COMPARISON OF THE PERCEPTION OF CLINICIANS AND PATIENTS FOR THE ESTHETIC QUALITY OF MAXILLARY ANTERIOR RESTORATIONS

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ABSTRACT

Objective: *The objective of the study was to compare the perception of clinicians and patients for the esthetic quality of maxillary anterior restorations*

Subjects and methods: *This cross-sectional analytic study was conducted on 172 participants at Rawal Insitute Of Health Sciences after approval by ethical committee of Institute. The research utilized both objective (Ryge criteria) and subjective assessments by clinicians and patients. Patients aged between 15 and 50 years with tooth-colored restorations placed within the last 3 months were included, while those with certain visual impairments and psychological issues were excluded. For dentists, the inclusion criteria included being aged between 25 and 50 years with over two years of experience and validated qualifications. Data analysis was done employing descriptive statistics and the Chi-square test.*

Results: *The mean age of the participants was 38.00±7.27 years. The Clinician group comprised 40 individuals, while the Patients group had 132 individuals. The evaluated restorations comprised 27.91% all-ceramic, 43.02% direct composite, and 29.07% porcelain fused to metal. Regarding the shape of restoration, 55.00% of clinicians and 53.79% of patients rated it as "Good," 22.50% of clinicians and 8.33% of patients considered it "Poor," and 22.50% of clinicians and 37.88% of patients found it "Satisfactory." The difference in perception was statistically significant (p = 0.024). For the shade of restoration, 62.50% of clinicians and 51.52% of patients perceived it as "Good," 20.00% of clinicians and 9.85% of patients rated it as "Poor," and 17.50% of clinicians and 38.64% of patients described it as "Satisfactory." The difference in perception was statistically significant (p = 0.025).*

Conclusion: *The study found significant differences in the perception of clinicians and patients for the esthetic quality of maxillary anterior restorations, particularly in terms of shape and shade.*

Keywords: *Shade, shape, restoration, maxillary anterior*

INTRODUCTION

In the past, restorative dentistry primarily aimed at restoration of dental caries and functionality of the decayed teeth through direct or indirect restorations.[1] However in recent decades, several factors including a decline in dental caries prevalence, increased dental awareness, and advancements in techniques and materials, have led to a notable shift in focus.[2] This shift in focus emphasizes the significance of esthetic restorations, reflecting a collective movement towards enhancing the appearance of dental restorations alongside their functional aspects.[3]

When individuals seek dental restorations for their upper front teeth (maxillary anterior teeth), their primary focus is often on achieving exceptional dental aesthetics.[4] Their main objective is to obtain a visually pleasing dental appearance that enhances their overall facial aesthetics and boosts their self-confidence.[5] Scientific research has consistently demonstrated a strong correlation between a favorable dental appearance and positive perceptions of one's personality and character.[6] Conversely, unfavorable dental aesthetics can have a detrimental effect on an individual's self-assurance and confidence.[7]

A study conducted in Jorden to assess the esthetic quality of maxillary anterior restorations by clinicians and patients reported that 32.4% of patients had esthet-

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ic complaints, while 43.8% and 67.6% of restorations were rated as satisfactory by clinicians and patients, respectively.[8]

The rationale of this study was to investigate the level of agreement between clinicians and patients when evaluating the esthetic quality of maxillary anterior restorations. By comparing the assessments made by both groups, valuable insights can be gained regarding the perception of esthetic outcomes. This knowledge will help clinicians in better understanding of patient preferences and refinement of their treatment approaches to ensure the highest level of patient satisfaction. There is lack of research on this topic in our population

The objective of the study was to compare the perception of clinicians and patients for the esthetic quality of maxillary anterior restorations.

MATERIAL AND METHODS

This cross-sectional comparative study was conducted on 172 participants, consisting of 40 dentists and 132 patients, at Rawal Institute Of Health Sciences from 5th February 2023 to 28th June 2023 using a non-probability consecutive sampling technique. Ethical approval of the institute was taken. The sample size was calculated using the WHO calculator, with a 95% confidence level and a 7% margin of error, based on a patient satisfaction rate of 67.6% regarding anterior restoration.[8]

After an in-depth explanation of the study, verbal informed consent was obtained from all participants. The inclusion criteria for patients were as follows: both genders, aged between 15 and 50 years, with maxillary anterior direct or indirect tooth-colored restorations placed within the last 3 months. Patients with visual impairments such as color blindness, mental retardation, and other psychological issues were excluded. For dentists, the inclusion criteria were as follows: both genders, aged between 25 and 50 years, with more than two years of experience and qualifications validated by the Pakistan Medical Council.

While seated on the dental chair, the patients were interviewed and provided with a comprehensive explanation of the study protocol. Age and gender of the participants were recorded. An examination was conducted to determine the existence of any maxillary anterior restorations. To evaluate the aesthetics of each restoration by clinicians and patients, a combination of objective and subjective procedures was employed. Clinicians carried out clinical objective assessments using standardized criteria (Ryge criteria)[9], while the patients provided their personal subjective evaluations.

The dentists performed assessment adhering to Ryge criteria[9]. Color and shape matching of the resto-ration were evaluated at a distance of 45cm, (approximating close conversation distance). A comparison was made with the same tooth, adjacent tooth, or the nearest mesially or distally available tooth, applying the following criteria:

- Good: The color or shape of the tooth and restoration exhibited a complete match.

- Satisfactory: A mild difference in color or shape was observed between the restoration and tooth.

- Poor: The color or shape of the restoration significantly deviated from that of the natural tooth

The patients provided a subjective quality assessment of the restoration, rating it as good, satisfactory, or poor.

The data was analyzed using R version 4.1.3. Descriptive statistics were computed, including the mean and standard deviation (SD) for numerical variables, and frequency with percentages for categorical variables. Chi-square test was used to determine association between patients and clinician quality assessment. The level of significance was kept at $P<0.05$.

RESULTS

In the present study, the mean age of the participants was 38.00±7.27 years. Table-1 presents the distribution of participants' gender, age, and educational level.

Among the 172 restorations assessed, the distribution of restoration types is shown in Fig-1. Most common was direct composite restorations (n=74, 43.02%)
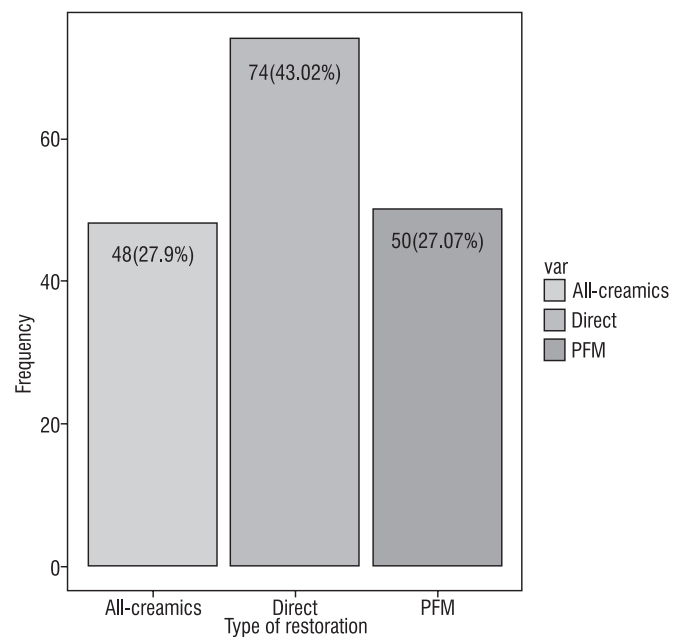

Fig 1: Types of restorations assessed

TABLE 1: GENDER, AGE AND EDUCATIONAL LEVEL OF THE PARTICIPANTS

Variable	Characteristic	Clinicians(n = 40)	Patients (n= 132)
Gender	Female	16 (40 %)	78 (59.09%)
	Male	24 (60 %)	54 (40.91%)
Age group (years)	25-40	24 (60 %)	83 (62.88%)
	41-50	16 (40 %)	49 (37.12%)
Educational Level	General dentist	20 (50 %)	-
	Specialist	20 (50 %)	-
	Higher	-	31 (23.48%)
	Intermediate	-	55 (41.67%)
	Matric	-	33 (25.00%)
	Primary	-	13 (9.85%)

TABLE 2: COMPARISON OF THE PERCEPTION OF CLINICIANS AND PATIENTS FOR THE ESTHETIC QUALITY OF MAXILLARY ANTERIOR RESTORATIONS

Variable	Perception of Quality	Clinicians (n = 40)	Patients (n = 132)	p-value*
Shape of Restoration	Good	22 (55.00 %)	71 (53.79%)	0.024
	Satisfactory	9 (22.50 %)	50 (37.88 %)	
	Poor	9 (22.50 %)	11 (8.33 %)	
Shade of Restoration	Good	25 (62.50%)	68 (51.52%)	0.025
	Satisfactory	7 (17.50 %)	51 (38.64 %)	
	Poor	8 (20.00 %)	13 (9.85 %)	

followed by Porcelain fused to metal (n=50, 29.07%).

Table-2 presents the comparison of the perception of esthetic quality of clinicians and patients for maxillary anterior restorations. Statistically significant difference was for the perception of clinicians and patients for the esthetic quality of maxillary anterior restorations with respect to shape of restoration (p=0.024) and shade (p=0.025). Good perception for both parameters was higher among clinicians than patients.

DISCUSSION

The aim of this study was to compares the perception of clinicians and patients for the esthetic quality of maxillary anterior restorations. The results revealed statistically significant differences in perception for both the variables, i.e. shape and shade of the restorations.

The differences in perception of esthetic quality between clinicians and patients can be attributed to several factors:. Clinicians, who are dental professionals with specialized training and experience, may have a more critical and discerning eye when evaluating restorations.[10] They are trained to notice subtle details and deviations from ideal aesthetics that patients might not be aware of.[11] Esthetic perception is inherently subjective and can vary widely between individuals. Clinicians and patients may have different expectations and preferences when it comes to the appearance of dental restorations.[12] Patients may not have the same level of exposure to various types of restorations or the same familiarity with dental terminology as clinicians. Their judgments might be influenced by their personal experiences as dental patients. The distribution of restoration types differed among clinicians and patients. The varying material properties and appearance of different restoration types could have influenced their judgments.[13]

The Ryge criteria, initially introduced by Cvar and Ryge in 1971, serve as a valuable tool for the clinical evaluation of restorative materials. This evaluation method involves visually comparing a dental restoration to the adjacent tooth structure, aiming to determine if they blend seamlessly.[14] If any mismatch is observed, the criteria help ascertain whether it falls within the acceptable range of natural tooth color. Over the years, these criteria have proven to be straightforward and effective standards for assessing the esthetic aspects of both direct restorations and laminate veneers.[15]

In our study, we utilized the Ryge criteria with slight modifications to carry out a comprehensive clinical assessment of color and shape match. The results were categorized into three ratings: good, satisfactory, or poor, providing valuable insights into the esthetic quality of the restorations. Similar modification was

used in previous study.[8]

The perception of esthetic quality, particularly regarding color and translucency, is subjective and can vary among individuals. Factors like prior visual experiences, the materials used, and surface texture influence how people perceive colors, including dental restorations. Clinicians face a challenging task in providing esthetic restorations, as they must consider these subjective variables when planning treatments.[16] Open and honest discussions with patients about achievable outcomes are crucial. Taking time during the reversible stage of treatment to demonstrate and decide on shade and shape values can prevent issues and expenses later on in irreversible stages. Effective communication and consideration of individual preferences are essential for ensuring patient satisfaction and successful treatment results.[17]

A Jorden-based study revealed notable discrepancies in esthetic evaluations between clinicians and patients, demonstrating statistically significant differences. [8] These results support our findings. Another study conducted in China with 90 participants reported that patients' esthetic perception of anterior direct composite esthetic restoration differed from that of clinicians. [18] These findings also are in consistent with current study.

Strengths and limitations

This cross-sectional comparative study had strengths such as a relatively large sample size of 172 participants. However, there were limitations, including potential selection bias from non-probability consecutive sampling, limited representation due to a single-center study, and possible recall bias in subjective evaluations. The study's time frame might not have captured long-term variations in esthetic quality, and subjectivity in assessments could introduce variability. Exclusion criteria may impact generalizability, and the Ryge criteria might not encompass all relevant aspects of esthetic evaluation. Cultural bias could be present as the study was conducted in Pakistan.

CONCLUSION

The study found significant differences in the perception of clinicians and patientsforthe esthetic qualityof maxillary anterior restorations, particularly in terms of shape and shade. Understanding these variations in perception can be valuable for dental professionals to better communicate with patients and align treatment goals with patient expectations.

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