

PERCEPTION OF DENTAL AESTHETICS AND TREATMENT NEEDS AMONG DENTAL AND NON-DENTAL STUDENTS

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ABSTRACT

Smile is a very important component of presentation of any personality. Main dental factors which effect a smile of a person are shape, size, color, position of tooth and gingival display. Dentists and laypersons vary in the way they judge different smiles and their perception also depends on their knowledge regarding dental abnormalities. The objective of this research was to study the effect of alteration in dental factors on smiles as perceived by dental and non-dental students. Two hundred and forty participants consisting of two groups were included in the study. Group I was of non-dental students and group two of dental students. Eleven digitally altered images of a smiling subject were shown to each participant. These images included abnormalities in tooth shape, size and color that are commonly presented to restorative dentists for aesthetic correction. Participants were asked to rate the picture on a 5 point likert scale according to their perception regarding aesthetics as well as need of any treatment. Frequency and percentages of responses were noted and Chi-square was used to compare the two groups. Non-dental students were not able to identify aesthetic abnormalities in smile and rated them as "good", while more dental students marked these as "fair" (33%) and "poor" (65.8 %). It was concluded that the alteration on smiles are perceived better by dental students than non-dental students. Need of treatment was also more correctly identified by dental students.

Key Words: Dental Aesthetics, Treatment Needs

INTRODUCTION

Smile is one of the main components of facial attractiveness. For both gender, facial attractiveness is equally important. Smile is a combination of factors that depends on tooth shape, position, size, colour and gingival display.¹ A study conducted by Ulrich klages found that quality of life is greatly compromised for individuals with high Public self-conscious if they experience any variation from ideal dental appearance but this effect was smaller for individuals with low public self-consciousness.²

Miller stated that the trained and observant eye readily detects what is out of balance, out of harmony with its environment.³ Dental professionals critically judge dental aesthetics by focussing at the features

that make smile less pleasing. Lay person's ability to judge a smile is subjective, they only notice what is not beautiful to them.⁴ Dentist on the other hand, can easily figure out minor discrepancies in ideal smile parameters.

Most studies on the subject of smile perception are reported from orthodontic specialty. Very few studies can be found addressing the restorative scenario. Among them, various researchers have reported different methods to assess perception of smile. Mokhtar et al used photoshopped pictures of a male and female subject.⁵ They used midline diastema, gummy smile and midline deviation in their altered pictures. While, Alhaja used buccal corridor discrepancy in addition to above in their survey based on photoshopped pictures.⁶ Among local studies, Rehman et al altered the pictures of one male and one female subject to produce different skin tones and teeth shades.⁷ While another study reported possible social influence of un-attractive smile.⁸

The reported literature focused mainly on a few parameters of smiles. However, the effect of other factors that can alter smile has not been studied yet. These factors may include discolorations of teeth, discoloration of a single tooth and chipping of incisal edges. It was therefore, the objective of this research to study the effect of above mentioned alteration on smiles as perceived by dentists and non-dentists.

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METHODOLOGY

A cross-sectional study was conducted among both dental and non-dental students of Dow University of health sciences in Karachi, Pakistan. Participants consisted of two groups, group I consisted of non-dental students and group two of dental students. Group II was further divided into (A) undergraduate and (B) postgraduate students. Digitally altered images of a smiling subject were shown to each participant and they were asked to rate the picture on a 5 point likert scale according to their perception regarding aesthetics as well as need of any treatment

SAMPLE SIZE CALCULATION

Using G power version 3.1 with one way Anova 95% confidence interval (CI), 80% power of test, effect size of 0.24 with 3, sample size calculated was 240. The study was conducted an 240 participants, 120 non-dental students were studying in the field of Physiotherapy, Pharmacology and MBBS. While 120 of Dental students included 75 undergraduate and 45 postgraduate students.

Final year dental undergraduate students, with age range of 19- 24 years and dental Postgraduate students from the department of Operative Dentistry, Orthodontics and Prosthodontics were included. The criteria for exclusion of the participants were; inability to give consent, dental students who were not in their final year of study, and postgraduate students from department of oral and maxillofacial surgery.

PHOTOGRAPHS

Photographs consisted of 11 smile pictures in the form of a booklet (Fig 1). Each picture was numbered from 1 to 11 and the size of each picture was 6x8 inches. Each picture was provided on a single sheet. White sheet were alternatively placed in between each photograph. This white sheet fulfilled two purposes; one was participants do not compare one picture with another and rate pictures individually and second the colour perception to remain intact. Pictures were digitally manipulated using Adobe Photoshop CS3 software. One picture of ideal smile was taken from internet and digitally manipulated to create 11 different variations from aesthetic norms.(9)

These variations were

Picture 1: Smile with diastema, for which 2mm wide space was created between maxillary central incisors.

Picture 2: Pink spot on right maxillary central incisor at the cervical area to simulate internal resorption.

Picture 3: Deteriorated old composite restoration, stain on the mesial aspect of right lateral incisor.

Picture 4: Pitting, for which general form of teeth remained intact, only pitting of anterior teeth was done to simulate enamel hypoplasia.

Picture 5: Oblique fracture at incisal edge of maxillary right central incisor at dentine level.

Picture 6: Gummy smile, for which gingival distance was increased to 5mm from the gingival margin of anterior teeth to lower boarder of upper lip.

Picture 7: Brown single tooth discoloration depicting a non-vital tooth following dental trauma.

Picture 8: Bilateral Peg shaped lateral incisors.

Picture 9: Chalky-white lines, more obvious on left lateral incisor.

Picture 10: Generalized yellowish discoloration of teeth, maxillary right central more prominently discoloured having a stained craze line.

Picture 11: The size of lateral incisors and canines were altered.

QUESTIONNAIRE

The questionnaire consisted of

-Written Consent from the participants to participate in the study.

-Biographic data of participants including age, gender, level of education (under graduation or post-graduation), field of study (dental or non-dental) and dental speciality for dental postgraduate students.

-Each picture was rated twice on the basis of aesthetic perception and treatment needs. Five-point Likert scale was used for aesthetic rating, ranging from excellent to poor. For treatment need, rating scale was from "strongly disagree" to "strongly agree".

STATISTICAL ANALYSIS

For analysis the statistical package for social science (SPSS, version 16.0) was used. Chi- square test was used to establish associations between the two groups at 5% level of significance.

RESULTS

Means of aesthetic perception rating of photographs by dental and non- dental students showed significant difference between both groups (table 1). Non- dental students were not able to identify aesthetic abnormalities in smile and rated them as "good", while more dental students marked as "fair" (33%) and "poor" (65.8 %). Similarly, the need of any correction or treatment was also identified more by dental students, non-dental students were not able to decide and marked "neutral" (9.2%)(table 2). This also showed statistically significant difference in their opinions (p value=0.05). In group I, the under graduate and post graduate students responses did not show significant difference both in aesthetic as well as treatment need perception (p value =0.33 & 0.53

respectively) (table 3). Figure 2 shows comparison of rating for aesthetic perception by dental and Non-dental students. Remarkable difference in perception among both groups was observed in picture of Diastema closure (pic 1), pink spot (pic 2), chalky white appearance (pic

9) and altered size of lateral incisor and canine (pic 11), which were marked "good" by non-dental students. Picture of generalised yellow discoloration (pic 10) was equally marked by both groups as poor.

PICTURE - 1



PICTURE - 2



PICTURE - 3



PICTURE - 4



PICTURE - 5



PICTURE - 6



PICTURE - 7



PICTURE - 8



PICTURE - 9



PICTURE - 10



PICTURE - 11



Fig 1: Photographs with aesthetic abnormalities included in the study.

The scales requires the study participants to assign a numerical value to indicate their response. Whereas, in likert scale the smile attractiveness was gauged in easy understandable terminology; ranging from excellent to poor. The images of study were limited to show only the smile of the patient. It has been shown that full facial pictures of patients may influence the response of the participants.¹⁶

We used modified pictures to simulate different dental abnormalities. A computer software was used for this purpose. Studies have shown that this simulation can be successfully used to gauge the opinion of participants of different backgrounds.^{1,7,17} Such simulations enable the researcher to study the effect of various smile imperfections on perception or need for treatment of lay persons.

We found a significant difference in responses between the dental and non dental students in both identification of abnormality and need for treatment. The Dental students were able to correctly rate abnormalities more often than non dental students. Similar results were reported by Yousef.⁵ However our results partially disagree with Magne. In their study they found that the lay persons were able to identify gingival inflammation with similar frequency to that by dentists.¹⁷

The overall responses of both the dental and non-dental students show some difference in the reported literature. In our sample we found that midline diastema was rated as 'good' by most of the lay persons, whereas dental students rated it as fair. In contrast, Abu Alhaija reported in their study that both dentists' and lay persons were equally able to rate diastema as non-aesthetic.⁶ This difference can be explained by observing the results of Kokich, who reported that dental professionals perceive a diastema of 1-1.5mm as non-aesthetic. While lay persons perceive a diastema as non-aesthetic when it is 2mm or more.¹⁸ In our study the size of diastema was 1-1.5mm and this may help to explain the difference in results. It is also possible that unless there are obvious discrepancy in smile, lay-persons are limited in their ability to perceive minor irregularities and overall smile may hide these minor deviations.^{19,20,21}

The results of our study suggest that the lay persons may have a different perception of smile attractiveness as compared to the dental practitioner. So it is important that while doing a smile makeover, the dental professional does not influence the desire of patient too much and not try to impose the principals of ideal smile. This may lead to non-acceptance of final result by the patient.

Limitation of our study include the absence of inclusion of an image of an ideal smile, we included all the photos with some sort of dental or gingival abnormality with which patients usually present for esthetic correction.

We recommend that further studies maybe done

to compare the ideal smile with other abnormalities. Another study can be done to compare the perception of a first year and final year dental students to compare the effect of knowledge and experience on their perception.

CONCLUSION

It is concluded that the alteration on smiles are perceived better by dental students than non-dental students. Need of treatment is also more correctly identified by dental students.

RECOMMENDATION

We should always discuss the treatment needs with the patients before restoring abnormalities in teeth to make them contented with the outcome.

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