

Comparison of perception of smile by orthodontists and general dental practitioners - A questionnaire study

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ABSTRACT

Background: In the past, cephalometric-based diagnosis and treatment planning were considered to be the gold standard in orthodontic treatment and the outcome was to achieve ideal occlusion. At present, individuals opting for orthodontic treatment desire enhancing facial esthetics and a beautiful smile. Smile perception differs widely among professionals in dentistry. The general dental practitioner first attends individuals seeking orthodontic treatment, and his/her perception of smile may be different from that of an orthodontist. **Objective:** The objective of this study was to determine the perception of smile by orthodontists and general dental practitioners. **Materials and Methods:** In this questionnaire study, 100 questionnaires were distributed among 50 orthodontists and 50 general dental practitioners. Their responses were obtained, data analyzed, and results evaluated. **Results:** This study showed that the mean scores given by orthodontists are lesser than that of the general dental practitioners. The factors that had an impact on smile by non-orthodontists include crowding of lower anterior and diastema of 3–4 mm. Among orthodontists, the various factors that had an impact include diastema, midline deviation, and reverse smile arc. **Conclusion:** Different parameters have impact on the smile perception. Diastema smile and reverse smile were regarded as unattractive and received the lowest score in this survey. The presence of midline shift was not considered unesthetic by non-orthodontists.

KEY WORDS: General practitioners, Orthodontists, Smile attraction, Smile perception

INTRODUCTION

Smile is one of the most important expressions contributing to facial esthetics. A pleasant smile creates a lot of impact in day-to-day life. Nowadays, patients are becoming conscious about a beautiful smile. Smile esthetics has become the primary objective of orthodontic treatment.^[1] Orthodontists have the responsibility to create a beautiful smile for a problem and the term beautiful smile is very subjective.

The reemergence of the soft tissue paradigm in clinical orthodontics has made smile analysis a key element in diagnosis and treatment planning.^[1] As an attractive well-balanced smile is a paramount treatment objective of modern orthodontic therapy, extensive studies on facial features have resulted in the establishment of norms that orthodontists use as guidelines to evaluate

facial forms to direct therapy. Smile analysis includes evaluating the smile arc, tooth and gingival display, presence of buccal corridor space (BCS), midline coincidence, tooth proportionality, gingival esthetics, shade of teeth, and the cant of occlusal plane. The esthetics of a smile is influenced by features such as the presence of BCSs, the amount of gingival display, and the presence of a midline diastema. The influence of the buccal corridors on smile esthetics has been noted by some investigators to be of no esthetic consequence,^[2] whereas others believe that it is unattractive.^[3-5] A smile demonstrating minimal gingival display has been deemed more esthetic than one with excessive gingival display.

Geron and Atalia reported that upper gingival exposure of up to 1 mm was regarded as attractive.^[6] Kokich *et al.* reported that the lay and orthodontic groups rated a 3 mm distance as unattractive.^[7] The presence of a midline diastema produces an unattractive smile.^[8] Kokich *et al.* reported that large midline diastema negatively influenced smile esthetics, while

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a midline diastema of up to 1.5 mm was regarded as attractive.^[7] The perception of esthetics varies from person to person and is influenced by personal experiences and social environment.^[9] For the same reasons, there can be differences of opinion regarding esthetics between laypeople and professionals.^[10]

Roden-Johnson *et al.*^[2] and Pinho *et al.*^[11] reported that general practitioners, orthodontists, and laypersons evaluated smiles differently, whereas Ioi *et al.*^[3] found that orthodontists and dental students rated the attractiveness of smiling photographs similarly. Based on literature, other researchers had reported that smile attractiveness had no difference between dental professionals and laypeople.^[4,12] Many factors can influence the formation of esthetic beauty standards including culture.^[13] Although many studies have been published on smile esthetics, this was the first regarding the perception of esthetic smiles among South Indian population. The aims of this study were to rate the attractiveness of different smile

variables such as diastema, BCS, gingival display, midline deviation, crowding of anterior, and reverse smile arc. The purpose of this study was to compare the perceptions of orthodontists and general dental practitioners, regarding smile esthetics.

MATERIALS AND METHODS

The study comprised 100 participants, 50 orthodontists and 50 general dental practitioners. The original photograph (ideal smile) was then manipulated using image processing software (Adobe Systems, San Jose, California, USA) to produce a series of images with the nose and chin removed from the images to reduce the number of confounders. Each esthetic characteristic was altered to varying degrees.^[7]

The questionnaire comprised the sets of the altered smile photographs [Figures 1-6]. The importance of an attractive smile for the rater, the satisfaction of the rater regarding his/her own smile, the desire for changing the rater's smile, the impact of the smile in social life, and the importance of different smile variables were evaluated using the Likert scale (very high = 1, high = 2, medium = 3, low = 4, and very low = 5). The photographs of the different manipulated smiles were presented in a catalog and evaluated by the subjects using the

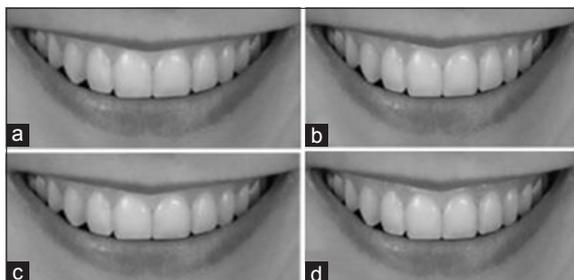


Figure 1: (a-d) Variation in gingival display

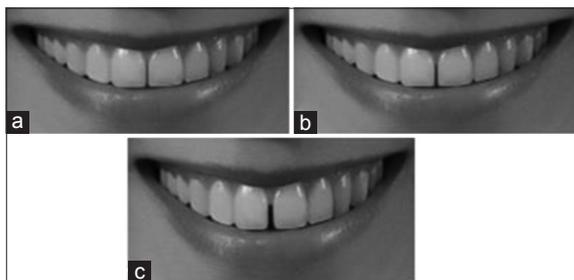


Figure 2: (a-c) Variation in midline diastema



Figure 3: Midline deviation



Figure 4: Reverse smile



Figure 5: Buccal corridor space - (a) narrow, (b) wide



Figure 6: Lower anterior crowding

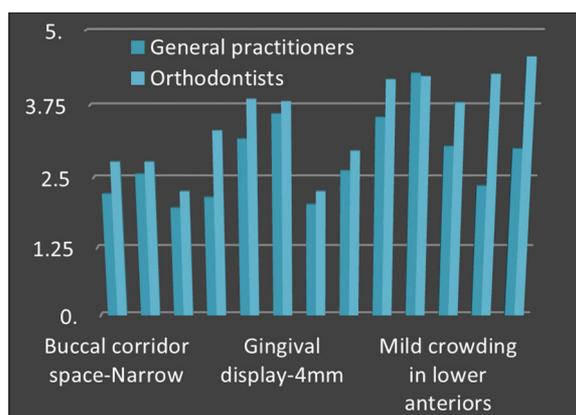


Figure 7: Bar graph showing the scores given by raters for each smile variation

rating (very attractive = 1, attractive = 2, accepted = 3, unattractive = 4, and very unattractive = 5).

Statistical Analysis

Data analysis was undertaken using the Statistical Package for the Social Sciences (version 9.0; SPSS Inc., Chicago, Illinois, USA). The mean and standard deviation (SD) of each group were calculated. Comparison between the groups was performed using the univariate general linear model, which was selected to test the effect of independent factors on smile attractiveness as well as the interactions between these factors.

RESULTS

The means and SD for questions related to the impact of the smile on the subjects and the scores given by raters for each smile variation are shown in Figure 7. Higher scores indicate less impact. This study showed that the mean scores given by orthodontists are lesser than that of the non-orthodontists. The factors that had impact on smile by non-orthodontists include crowding of lower anterior and diastema of 3 mm and 4 mm. Among orthodontists, the various factors that had impact include diastema, midline deviation, and reverse smile arc.

DISCUSSION

This research focused on these aspects of smile esthetics: Diastema, BCS, gingival display, midline deviation, crowding of anterior, and reverse smile arc. In this study, the raters were of two groups: Orthodontists and non-orthodontists and of different gender and age to investigate the effect of these variables on smile attractiveness rating. The photographs used in this study were limited to the mouth to reduce the effect of confounders. Several authors^[3-5,7] reported that the size of the BCS influences smile attractiveness when the full face is taken in context.

In this study, photographs of the different smiles were evaluated using different rating scores (very attractive, attractive, acceptable, unattractive, and very unattractive). Other researchers^[2,3,14,15] used a visual analog scale (VAS) to judge smile attractiveness. Using the former method in rating esthetics produces simple, rapid, and reproducible results, whereas a VAS may mean different things to different raters^[16] and raters will use certain portions of the scale and ignore others.^[17]

Attractiveness is suggested to influence social interaction. In this study, the impact of an attractive smile on social acceptance was rated high by all groups. This was in agreement with Van der Geld *et al.*^[18] who emphasized the importance of an attractive smile on social acceptance.

In this study, age did not affect the rating of smile attractiveness, whereas the profession and gender of the raters had an effect. This is in agreement with the findings of Gracco *et al.*^[19] and Martin *et al.*^[4] who reported that the age of the rater did not affect attractiveness rating of BCS but is contrary to the results of Moore *et al.*^[5] and Ioi *et al.*^[3] who suggested that males and females rated smile attractiveness similarly. However, the fact that the evaluators in this study were all adults may explain the lack of age influence.

The rating of attractiveness of BCS was not affected by age or gender. This is in agreement with other studies.^[3-5,19] However, the profession of the rater affected smile attractiveness scores in the presence of BCS. This is contrary to the findings of Krishnan *et al.*^[14] and Ioi *et al.*^[3] who reported that orthodontists and dental students had similar tendencies in scoring the preferences of BCS.

The findings of this study showed that non-orthodontists accept a wider range of deviation compared with orthodontists. Therefore, when esthetic treatment to obtain a harmonious smile is performed, clinicians must be careful about imposing his/her own beauty norms on patients.^[20-22] The type and degree of

deviation from the norm and the opinion of the patient need to be taken into consideration.^[23,24]

CONCLUSION

Different parameters have an impact on the smile perception. Diastema smile and reverse smile were regarded as unattractive and received the lowest score in this survey. The presence of midline shift was not considered unesthetic by non-orthodontists.

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