

# EVALUATE ESTHETIC SATISFACTION OF PATIENTS WITH METAL-CERAMIC RESTORATIONS IN THE ANTERIOR MAXILLA

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## ABSTRACT

**Objective:** to determine esthetic satisfaction of patients provided with metal ceramic fixed restorations in the anterior maxilla

**Materials and Methods:** A cross sectional study was carried out from February 2015 to March 2016 at the Department of Prosthodontics, Khyber College of Dentistry Peshawar. A total of 159 subjects were observed by using 28% proportion of satisfaction with fixed partial dentures by using WHO sample size calculator. Moreover, nonprobability consecutive sampling technique was used for data collection. Patients after giving informed consent were asked to evaluate their metal ceramic fixed restorations by looking at them in a wall mounted mirror from a conversation distance. The score pointed out by the patient for each of the three aspects of aesthetics (shade, shape and texture) of the restoration was recorded. These were summed to document the overall score assigned to restoration. Data was analysed using SPSS 17.

**Results:** Out of total of 159, the mean age of the participants included in the study was  $31.71 \pm 7.88$  (SD) years. Males comprised 40.3% of the participants. Majority of patients i.e. 69 (43.4%) were in the age group 31-40. Majority of the patients 59 (37.1%) were poorly satisfied with their maxillary anterior metal ceramic restorations, 42 (26.4%) patients showed moderate satisfaction with their restorations. Higher frequency (49.1%) of poor satisfaction levels with the maxillary anterior metal ceramic fixed partial dentures was found in the age group 20-30 years. Gender stratification showed no significant statistical difference.

**Conclusion:** Aesthetic attitude towards the anterior metal ceramic fixed restorations differed with the differing age groups, with the ageing subjects more satisfied with their anterior restorations than younger subjects. This must be recognized in treatment planning for future restorations.

**Keywords:** Esthetics, Dental esthetics, Metal ceramic fixed restorations

## INTRODUCTION

Dental esthetics has become an important and rewarding discipline in dentistry. This is because of patients' high demands for anterior restorations of high esthetic quality. This requires the clinicians to be

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prepared for meeting the esthetic demands and high expectations of patients.<sup>1</sup> Esthetic perception varies in both the patients and clinicians with an influence of each person's personal experience and socio-cultural environment.<sup>2</sup> Among the different involved factors, the esthetics of the smile has an important influence on the perception about the individual appearance and personality.<sup>2</sup>

Tooth colour is one of the critical factors influencing satisfaction with smile appearance. Per-

ception of tooth colour is a complex phenomenon affected by several factors including lighting conditions, optical properties of teeth and the viewer's visual experience. Dissatisfaction with the tooth colour of restorations may be one of the common causes of dissatisfaction with maxillary anterior metal fused-to-porcelain restorations. Age, Gender and education level was found to have influence with satisfaction of dental esthetics.<sup>3</sup> Esthetic perception of patients differs significantly according to tooth region. When planning and assessing anterior restorations patient's viewpoint must be given importance as the differences in esthetic perception of dental restorations between patients and dental professionals influence the decision making process.<sup>4,5</sup>

In one study, majority of restorations 68% were satisfactory for the patients. Some 54% of the patients rated the shade of their restoration as good. In a study comparing the shade of restoration matching to adjacent teeth some 25% found it satisfactory as compared to 21% who rated it poor. Some 62% of the patients rated the shape of their restorations as good, 24.4% satisfactory and 14% poor. Surface texture of the restorations was judged by 76% of patients as good, 10% as satisfactory and 15% as poor.<sup>1</sup>

Age had an effect on satisfaction with tooth colour. Young patients, aged between 19 and 39 had higher dissatisfaction rates compared with patients aged 40 and over. Young people have greater preferences for whiter teeth.<sup>3</sup> In another study, dissatisfaction with tooth colour was significantly higher in females than in male patients (odds ratio 1.99).<sup>6</sup> Satisfaction levels regarding esthetics of anterior restorations seem to improve with education and age. Younger people and females were more concerned about whiter teeth.<sup>3,6</sup>

In another study, 19% of patients with metal ceramic crowns on anterior teeth were satisfied with their esthetic appearance, 28% moderately satisfied and 52% dissatisfied. Majority of patients, i.e. 41% were satisfied with their fixed partial dentures, 28% moderately satisfied and 29% dissatisfied with the appearance.<sup>7</sup>

This study is designed to identify different aspects of esthetic failure of restorations in anterior maxilla. This study will show patient's esthetic satisfaction with restorations already provided to them. It will help in reinforcing upon the dental

practitioners to give due consideration to the patient's viewpoint and concerns when planning restorations in the anterior maxilla.

## MATERIALS AND METHODS

This cross-sectional descriptive study was performed at the Prosthodontics Department of Khyber College of Dentistry, Peshawar over a period of 14 months. During this period, 159 patients fulfilling the inclusion criteria were included. Adults of both genders in the age range of 20-50 years, having received metal ceramic restorations in the anterior maxilla were included in the study. After obtaining informed consent, each patient was given the opportunity to document the overall esthetics restored by looking at them in a wall mounted mirror from a conversational distance, which was 2 feet, utilizing natural hours of daylight before 12pm with no cloud cover. The restorations provided by operators who had completed 1<sup>st</sup> year of postgraduate fellowship training in prosthodontics, were considered for this study. The score pointed out by the patient for each of the three aspects of aesthetics (shade, shape and texture) of the restoration was recorded. These were summed to document the overall score assigned to restoration.

The collected data were analyzed using SPSS version 17.0. Frequencies and percentages were calculated for categorical variable like gender and each response of the patient and overall satisfaction level. Mean  $\pm$  SD was calculated for age. The satisfaction level was stratified among age and gender to see effect modification. Post stratification was applied through chi-square test keeping p value  $\leq 0.05$  to be significant.

## RESULTS

In this study 159 patients were included. The mean age of the subjects was  $33.71 \pm 7.88$  (SD) years. Age distribution is shown in Table 1.

Out of 159 subjects males were 64 (40.3%) and females were 95 (59.7%). Male to female ratio was 1:1.48. Gender distribution is shown in Table 2.

Satisfaction levels of the subjects is shown in table 3.

Higher frequency of poor satisfaction levels with the maxillary anterior metal ceramic fixed partial dentures was found in the age group 20-30 years,

**Table 1: Age Distribution (n=159)**

Age (Years)	Frequency (N)	Percentage (%)
20-30	57	35.8
30-40	69	43.4
40-50	33	20.8
Total	159	100.0

**Table 2: Gender Distribution (n=159)**

Age (Years)	Frequency (N)	Percentage (%)
Male	64	40.3
Female	95	59.7
Total	159	100.0

**Table 3: Distribution of subjects within the satisfaction levels (n=159)**

Satisfaction level	Frequency (N)	Percentage (%)
Poor Satisfaction	59	37.1
Moderate Satisfaction	42	26.4
Complete Satisfaction	58	36.5
Total	159	100

**Table 4: Stratification of satisfaction levels with the age (n=159)**

Age group (Years)	Satisfaction levels			Total	P value
	Poor Satisfaction	Moderate Satisfaction	Complete Satisfaction		
20-30	28 (49.1%)	15 (26.3%)	14 (24.6%)	57 (100%)	0.039
30-40	25 (36.2%)	17 (24.6%)	27 (39.1%)	69 (100%)	
40-50	06 (18.2%)	10 (30.3%)	17 (51.5%)	33(100%)	
Total	59 (37.1%)	42(26.4%)	58(36.5%)	159(100%)	

By using Chi-square test, keeping  $p \leq 0.05$  as significant

**Table 5: Stratification of satisfaction levels with gender (n=159)**

Gender	Satisfaction levels			Total	P value
	Poor satisfaction	Moderate Satisfaction	Complete Satisfaction		
Male	16 (25%)	16 (25%)	32 (50%)	64 (100%)	0.008
Female	43 (45.3%)	26 9 (27.4%)	26 (27.4%)	95 (100%)	
Total	59 (37.1%)	42 (26.4%)	58 (36.5%)	159 (100%)	

By using Chi-square test, keeping  $p \leq 0.05$  as significant

28 patients (49.1%). 51.5% (17) of patients in the age group 41-50 years were found to be completely satisfied with their anterior maxillary metal ceramic restorations. (Table 4)

**DISCUSSION**

Dental esthetics has become an important and rewarding discipline in dentistry with an increasing

number of patients requesting anterior restorations of high esthetic quality. Clinicians must be able to meet the high esthetic demands of their patients. Different variables may influence the esthetic quality of restorations. Quality evaluations may vary with patient's assessments. The study by Zakerreya et al attempted to assess the esthetic quality of maxillary anterior restorations and examine variables affecting esthetic quality. Patients evaluated esthetic satisfaction of their anterior maxillary restorations with the adjacent teeth using Visual Analogue Scale (VAS). The study observed that the percentage of esthetic complaints was 32.4% whereas the percentage of restorations judged to be satisfactory was 67%. The study concluded that age, gender and qualification of the operator and the technician, type and longevity of restoration play significant role in the esthetic satisfaction of patients with their esthetic restorations. Contrary to this, 36.5% of patients in our study who had metal-ceramic fixed restorations in the anterior maxilla were satisfied with their restorations. The low percentage of satisfied patients may be related to age, gender, preparation techniques and the quality of restorations provided. The production of high quality esthetic restorations is a technique sensitive procedure achieved with the help of well-trained dental technicians and well-equipped laboratories.<sup>1</sup>

Rupal et al conducted a study to assess the level of satisfaction and their desired treatment options. The study concluded 39.5% of the patients were satisfied with their esthetic restorations, making it close to our study.<sup>7</sup>This study was performed in India, which could be the reason of similarity. The preparation techniques and the available quality of restorations and the necessary training of the technicians could be lacking.

Visual comparisons between a restoration and the adjacent tooth structure are used to determine whether the restoration and the structure of the adjacent tooth are a perfect match or outside the normal colour range. We also used visual matching to determine the esthetic satisfaction of patients with maxillary anterior metal ceramic restorations as was used by Zakeryya et al. The Visual Analogue Scale (VAS), a simple and standardized criterion for clinically evaluating the aesthetic aspects of fixed restorations, yields meaningful clinical information quickly and economically to evaluate subjective experience.<sup>1,8</sup>The overall assessment of satisfaction

in our study was satisfactory, even though a large percentage of population (37.1%) was poorly satisfied with the dental esthetics. 36.5% of the subjects demonstrated complete satisfaction with the anterior restorations whereas 26.4% showed moderate satisfaction. Similar results were observed by Rupal et al, which showed higher rate of satisfaction among the study subjects i.e, 43% completely satisfied. Similar results were observed by Poonam et al, where 37.5% of the patients were poorly satisfied and more than 60% were satisfied with the dental esthetics.<sup>7,9</sup>

A study conducted by Oggini et al concluded that esthetic failure was the most common cause of failure of anterior fixed partial denture in a sample of Nigerian population. They reported 40.5% of the restorations failed due to poor esthetics close to this study i.e. 40% of poorly satisfied fixed restorations. Dental caries, which is reported to be the most common factor for failure of fixed partial denture in western countries (22%-38 %) in contrast to this study. In the western countries all ceramic restorations have become more common to restore the anterior missing teeth, because of superior esthetic quality. However, this is not the case in developing countries where because of the technical difficulties in fabricating these restorations, lack of dental health insurance and high cost.<sup>10</sup>

The age and gender of an individual influence the attitude towards the appearance and restorations in maxillary anterior region. Dissatisfaction with the tooth colour and appearance is common among younger individuals. Rupal et al reported significant difference in satisfaction levels among the age groups ( $p$  value  $< 0.05$ ). 79 % of the elderly subjects (age above 60 years) showed complete or moderate satisfaction with their dental esthetics. The study concluded older patients tend to be more satisfied with their esthetics and esthetic restorations than younger individuals, suggesting the appearance of their teeth is not as important to older as to younger individuals. Similar results were reported by Alkhatib's study in UK which reported a higher level of satisfied patients with the tooth colour; 71% satisfied patients above age of 55 years. Our study shows that age played a significant role in the esthetic satisfaction of patients, patients in the age group 40-50 showed a higher percentage (51.5%) of completely satisfied patients than younger people ( $p$  value 0.039) suggesting ageing people give less importance to their dental

esthetics.<sup>7</sup>The results showed the satisfied percentage of the patients increase with increasing age. One other factor could be that they compare their restored maxillary anterior teeth with their dental status prior to their prosthodontic treatment. Younger patients are more under the influence of media and society.<sup>1, 9, 11.</sup>We expected older individuals to have limited interest in dental appearance, together with the lower socioeconomic status and their lower incomes as they may not be able to afford more expensive aesthetic restorations. They may also be forced out of the way by their systemic health problems which are on a rise in developing countries. The proportion of elderly population in the industrialized countries is growing substantially with increasing life expectancy and their characteristics are of major concern to the society.

This study results also showed the significant difference in the esthetic satisfaction among the male and female subjects. Males tend to be more satisfied with their restorations than females (p value 0.008). Similar results were observed by Zakereyya et al, which showed significant differences in esthetic satisfaction of dental restorations for age (p value less than 0.05) and gender (p value less than 0.001).<sup>1, 50</sup>

Patients have been relying upon their clinicians to select the best appearance for their restorations. However, as stated, esthetics is a subjective phenomenon, this study has given the patients an opportunity to assess their maxillary anterior metal ceramic fixed restorations. The study by Zakeryyya et al, used a combination of assessment by the patients as well as the clinician to assess the esthetic quality of the fixed restorations and a comparison was made of the agreements and disagreements of the two schemes. This study assessed the evaluation by the patient only. Clinicians seemed to be more critical in their evaluation of the esthetic restorations as compared to the patients.

## CONCLUSION

The percentage of satisfactory restorations revealed by the subjective assessment of the patients was 36.5 % completely satisfied. Dissatisfaction tend to be more common in females than males. Aesthetic

attitude towards the anterior metal ceramic fixed restorations differed with the differing age groups, with the ageing subjects more satisfied with their anterior restorations than younger subjects. This must be recognized in treatment planning for future restorations.

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