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COMPARISON OF PLEASANT AND UNPLEASANT SMILE CHARACTERISTICS IN THE PERCEPTION OF THE ORTHODONTIST, DENTIST AND LAYPEOPLE IN AN MARATHWADA POPULATION.

Dentistry

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ABSTRACT

Smile is an important aspect of esthetics so pleasant and attractive smile provides a significant part of facial beauty. Aim of study is to identify and compare characteristics of a pleasant and unpleasant smile in the perception of Orthodontist, dentist and laypeople to assess the degree of importance for factor by analyzing various smile feature. All participants were consecutively selected among Marathwada population aged 16-30 years. Three group included in study so the sample size for each group is 47.Photographs were taken of the frontal view of posed smiles out of all the photograph taken 12 patient photograph selected for the study based with random sampling method. Online electronic questionnaires created by Google forms to access the pleasant and unpleasant smile using 4 parameters that is gingival display, buccal corridor, smile arc, smile width. Results:- There was a significant correlation between the orthodontist, dentist and laypeople to assess the degree of importance for factor by analyzing various smile features. ($P<0.01$ and $P < 0.05$). Conclusion :-There is no significant difference in opinion of Orthodontist, dentist and laypeople in assessment of smile characteristics.

KEYWORDS

visual analog scale, unattractive, attractive, smile, questionnaire-based survey.

INTRODUCTION

In practically every area of life, physical appearance is important. Numerous studies have demonstrated a connection between social attractiveness and physical appearance.[1] One's achievement in many areas of life and interpersonal interactions are positively impacted by physical appearance. Nowadays, the most crucial factor for individuals pursuing orthodontic treatment is dentofacial aesthetics.[2] The most important aspect of physical attractiveness is facial attractiveness. Every facial feature, including the lips and teeth, has an impact on the overall beauty of the face. Regarding their relative relevance, the literature is divided.[3] Westfall et al. indicated that self-rated attractiveness and attractiveness rated by other persons were related to the participant's satisfaction with life.[4]

Several studies have reported that poor dental aesthetics negatively impacts overall attractiveness.[5-11] Occlusion status impacts a person's perceptions of attractiveness. Ones with normal occlusion were perceived positively. Smile is a significant contributor to facial attractiveness. The eyes are the most prominent facial feature, with the mouth attracting the second most visual attention. Thus, malocclusion can negatively impact facial attractiveness. Orthodontically corrected malocclusion and improved smile positively affect overall facial esthetics.[9]

According to social and personal experience, people have different views on aesthetics. Laypersons are influenced by the aesthetic standards established by actresses and models presented in the entertainment media, and seek to meet these standards. Many studies showed that dental professionals are more critical of dental aesthetic aberrations than non-professionals.[6] For example, in laymen, general clinicians, and orthodontists, there are great differences in their views on dental aesthetics in relation to gum exposure. Similarly, there are differences in the perception of vertical maxillary excess between dentists and laymen. [12] Classification of aesthetics into unpleasant, acceptable, and pleasant needs to calibrate the perception between dentists and patients. If the perception is not calibrated, there may be some conflicting views on expectations and treatment. The consensus between dentists and patients is essential to standardize treatment plans and methods.[13]

Smile is an important aspect of esthetics so pleasant and attractive smile provides a significant part of facial beauty. Therefore, creating a beautiful and well-balanced smile must be one of the most important parts of orthodontic treatment planning. Measurement and analysis of smile parameters includes gingival display, smile arcs, maxillary and mandibular midlines, buccal corridors, smile width, gingival and papilla height, vermilion show, and proportions and the color of the teeth.

This study aimed to identify and compare characteristics of a pleasant and unpleasant smile in the perception of Orthodontist, dentist and laypeople to assess the degree of importance for factor by analyzing various smile features.

MATERIAL AND METHODS

This study was approved by the Hospital. Data were collected from consecutive Indian adult patients (50 males and 50 females) with an average age of 23.5 years (16-30 years). The patients were selected from the Department of Orthodontics, And Dentofacial Orthopaedics at Dr Hedgewar Smruti Rugn Sewa Mandal Dental college and Hospital, Hingoli Maharashtra. Inclusion criteria included no prior orthodontic treatment and normal size and shape of maxillary canines and incisors (maxillary anterior teeth that were not too big, too small, conical, fused, geminated, or curved). Patient with all permanent teeth to the second molar were present in the mouth without any apparent anomaly in size. Patient in the age group of 16-30 years. The exclusion criteria were fillings or cavities in the maxillary anterior teeth, significant periodontal disease or gingivitis, and craniofacial deformities. All participants were consecutively selected among Marathwada population aged 16-30 years and were included in this study if all permanent teeth to the second molar were present in the mouth without any apparent anomaly in size.

Photo taking

Photographs were taken of the frontal view of posed smiles under standard and equal conditions. They were taken by a Sony ZVE-10 digital camera. The models were asked to smile pleasantly and naturally, with the teeth marked in the rest position, called an open-lip posed smile. Photographs were cropped and edited in black and white

using Adobe Photoshop CC. Out of all the photograph taken 12 patient photograph selected for the study based with random sampling method.

Online electronic questionnaires created by Google forms To access the pleasant and unpleasant smile using 4 parameters that is gingival display, buccal corridor, smile arc, smile width.

Parameters To Access

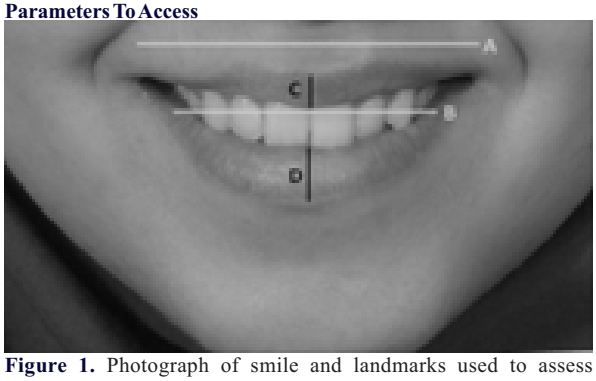

Figure 1. Photograph of smile and landmarks used to assess parameters.
a. Buccal corridor
b. Smile width
c. Gingival display
d. Smile arc

Visual Analogue Scale

The visual analogue scale (VAS) was created with a 100mm continuous line fixed at 0 on the left (very unattractive) and 10 on the right (very attractive) (Fig. 2). The raters were instructed to write down their assessment of each component in the facial environment at the appropriate point along the scale with a vertical line. All scores were measured to the nearest millimeter from the left anchor end to the rater's scribe to give the final aesthetic rating.

Evaluation Of Facial Attractiveness

The photographs were assessed by 24 laypersons (12 males and 12 females, mean age of 34.6 years) and 24 orthodontists (12 males and 12 females, mean age of 37.1 years). They were all Chinese and participated voluntarily, with no history of orthodontic treatment. Each rater received little information on the study design. The slides were presented to each rater in the same order and viewed on a laptop (15-inch, Dell, Austin, Texas, USA). The VAS was numbered according to the corresponding slides shown to them. Each rater was given a booklet with five visual VAS on each page and asked to fill them out without time limit. Attractiveness of the hair, eyes, eyebrows, nose, lips, teeth, chin, and face were evaluated by the raters. The PowerPoint presentation containing 300 photos of 100 patients were evaluated eight times with an interval of no less than 10 days. For example, for the first time, only the hair was evaluated, and for the second time only the eyes were evaluated. To reduce the impact of other facial components on the score, only one facial component was evaluated at a time and thus the raters were able to focus concentration on one part.

Statistical Analysis

The collected information and responses were coded and statistical analysis was performed using the software SPSS Statistics for Windows, Version 16.0 (SPSS Inc., Chicago, IL, USA). To maintain data quality (validity), rechecking and cross checking was done during data entry phase. To know the difference between two groups, Chi-square statistics was done on the basis of data collected. Three group included in study so the sample size for each group is 47 so the total sample size included in study was 151.

RESULTS

Values of intraclass correlation coefficient for the VAS scores ranged from 0.72 to 0.89, which demonstrated good intra-observer agreement. Descriptive statistics (mean and standard deviation) for the sample are presented in Table 1.

The mean difference was 0.588 mm, and the p-value is 0.017, which is statistically significant. Dentists significantly associate higher gingival display with pleasant smiles. Mean Difference was 0.766 mm, p-value was 0.000, which is highly significant. Laypersons show a strong preference for more gingival display in pleasant smiles. Mean Difference was 0.634 mm, p-value was 0.026, which is significant. Orthodontists also significantly associate greater gingival display with pleasant smiles.(Table 1)

Table 1. Gingival Display : Smile Characteristics Among Pleasant And Unpleasant Groups

Respondent	Parameter	Count	Mean	SD	Mean Difference	P Value
Dentist	Pleasant	5	5.149	0.281	0.588	0.017
	Unpleasant	7	4.560	0.393		
Lay Person	Pleasant	7	5.274	0.181	0.766	0.000
	Unpleasant	5	4.508	0.336		
Orthodontist	Pleasant	4	5.067	0.110	0.634	0.026
	Unpleasant	8	4.434	0.294		

Table 2. Buccal Corridor : Smile Characteristics Among Pleasant And Unpleasant Groups

Respondent	Parameter	Count	Mean	SD	Mean Difference	P Value
Dentist	Pleasant	9	5.273	0.198	0.862	0.000
	Unpleasant	3	4.411	0.402		
Lay Person	Pleasant	9	5.471	0.205	0.764	0.000
	Unpleasant	3	4.708	0.278		
Orthodontist	Pleasant	2	5.186	0.012	0.509	0.018
	Unpleasant	10	4.677	0.245		

Mean Difference = 0.862 mm, P-value = 0.000 → Statistically significant. Dentists significantly associate a wider buccal corridor with pleasant smiles. Mean Difference = 0.764 mm, P-value = 0.000 → Highly significant. Lay persons also significantly prefer wider buccal corridors in pleasant smiles. Mean Difference = 0.509 mm, P-value = 0.018 → Statistically significant. Orthodontists also significantly associate wider buccal corridors with pleasant smiles. (Table 2)

Table 3. Smile Arc : Smile Characteristics Among Pleasant And Unpleasant Groups

Respondent	Parameter	Count	Mean	SD	Mean Difference	P Value	Inference
Dentist	Pleasant	9	5.435	0.352	0.865	0.010	Significant
	Unpleasant	3	4.571	0.579			
Lay Person	Pleasant	10	5.490	0.257	0.882	0.002	Significant
	Unpleasant	2	4.608	0.424			
Orthodontist	Pleasant	7	5.299	0.177	0.716	0.001	Significant
	Unpleasant	5	4.583	0.375			

Table 4. Smile Width : Smile Characteristics Among Pleasant And Unpleasant Groups

Respondent	Parameter	Count	Mean	SD	Mean Difference	P Value	Inference
Dentist	Pleasant	10	5.424	0.323	0.636	0.028	Significant
	Unpleasant	2	4.788	0.278			
Lay Person	Pleasant	11	5.637	0.283	0.991	0.007	Significant
	Unpleasant	1	4.646	0.000			
Orthodontist	Pleasant	10	5.283	0.220	0.859	0.001	Significant
	Unpleasant	2	4.424	0.265			

DISCUSSION

Mean Difference: 0.865 P-value: 0.010 → Statistically significant. Dentists significantly associate a more pronounced or ideal smile arc with pleasant smiles. Mean Difference: 0.882 P-value: 0.002 → Statistically significant. Lay people also significantly prefer smiles with a more aesthetically pleasing smile arc. Mean Difference: 0.716 P-value: 0.001 → Statistically significant. Orthodontists also significantly associate an ideal smile arc with pleasant smiles. (Table 3)

Mean Difference: 0.636 P-value: 0.028 Significant Dentists significantly associate wider smiles with being more pleasant. Mean Difference: 0.991 P-value: 0.007 Significant Lay persons also strongly prefer wider smiles when judging a smile as pleasant. Mean

Difference: 0.859 P-value: 0.001 Significant Orthodontists clearly associate smile width with attractiveness or pleasantness. (Table 4)

Mini-esthetics is an important concept in orthodontics concerned with relatedness of dentition to the face. It includes analysis of a teeth display in neutral status, while smiling and during speech, in addition to gingival display and the extent of buccal corridors. For decades, the smile esthetics attracted the interest of researchers, with culture, ethnicity, gender and profession being suggested as influencing factors. Although several studies evaluated similar outcomes in different populations, a shared pitfall between the studies we came across was the absence of replication of results using the same questionnaires and images in other population. The present study was done to Comparison of pleasant and unpleasant smile characteristics in the perception of the Orthodontist, Dentist and laypeople . In this study, a total of 4 smile characteristics were assessed, and the effect of each one on smile attractiveness is studied. This 4 parameters is gingival display, buccal corridor, smile arc, smile width. The study shows, that the amount of as gingival display increase the attractiveness of smile decreases. From the VGA scale analysis it indicated that the orthodontist, dentist and layperson gives the same unpleasant reading to the photograph Showing the gingival display. (Table 1).

From table 2, we can say that attractiveness of BCS was not affected by age or gender. This is in agreement with other studies (Moore et al., 2005; Gracco et al., 2006; Martin et al., 2007; Ioi et al., 2009). 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. (2008) and Ioi et al. (2009) who reported that orthodontists and dental students had similar tendencies in scoring the preferences of BCS.. Overall, an image representing the ideal standards of smile esthetics was perceived as the most attractive (Table 3). This is likely due to the effect of media and standardizing what an ideal smile should look like. Second to the ideal smile, a smile with wide buccal corridors was generally preferred by the participants. This is in contrast to the finding of narrow buccal corridors being more attractive in the Jordanian population.22 The smile arc is defined by the parallelism of the curvature of the visible maxillary incisal edge and upper border of the lower lip, which makes people look younger and more attractive. Our results revealed that this feature is one of the most important determinants of a pleasant and unpleasant smile, among the all three observer which agrees with most previous studies (table 3). Smile width The number of teeth in a quadrant was visible in the smile the visibility of more tooth influence the facial attractiveness. Pham TAV and Nguyen PA. done study on Morphological features of smile attractiveness and related factors influence perception and gingival aesthetic which shows similar results obtained from the current study.

CONCLUSION

According to the esthetic perception of Orthodontist, dentist and laypeople, there is a significant relationship between smile attractiveness and the following smile characteristics: gingival display, buccal corridor, smile arc, smile width. There is no significant difference in opinion of Orthodontist, dentist and laypeople in assessment of smile characteristics.

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