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METAL RESTORATIONS;

INFLUENCE OF AGE ON AESTHETIC SATISFACTION OF PATIENT AFTER PROVIDING PORCELAIN FUSED TO METAL RESTORATIONS.

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ABSTRACT: Introduction: Aesthetic is the most important consideration for the replacement of missing teeth. Traditional metal-ceramic fixed dental prostheses are stronger, clinically recognized, and reliable and will therefore persist the first consideration. **Study Design:** Cross sectional study. **Setting:** Liaquat University of Medical and Health Sciences, Jamshoro. **Period:** October 2015 to September 2016. **Material and Methods:** Using non probability consecutive sampling technique. Data from 120 patients regarding effect of age on appearance after providing metal-ceramic fixed prosthesis were collected using the method of interview and examination. **Results:** The male to female ratio was 1:1.4 with a mean age of 30 years and standard deviation (SD) 10.88. 120 Patients were divided in four age groups. Out of Sixty-six patients with age range from 19 to 30 years, thirty-eight were found to be completely satisfied. Out of 21 patients of 31-40 years old, eighteen were aesthetically satisfied. In another group comprises of 24 patients with an age range 41-50, seventeen showed completely satisfaction. Another group, age range from 51-60 that showed 9 patients, in which six patients were satisfied with fixed prosthesis. **Conclusion:** Most of the patients in this study were satisfied after providing prostheses. Middle age (31-40years) patients showed more satisfaction comparative to other age groups.

Key words: Dental Appearance, Fixed Partial Denture, Crown, Metal-Ceramic Restorations, Satisfaction.

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INTRODUCTION

Aesthetics have developed just as important as function, structure and biology, until nearly to close two decades.[1] The word ''Aesthetic'' is derived from the Greek word αισθητική (Transliterated: aisthitiki) meaning "perception". It deals with the characteristic of beauty and belongings beautiful.

Dental appearance (aesthetic) influences people judgments concerning facial attractiveness and personal features[2-3] and dental appearance is one of the critical feature affecting patient perception of maxillary anterior six teeth as they are most visible one during function and speech.[4] Re-establishment of different factors like tooth shape, shade, position, restoration quality, visibility and teeth arrangement etc[5-6] in the anterior region is utmost important for the patient. Discoloured, unsightly, malposed, malformed anterior teeth and midline diastemas can make the individual psychologically depressed and socially less active. An expert eye easily perceives any asymmetry or any characteristic of that smile which may be out of balance, or conflicting with its surroundings.[7] The observer's perception of a visual competence may be satisfying and attractive by one individual and culture and not so on others. The perceived appearance of teeth could be determined by gender, age and educational story.[8-9]

Many treatment options are desired by patients for improvement in their dental aesthetics like tooth whitening, labial veneers, anterior tooth restoration, orthodontics treatment as well as Prosthodontics treatment.[6,10] The lost teeth could be substituted by different types of fixed and removable prosthesis dependent on the circumstance of patient's oral tissues, abutment tooth which support the prosthesis, bone density

and patient economic circumstance, seeing all these factors would lead to accomplish an adequate prosthesis.[11] Several treatment options have been proposed to restore appearance by fixed prosthesis, out of which porcelain fused to metal has been the most conservative approach in terms of strength, aesthetic, marginal fit and simplicity of technique.[12-13] Porcelain has colour adaptation and optical possessions that mimic natural teeth. However porcelain restorations are measured to be colour stable until now discolouration is one of the most important factors for failure of esthetic restorations and it has been determined that composite resins are not capable to retain the colour they own at the time of insertion.[14]

A study has reported satisfactory perception of dental appearance for fixed prosthesis postoperatively to be 62%[15], whereas other studies[4,16] concluded that positive perception for porcelain fused to metal restorations to be 37% and 42% respectively. The most-preferred basic treatment options for the enhancement of dental Aesthetic was establish to be whitening of teeth (49.0%), following esthetic restoration (25.4%), orthodontic treatment (24.5%) and prosthetic restoration (16.9%).[17]

Aesthetic is the most important consideration for the replacement of anterior teeth. There are various international studies available, which evaluate the dental aesthetic after providing PFM prosthesis. Study of this kind is deemed necessary, by doing this study we will be able to determine the patients aesthetic regarding fixed PFM prosthesis. By using this economical modality of treatment we can replace the missing anterior teeth with better appearance as compared to very expensive treatment modality such as full porcelain.

METHODS

Crossectional study was carried out at Liaquat University of Medical and Health Sciences, Jamshoro from October 2015 to September 2016. Using Non probability consecutive sampling technique, 120 patients were included in the study using P= 42%[6], d=9% and 95% confidence level. By using this formula $N=z^2 1\text{-}\alpha$ is $p(1\text{-}p)/d^1$. Those patients18 to 60 years old having maxillary anterior missing, traumatised and proclined upper anterior teeth and incisally weared teeth, endodontically treated and discoloured teeth were included in this study. While mentally handicapped and medically compromised patients and patients with bad oral hygiene having gingival and periodontal problems, high caries risk and crowded teeth were excluded. All patients were treated with fixed metal ceramic prosthesis. Prior to the treatment, selected patients were informed regarding the nature and purpose of study and after this informed consent was obtained from these patients in their mode of language. Age of patient was recorded in Proforma. Diagnosis of all cases for fixed prosthesis treatment was made by taking proper history, clinical and radiographic examination. Subsequently, fixed Prosthodontic treatment was carried out in following manner:

Proper shade was selected and noted in porcelain shade guide (vitapan classical) according to the shade guide lines in natural daylight (10am to 12pm) with the suggestion of two other people and, then an initial oral impression of both jaws were taken with elastomeric impression material (addition silicone, New Dentplus, dental line LTD-G. Deverikos). Afterwards preparation of anterior teeth was done, Axial and incisal reductions were performed according to the minimum thickness considered ideal for porcelain fused to metal restorations and based on the tooth anatomy. A definite finish line (e.g., shoulder with rounded internal line angles or chamfer) was created on cervical margin of labial and lingual side, and all sharp edges and line angles were rounded. Impression was recorded with elastomeric impression material (Coltene addition silicone). After that the impressions was sent to dental laboratory after disinfecting with sodium hypochlorite 1% (Eco Lab) for fabrication of fixed prosthesis along with guidelines for specific patient regarding their prosthesis. Once the final prosthesis has been received from lab, preparations were cleaned and dried. The final restorations were tried in to verify fit and contacts. Necessary adjustments were also made if necessary. The adjusted prostheses were polished as a final touch using a polishing kit.

Once the patient agreed to the shade and shape of the restoration, final prosthesis and abutment were rinsed and dried. Final prosthesis (porcelain fused to metal prosthesis) was cemented with GIC luting cement (GC corporation, Tokyo, Japan). The luting GIC were dispensed into the restoration and seated, the excess cement was removed from the margins, and the cement was allowed to set. The definite restorations were checked and the occlusion verified. Postoperatively questionnaire was recorded regarding their satisfactory dental aesthetic with respect of shade, shape, angulation, arrangements and visibility of teeth at the time and after 15 days of insertion of prosthesis in follow up visit. On both occasion responses were noted, then patients were labelled as satisfied if patients response for all three question were yes otherwise he or she labelled as unsatisfied if the patients response were no for any one of three questions. Data was analysed using SPSS version 21. Chi square test $(\chi)^2$ of the proportion was applied for significant.

RESULTS

During one-year period of the study, data from 120 patients from 19-60 years old with mean age 30.53 years and SD 10.88 years were recorded. Age was splited into four categories as shown in Figure-1.

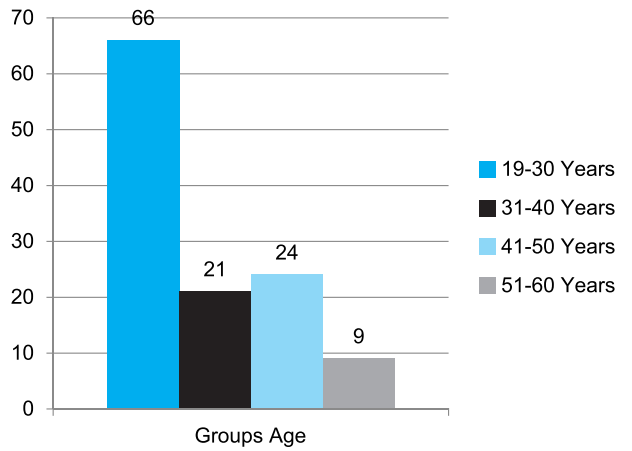

Figure-1. Distribution of age

Mean age in years:	(30.53)
Standard Deviation (SD):	(10.88)

At the time of insertion of prostheses, out of 120 patients, 65.83% patients were satisfied with the prosthesis while 34.17% patients were not satisfied, while 69.17% patients were satisfied and 30.83% were not satisfied at the time of the follow up, as shown in Figure-2 and 3.

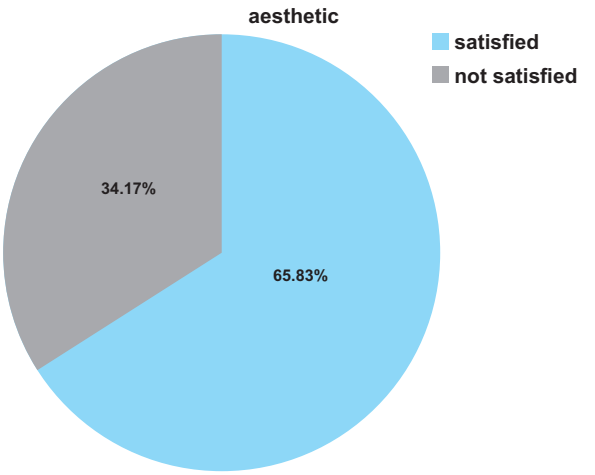

Figure-2. Frequency of aesthetic satisfaction at the time of insertion

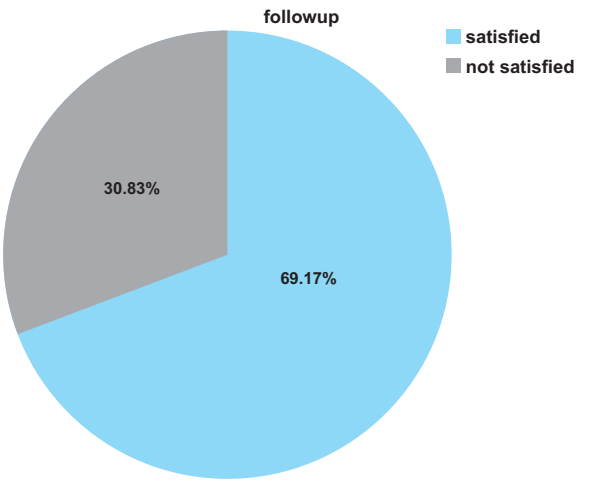

Figure-3. Frequency of satisfaction at the time of follow up

At the time of insertion, the first category for age range of 19-30 years contained 66 patients out of which thirty-eight were found to be completely satisfied while twenty-eight were not satisfied. 21 patients reported in age range 31-40 years and in that group eighteen were aesthetically satisfied while three were unsatisfied. In the third category that comprises of 24 patients with an age range 41-50, seventeen showed completely satisfied while seven patients reported with aesthetically unsatisfied. Another group, age range from 51-60

that showed 9 patients in which six patients were satisfied and three patients were not satisfied aesthetically with fixed prosthesis. Chi square test $(\chi)^2$ of the proportion was applied. The chi-square test was applied for stratification of age with aesthetic, and the p-value came out to be (0.114) which indicates a statistically non-significant level i.e. ($P < 0.05$) (Table-I).

At follow-up, the first category for age range of 19-30 years contained 66 patients out of which forty-four were found to be completely satisfied while twenty two were not satisfied. 20 patients reported with age range 31-40 years and in that group sixteen were aesthetically satisfied while four were unsatisfied. In the third category that comprises of 25 patients with age range 41-50, eighteen showed completely satisfied while seven patients reported with aesthetically unsatisfied. Another group, age range from 51-60 that showed 9 patients in which five patients were satisfied and four patients were not satisfied aesthetically with fix prosthesis. The chi-square test was applied for stratification of age with aesthetic, and the p-value came out to be (0.538) which indicates a statistically non-significant level i.e. ($P < 0.05$) as shown in Table-II.

DISCUSSION

For many years, clinicians measured aesthetic to be far less essential than function, structure and biology. However, recently if a treatment plan does not include a strong view of its aesthetic impression on the patient, the effect could be unsuccessful. A patient satisfaction has grown into an ever more important factor in dental treatment.[7]

This study investigated satisfaction of dental appearance after providing porcelain fused to metal fixed prosthesis, in this study majority of study participants belong to the younger group of age range from 19-30 years with 66% followed by the 41-50 years, 31-40 years and 51-60 years. The Mean age was 30.53±10.88 respectively.

The findings of this study are in agreement with the study results done by Tin-OO MM etal[5] showed with a mean age of 31.5±13.0. The youngest age group from below 35 are more participating as compared to other group.

One similar study[11] was conducted in Pakistan, the findings are not agreement in this study, in which more participants belong to 41-60 age group and the mean age was 50.80±16.460, this might be due to the population difference.

In this study, 66% patients were satisfied with the prosthesis at the time of insertion while 69% patients were satisfied at the time of follow up, our result are in agreement with the study that

Groups Age (Years)	Aesthetic		Total n (%)	P-Value
	Satisfied n (%)	Not Satisfied n(%)		
19-30	38(57%)	28(42%)	66(55%)	(0.114)
31-40	18(85%)	3(14%)	21(17%)	
41-50	17(70%)	7(29%)	24(21%)	
51-60	6(66%)	3(33%)	9(7%)	
Total	79(65%)	41(34%)	120(100%)	

Table-I. Stratification of patient satisfaction at the time of insertion respect to age

Age (Years)	Aesthetic		Total	P-Value
	Satisfied	Unsatisfied		
19-30	44(66%)	22(33%)	66(55%)	(0.538)
31-40	16(80%)	4(20%)	20(16.6%)	
41-50	18(72%)	7(28%)	25(20%)	
51-60	5(55%)	4(44%)	9(.75%)	
Total	83(69%)	37(30.8%)	120(100%)	

Table-II. Stratification of patient satisfaction with respect to age at the time of follow up

also showed significant aesthetic progress at the time of insertion and follow-up period, while shah RJ et al[18] reported that aesthetic satisfaction was moderate; almost 39.5% patients were completely satisfied with their dental appearance and tooth color. Another study has reported satisfactory perception of dental appearance for fixed prosthesis postoperatively to be 62%[15] whereas other studies reported that positive perception for PFM restorations to be 37%[16] and 42%[4] patients were completely satisfied with PFM restorations, one study concluded on the basis of 0-3 years, 4-6 and 10 years follow-up in which esthetic outcome, 80% of patients showed that they were satisfied with the aesthetic.[19]

In this study, age was divided in four categories, The first category for age range of 19-30 years contained 66 patients out of which thirty eight were found to be completely satisfied while twenty eight were not satisfied at the time of insertion, the p value was 0.114 which was non-significant statistically, while after fifteen days follow up forty four patients were satisfied and twenty two were not satisfied with p value (0.538) which was also statistically non-significant.

This finding of our study is in accordance with previous studies of Shah RJ et al[18] and Grzić R et al[20] in which they reported that, in the fixed prosthesis, approximately 45% of middle-aged and 51% of older patients were completely satisfied with their dental appearance while Significant difference was found between age groups regarding their satisfaction with dental appearance ($v2 = 10.521$; $df = 4$; $p = 0.033$).[18,20] Al-Zarea BK[6] reported in his study that age had no relation to satisfaction to dental appearance.

CONCLUSION

Majority of the patients in this study were satisfied with prosthesis at the time of insertion. This satisfaction percentage further increased at 15 days follow up. Middle age (31-40years) patients showed more satisfaction comparative to other age group.

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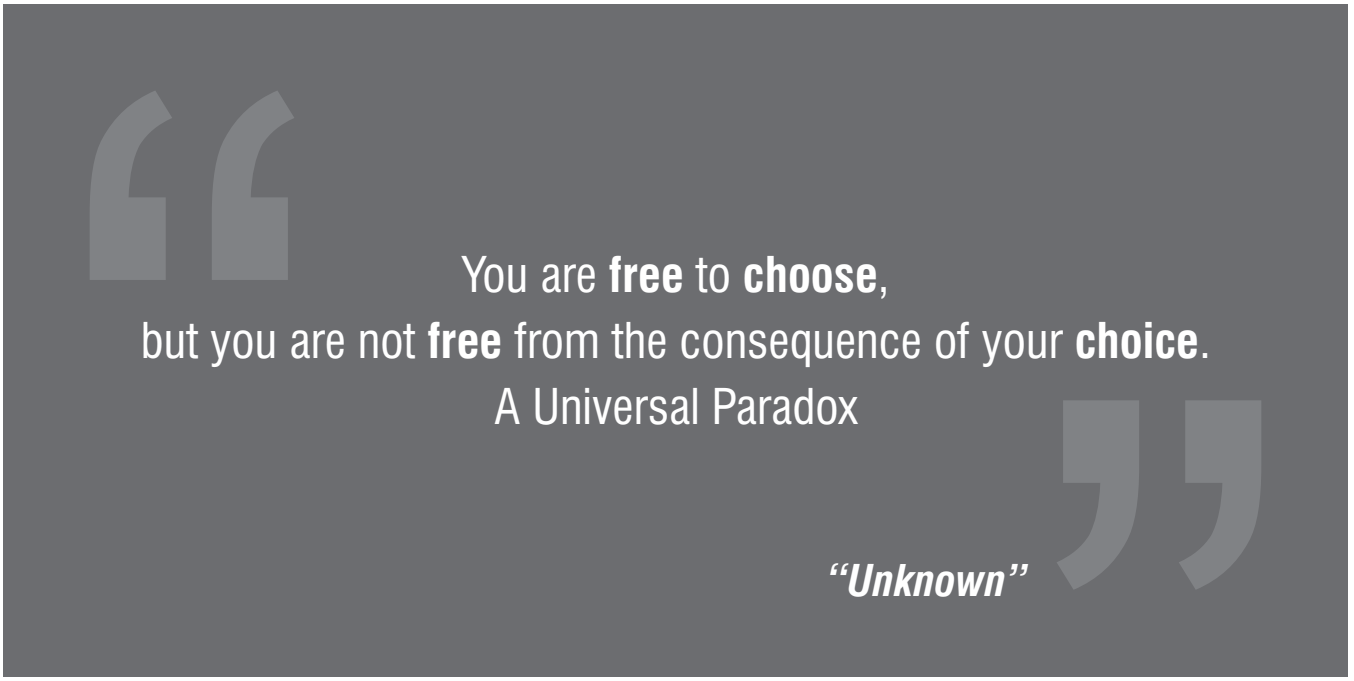

AUTHORSHIP AND CONTRIBUTION DECLARATION

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3	Aamir Mahmood Butt	Discussion writing and data collection.	
4	Madiha Waqas	Data collection.	