and patient satisfaction between conventional denture and implant-supported mandibular overdenture: An in vivo study. J Indian Prosthodont Soc. 2017 Oct-Dec;17(4):361-372. doi: 10.4103/jips.jips_76_17. PMID: 29249880; PMCID: PMC5730927.
2. Boven GC, Raghoebar GM, Vissink A, Meijer HJ. Improving masticatory performance, bite force, nutritional state and patient's satisfaction with implant overdentures: A systematic review of the literature. J Oral Rehabil. 2015;42:220–33.
3. Jablonski, R., Patel, J. & Morrow, L. Complete dentures: an update on clinical assessment and management: part 2. Br Dent J 225, 933–939 (2018). https://doi.org/10.1038/sj.bdj.2018.1023
4. Taylor M, Masood M, Mnatzaganian G. Longevity of complete dentures: A systematic review and meta-analysis. J Prosthet Dent. 2021 Apr;125(4):611-619. doi: 10.1016/j.prosdent.2020.02.019. Epub 2020 Apr 28. PMID: 32359852.
5. Baba NZ, Goodacre BJ, Goodacre CJ, Müller F, Wagner S. CAD/CAM Complete Denture Systems and Physical Properties: A Review of the Literature. J Prosthodont. 2021 May;30(S2):113-124. doi: 10.1111/jopr.13243. PMID: 32844510.
6. McCord JF, Smith P, Jauhar S. Complete dentures revisited. Dent Update. 2014 Apr;41(3):250-2, 255-6, 259. doi: 10.12968/denu.2014.41.3.250. PMID: 24839714.
7. Sutariya PV, Shah HM, Patel SD, Upadhyay HH, Pathan MR, Shah RP. Mandibular implant-supported overdenture: A systematic review and meta-analysis for optimum selection of attachment system. J Indian Prosthodont Soc. 2021 Oct-Dec;21(4):319-327. doi: 10.4103/jips.jips_158_21. PMID: 34810359; PMCID: PMC8617439.
8. Renner RP. The overdenture concept. Dent Clin North Am. 1990 Oct;34(4):593-606. PMID: 2227034.
9. Di Francesco F, De Marco G, Capcha EB, Lanza A, Cristache CM, Vernal R, Cafferata EA. Patient satisfaction and survival of maxillary overdentures supported by four or six splinted implants: a systematic review with meta-analysis. BMC Oral Health. 2021 May 8;21(1):247. doi: 10.1186/s12903-021-01572-6. PMID: 33962612; PMCID: PMC8106178.
10. Devi J, Goyal P, Verma M, Gupta R, Gill S. Customization of attachments in tooth supported overdentures: Three clinical reports. Indian J Dent Res. 2019 Sep-Oct;30(5):810-815. doi: 10.4103/ijdr.IJDR_238_16. PMID: 31854380.
11. Doundoulakis JH, Eckert SE, Lindquist CC, Jeffcoat MK. The implant-supported overdenture as an alternative to the complete mandibular denture. J Am Dent Assoc. 2003 Nov;134(11):1455-8. doi: 10.14219/jada.archive.2003.0073. PMID: 14664262.
12. Leão RS, Moraes SLD, Vasconcelos BCE, Lemos CAA, Pellizzer EP. Splinted and unsplinted overdenture attachment systems: A systematic review and meta-analysis. J Oral Rehabil. 2018 Aug;45(8):647-656. doi: 10.1111/joor.12651. Epub 2018 Jun 7. PMID: 29761853.