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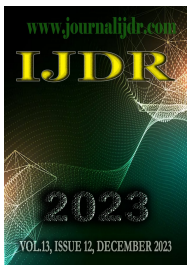

RESEARCH ARTICLE OPEN ACCESS

A CROSS SECTIONAL STUDY ON GENDER, SITE DISTRIBUTION AND PROSTHETIC OPTIONS IN PATIENTS REHABILITATED WITH DENTAL IMPLANTS

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ABSTRACT

Purpose & Aim: This study aim to collect data regarding patients gender distribution , site , treatment option instituted in a dental training institution over a period of three months. This study investigates the interplay based on gender, site distribution, prosthetic, and crown selection in dental implants, aiming to enhance our understanding of the multiple factors influencing treatment outcomes. ***Method:*** In the conducted cross-sectional study, data were collected from completed cases over a period of 3 months at the Department of Prosthodontics, Dental College And Hospital in Chennai. The study specifically examined gender, site distribution, prosthetic choices and crown selection in dental implants. A comprehensive analysis was undertaken by reviewing patient records and treatment histories. Data analysis utilized descriptive statistics. ***Results:*** Gender distribution revealed a balanced representation, with 50% females and 50% males. Site-specific variations demonstrated diverse implant locations, with mandibular posteriors (41.46%) and maxillary anteriors (30.48%) being predominant. Prosthetic trends indicated a preference for single-unit restorations (58.10%), while screw-retained crowns were the predominant choice (71.60%). This cross sectional analysis allowed for the identification of diverse patterns within each category. **Limitations:** The study is conducted over a brief time frame to obtain quick insights and initial findings. Due to constraints, the pilot study is carried out with a small sample to provide an initial understanding before a larger-scale investigation.The sample size is very small pertaining to only one unit. **Conclusion**: The findings from this study contribute valuable insights for clinicians to refine treatment strategies, acknowledging the importance of gender-specific considerations, varied implant sites, and evolving prosthetic preferences in achieving optimal patient outcomes. The results reveal no evidence of gender bias, with the mandibular posteriors and maxillary anteriors emerging as the most frequently encountered locations. Single-unit crowns were frequently chosen, with screw-retained restorations being the predominant option.

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INTRODUCTION

Over the past few decades, there has been a substantial surge in the popularity of implant prosthetics, gaining prominence among both adult and elderly populations.[1,2,3]The restoration of missing teeth becomes mandatory to regain optimal oral function and achieve favorable aesthetics, particularly in the anterior teeth region. Understanding gender identity may reveal potential variations in treatment preferences, success rates, and complications. Simultaneously, examining the site distribution of implants provides crucial insights into the challenges and considerations associated with different regions of the oral cavity. Moreover, the study explores the preferences in prosthetic choices, including single-unit, multi unit and full-mouth prostheses in patient preferences and clinical practices. Prosthetic selection is a critical aspect of implantology, influencing both the functional and aesthetic aspects of the final restoration.[6] Analyzing the prevalence of screw-retained and cement-retained prosthesis, as well as combinations of both, adds depth to our understanding of evolving patterns in restorative practices. Synthesizing this information, may contribute to the body of knowledge and guiding implantology practices, with the potential to inform practitioners, researchers and educators alike, fostering an environment of continuous improvement in the delivery of dental

implant procedures. As the landscape of implantology continues to evolve, evidence-based approaches for enhanced patient care and improved treatment outcomes becomes imperative.[7] The success of dental implants relies not only on technological advancements but also on the ability to tailor treatments to individual patient needs.[4] The study endeavors to provide comprehensive insights into implantology by analyzing gender, site distribution,type of prosthesis and selection patterns in dental implant procedures. By analyzing a diverse set of patient records, this study aims to uncover patterns and variations within these factors, offering valuable evidence-based considerations for dental practitioners.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Prosthodontics at a private dental institution in Chennai over a period of 3 months, aiming to provide a comprehensive analysis of dental implant preference.The ethical clearance has been successfully obtained to conduct our study. The study included a sample of rehabilitated patients records from a specified time frame of 3 months to determine the prevailing characteristics in a population at a certain point in time.

These records contains demographic information, medical history and detailed information on implant procedures. The study focused on variables such as gender, implant location, type and selection of prosthesis. This study evaluates the number of male and female patients. Implant locations were categorized into various sites including maxillary and mandibular anterior and posterior regions as well as full-mouth procedures. Prosthetic choices were classified into fixed or removable, single or multi unit prostheses,combinations of single and multi unit prostheses and full-mouth prostheses.Fixed prosthesis selection was categorized as screw-retained, cement-retained or a combination of both. Similarly, Removable prosthesis selection was categorized in to ball and bar attachment.The analysis utilized descriptive statistics, frequencies, percentages, chi-square tests and potentially logistic regression to identify patterns of dental implant.

RESULTS

In this cross sectional study, an analysis of 74 dental implant cases was conducted, revealing a balanced distribution between genders, with 50% of patients being female and 50% male. When examining the distribution of implants between the maxilla and mandible, it was found (56.09%) more implants placed in the mandible. The most prevalent implant site was the mandibular posteriors (41.46%), followed by maxillary anterior (30.48%). Full mouth implantation was observed in (2.4%) of cases.

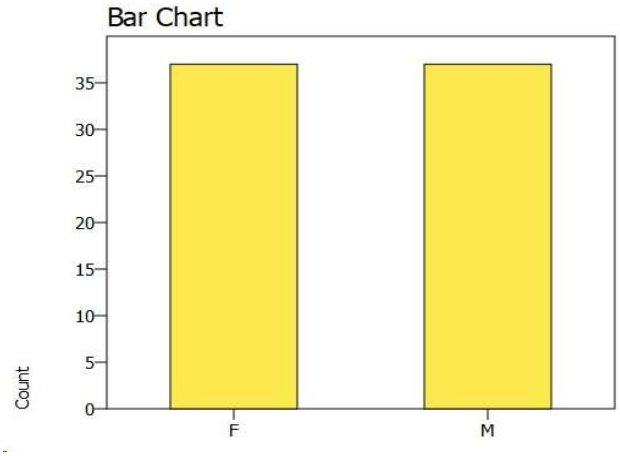

Table 1. Allocation of implants among males and females

Table 2. Distribution of Maxillary and Mandibular Implants

Maxilla		Count	Percentage	Cumulative percentage
	Maxillary anteriors	25	30.48%	30.48%
	Maxillary posteriors	9	10.97%	41.45%
Total		34	41.45%	
Mandibile				
	Mandibular anteriors	12	14.63%	56.08%
	Mandibular posteriors	34	41.46%	97.54%
Total		46	56.09%	
	Full mouth	2	2.46%	100%
Total		2	2.46%	100%

Table 3. Frequency of distribution of implants across anterior and posterior region

	Anteriors	Count	Percentage	Cumulative percent
	Maxillary anteriors	25	30.48%	30.48%
	Mandibular anteriors	12	14.63%	45%
Total		37	45%	45%
	Posteriors			
	Maxillary posteriors	9	10.97%	55.97%
	Mandibular posteriors	34	41.46%	97.47%
Total		43	97.47%	97.47%
	Full mouth	2	2.43%	100%
Total		2	2.43%	100%

Prosthetically, single-unit prostheses were the most common (58.10%), followed by multi unit (25.70%), full mouth prostheses (6.80%) and the combination of single and multi unit (9.50%). Screw-retained prosthesis were predominant (71.60%), while cement-

retained prosthesis constituted (27.00%), and combined screw and cement-retained prosthesis were present in (1.40%) of cases. Analysis of the data by gender and implant site indicated that mandibular posteriors were the most common site for both females (21.60%) and males (17.60%). However, no significant gender-based differences in implant distribution across various sites were observed (Fisher's exact test, $p > 0.05$). The overall gender distribution was equal, as evidenced by an equal number of implants in both males and females (Fisher's exact test, $p = 1.000$), (Fisher's exact test, $p > 0.05$).

The prominence of single-unit prostheses at 58.10%, in contrast to multi unit at 25.70% and full-mouth rehabilitation at 6.80%, underscores a distinct inclination toward individual tooth replacements. In a study Cláudio, Rodrigues preferred -implant fixed dentures for mandible.[15] In a study by Caroline favor simple and conventional treatment approaches in implant prosthetics.[16] According to the meta-analysis of Pjetursson, conventional tooth-supported prostheses had a significantly higher 5-year success rate (84.3%) than implant-supported FDPs (Fixed Dental Prostheses)

Table 4. Prosthesis - Single Unit vs multi unit vs Full Mouth

	Type of prosthesis	Frequency	Percent	Cumulative Percent
	Single unit	43	58.10%	58.10%
	Multi unit	19	25.70%	83.80%
	Full mouth	5	6.80%	90.50%
	Single unit and multi unit	7	9.50%	100.00%
Total		74	100.00%	100.00%

Table 5. Comparing Prosthetic Options: Screw retained vs Cement retained vs combination of both

	Type of crown	Frequency	Percent	Valid percent	Cumulative percent
	Screw retained	53	71.60%	71.60%	71.60%
	Cement retained	20	27.00%	27.00%	98.60%
	Screw and cement retained	1	1.40%	1.40%	100.00%
Total		74	100.00%		100%

DISCUSSION

The sample consists of 74 individuals, with an equal distribution of 37 males and 37 females. The percentages represent the proportion of each gender category within the sample. The sample is evenly split between males and females, with each gender constituting 50% of the total sample. Both genders contribute equally to the total percentage, with each accounting for 50% of the sample. The predominant placement of implants in the mandible (56.09%) compared to the maxilla (41.46%) reflects a higher frequency of implant procedures in the lower jaw. This finding aligns with existing literature indicating favorable bone density in the mandible, influencing implant success rates in this region. According to studies conducted by Raghoebar GM et al[8] and Albrektsson A,[9] dental implants placed in the mandible exhibit a superior survival rate compared to those in the maxilla. This discrepancy in survival rates is likely attributed to the higher quality of bone in the mandible.

The distribution of implants, with prevalence in the mandibular posteriors (41.46%) and maxillary anteriors (30.48%), emphasizes the significance of comprehending site variations. Notably, a study by Daniel Buser et al reported a distinct pattern, with 81.1% of implants placed in the posterior maxilla region.[10] in a study by Gabriel et al, Posterior region of the maxilla was most frequently affected by errors.[11] in a study by alhamdani most of the dental implants 76.2% were inserted in the upper and lower posterior jaw zones (42% and 34.2% respectively), whereas the remaining 23.9% were inserted in the upper and lower anterior jaw zones (19.3% and 4.6% respectively).[12] This variance in implant placement patterns highlights the importance of considering regional differences in treatment planning, possibly influenced by factors such as bone quality, anatomical variations, and functional demands specific to each region. Analyzing the most common implant site in males in conjunction with prosthesis type and retention method provides valuable insights. For instance, if mandibular posteriors are the most common site, understanding whether single-unit prostheses or multi unit are preferred, along with the choice of screw or cement retention, can guide clinicians in optimizing treatment outcomes for male patients.[13] Similar to the male subgroup, examining the most common implant site in females in conjunction with prosthesis type and retention method offers specific insights. This analysis aids in tailoring treatment plans based on the unique preferences and considerations associated with female patients. The patient's perceived preference toward dental implants over other prosthetic options has been acknowledged by other studies.[14]

(61.3%)[17], Grasping the preferences for specific prosthetic options is paramount for aligning with patient expectations and promoting the enduring success of implant-supported restorations. This preference for single-unit prostheses suggests a focus on personalized and targeted solutions, emphasizing the importance of tailoring treatment plans to meet the unique needs and desires of each patient.[7] The dominance of screw-retained crowns (71.60%) over cement-retained crowns (27.00%) suggests a prevalent preference for the former. The choice between a screw-retained or cement-retained implant restoration connection plays a pivotal role in various clinical and technical aspects of treatment, influencing factors such as aesthetics, occlusion, fabrication ease, retention, retrievability, cost, and the passivity of the framework As indicated in Wittneben et al.'s systematic review, there were no statistically significant disparities in the survival and failure rates between screw- and cement-retained implant restorations.[18] Notably, cement-retained restorations exhibited a commendable five-year survival rate of 96.0%, while screw-retained restorations demonstrated a slightly lower survival rate of 95.6%. In a cross sectional study conducted by Ferreiroa et al, an examination was undertaken to compare both cement-retained and screw-retained restorations for single-tooth implants.[19] The results revealed that while the cement-retained approach proved effective in preventing screw loosening, an overabundance of cement led to complications in the soft tissues. However, it is essential to recognize that cement-retained restorations were associated with a higher incidence of both biological and technical complications. The study limitations include a short study period with a limited sample size. Due to constraints, the pilot study is carried out with a small sample, to gain preliminary understanding before a more extensive investigations undertaken. Further this study exclusively addresses fixed prosthetics, with no inclusion of removable options . This information informs clinicians about the popular choices in crown retention methods, impacting considerations related to maintenance, retrievability, and aesthetics.[20]

CONCLUSION

In conclusion, this cross sectional study on dental implantology, comprising of gender, site distribution, prosthetic type and selection patterns has provided valuable insights into the complexities of treatment patterns. The equal distribution of gender in the study ensures a comprehensive understanding applicable to diverse patient populations. The prevalence of mandibular posteriors and single-unit prostheses highlights site distribution and prosthetic preferences respectively, influencing treatment planning. The dominance of

screw-retained prosthesis suggests a common preference in prosthesis retention methods. Understanding these patterns contributes to evidence-based practices, enabling clinicians to tailor treatments, enhance patient outcomes, and navigate evolving dynamics in the field of implantology. Further, the study emphasizes the need for ongoing research to adapt to emerging patterns, ensuring continued improvement in dental implant procedures.

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