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PERCEPTION OF SMILE ESTHETICS AMONG ORTHODONTISTS, CLINICIANS AND LAYPEOPLE

Dental Science

KEYWORDS:

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ABSTRACT

The subject of facial esthetics is pre-eminently important to Orthodontists. But more than this, it is a subject which interests and embraces all people everywhere. As Orthodontists, we often lose the sight of this fact. This study aims at:

» Highlighting the differences in perception of smile esthetics by clinicians, orthodontists and laypeople.

» Assessing factors such as crowding, gingival display, symmetry, midline, spacing, teeth size, lip thickness which are associated with smile unpleasantness.

The result of this study it can be concluded that:

- The group conducting most strict smile assessment are the Orthodontists, followed by the Clinicians and laypeople.
- Orthodontists are more concerned about the esthetics, crowding, gingival display, symmetry, midline, spacing, teeth size, and lip thickness.
- The laypersons are more concern about gingival display, midline diastema, symmetry, tooth size and spacing.

INTRODUCTION:

The subject of facial esthetics is pre-eminently important to Orthodontists. But more than this, it is a subject which interests and embraces all people everywhere. As Orthodontists, we often lose the sight of this fact. We tend to forget that the ultimate source of our esthetic values should be the people, not just ourselves.[1] The perception of beauty is associated with pleasure while seeing an object or a person, and while hearing a sound. For this reason, beauty is seen as a highly subjective feeling that results from individual factors such as sex, race, education and personal experiences, as well as social factors such as the environment and the media which has been increasingly responsible for globalizing the concept of beauty.[2]

Although orthodontic treatment is based primarily on occlusal relationships, greater attention is now paid to enhancing dentofacial characteristics to produce optimal facial esthetics. Current knowledge suggests that favorable treatment changes are significant to patients, parents, and friends, and are important aspects of orthodontic therapy. Thus, it seems worthwhile to outline the common denominators of an esthetically pleasing smile, which is often a primary reason for seeking orthodontic care.[3]

A number of studies available in the literature have focused on smile geometric and objective analysis. Nevertheless, diffrent factors might inflence esthetic patterns, including culture. Furthermore, perception of esthetics varies considerably among individuals and is inflenced by personal experiences as well as by the social environment[2]

Thus, in addition to assessing patient's smile in geometrical and objective terms, it is also necessary to scientifically understand smile pleasantness from the point of view of laypeople, orthodontists and clinicians. Rodrigues et al[4] used printed photographs to assess smile attractiveness according to variations in esthetic norms evaluated by 20 laypeople. They concluded that variations in esthetic norms do not necessarily hinder perception of smile attractiveness, whereas diastema exerts strong negative inflence on smile esthetics.

The literature has extensively covered the subject of smile in an objective manner; however, only a few studies have investigated the pleasant and unpleasant features of one's smile.

This study aims at:

» Highlighting the differences in perception of smile esthetics by clinicians, orthodontists and laypeople.

» Assessing factors such as crowding, gingival display, symmetry, midline, spacing, teeth size, lip thickness which are associated with smile unpleasantness.

MATERIAL AND METHODS:

A total of 50 photographs of patients aged between 18 and 26 years old and with permanent dentition were analyzed, at Kothiwal Dental College and Research Centre, Moradabad . Standardized frontal facial photographs of patients' smile were used for analysis. Patients were advised to keep natural head posture, remaining in the same posture they do in daily routine.

Ethical Approval from the Institutional Ethic and Review Board committee and patient's concent was taken before the study.

Frontal facial photographs of patients smile were edited (4×6). In other words, they will be cropped so as to evince the lower third of the face, particularly the smile (fig. 1). Examiners were asked to classify the photographs using Visual Analogue Scale (fig. 2) scores from 1 to 9, as follows: esthetically unpleasant (scores 1, 2 or 3); esthetically acceptable (scores 4, 5 or 6) or esthetically pleasant (scores 7, 8 or 9). Assessment was carried out by 5 orthodontists, 5 clinicians and 5 laypeople who also filled out a questionnaire so as to establish an association between smile unpleasantness and factors such as lip thickness, tooth size, gingival display (excess/little), symmetry, midline, spacing and crowding.

- **EXCLUSION CRITERIA**

Patient undergoing orthodontic treatment.

Patient with craniofacial syndromees.



Fig 1: Frontal Smile Photographs representing each category: A-Esthetically unpleasant, B- Esthetically acceptable, C-Esthetically Pleasant.

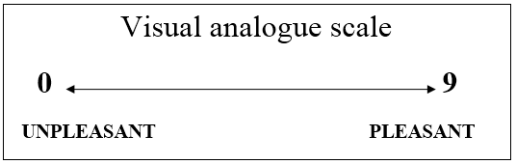


Fig 2: Visual Analogue Scale.

STATISTICAL ANALYSIS:
To analyse the data SPSS version 16.0 was used, alpha value (significant value) will be 0.05.

Data are described as the number of patient and compared using the Pearson Fisher Exact Test. Comparison of mean values between groups ANOVA test followed by Post Hoc Test is used. Student T square Test is used to see the relative change with respect to time and difference between 2 groups respectively.

RESULTS:
Result shows significant difference for smile perception between the Orthdontists, Clinicians and Laypeople.

Out of all the most prevalent factors each group highlighted different features as being responsible for smile unpleasantness. Orthodontists are more concerned about the crowding, gingival display, symmetry, midline, spacing teeth size and lip thickness than the Clinicians and laypeople.

Clinicians are not much concerned for the gingival display compared to Orthodontists and laypeople.

TABLE-1:-p-value in the last column of the above table shows that there is significant mean difference between at least 2 groups in case of all the variables. To see the pairwise comparisons post-hoc test was applied and presented in the following table

		N	Mean	Std. Deviation	F-value	p-value
Crowding	orthodontists	110	4.76	3.07	56.976	<0.001
	clinicians	247	7.47	2.32		
	laypeople	200	5.48	2.47		
	Total	557	6.22	2.78		
Gingival	orthodontists	110	4.21	3.17	140.89	<0.001
	clinicians	247	8.02	2.00		
	laypeople	200	4.84	2.37		
	Total	557	6.13	2.94		
Symmetry	orthodontists	110	5.18	2.04	122.294	<0.001
	clinicians	247	7.42	1.72		
	laypeople	200	4.66	2.16		
	Total	557	5.99	2.34		
Midline	orthodontists	110	4.57	2.05	99.732	<0.001
	clinicians	247	7.37	2.23		
	laypeople	200	4.65	2.46		
	Total	557	5.84	2.65		
Spacing	orthodontists	110	4.80	4.28	84.745	<0.001
	clinicians	247	8.24	1.99		
	laypeople	200	5.36	2.61		
	Total	557	6.53	3.19		
Teeth size	orthodontists	110	5.47	1.84	115.789	<0.001
	clinicians	247	7.93	1.74		
	laypeople	200	5.43	2.16		
	Total	557	6.55	2.28		
Lip Thickness	orthodontists	110	5.28	1.97	147.897	<0.001
	clinicians	247	8.01	1.32		
	laypeople	200	5.34	2.26		
	Total	557	6.51	2.27		

TABLE-2:-p-value in the last column of the above table which are less than 0.05 shows significant mean difference. We can see that Orthodontists and laypeople have non-significant differences in all the variables but clinicians have significant difference with Orthodontists and Laypeople.

Post Hoc Tests Dependent Variable	Dunnett T3 (I) Group	Multiple Comparisons (J) Group	Mean Difference (I-J)	p-value
Crowding	orthodontists	clinicians	-2.71005*	<0.001
		laypeople	-0.71136	0.11
	clinicians	laypeople	1.99868*	<0.001
Gingival	orthodontists	clinicians	-3.81520*	<0.001
		laypeople	-0.63091	0.193
	clinicians	laypeople	3.18429*	<0.001
Symmetry	orthodontists	clinicians	-2.23519*	<0.001
		laypeople	0.52182	0.104
	clinicians	laypeople	2.75700*	<0.001
Midline	orthodontists	clinicians	-2.79569*	<0.001
		laypeople	-0.07727	0.987
	clinicians	laypeople	2.71842*	<0.001
Spacing	orthodontists	clinicians	-3.43887*	<0.001
		laypeople	-0.56	0.511
	clinicians	laypeople	2.87887*	<0.001
Teeth size	orthodontists	clinicians	-2.45845*	<0.001
		laypeople	0.04773	0.996
	clinicians	laypeople	2.50617*	<0.001
Lip Thickness	orthodontists	clinicians	-2.73033*	<0.001
		laypeople	-0.05318	0.995
	clinicians	laypeople	2.67715*	<0.001
*. The mean difference is significant at the 0.05 level.				

Table 3. p value for all the parameters in different groups.

Group	Crowding
orthodontists	4.7636
clinicians	7.4737
laypeople	5.475
Total	6.2208

Group	Gingival
orthodontists	4.2091
clinicians	8.0243
laypeople	4.84
Total	6.1275

Group	Midline
orthodontists	4.5727
clinicians	7.3684
laypeople	4.65
Total	5.8402

Group	Spacing
orthodontists	4.8
clinicians	8.2389
laypeople	5.36
Total	6.526

Group	Lip Thickness
orthodontists	5.2818
clinicians	8.0121
laypeople	5.335
Total	6.5117

Group	Teeth size
orthodontists	5.4727
clinicians	7.9312
laypeople	5.425
Total	6.5458

Group	Symmetry
orthodontists	5.1818
clinicians	7.417
laypeople	4.66
Total	5.9856

Group	Midline
orthodontists	4.5727
clinicians	7.3684
laypeople	4.65
Total	5.8402

DISCUSSION:
In the present study 8 most prevalent factors responsible for smile unpleasantness was taken, which was rated by Orthodontists, Clinicians and Laypeople. Scoring was done on the Visual Analogue Scale (0-10) where 0= Unpleasant and 10= Pleasant.

Each group assessed the smile from a different point of view, highlighting the different features to classify the same smile as pleasant or Unpleasant.

Orthodontists emphasized the amount of crowding, gingival display, symmetry, midline, spacing, teeth size and lip thickness as the important features in the unpleasant smile esthetics. Laypeople are more concerned for gingival display, symmetry, midline, spacing and teeth size whereas Clinicians did not much emphasized on the various parameters taken.

This means that beauty is subjective and for this reason, establishing esthetic protocols for diagnosis and Treatment Planning based on the three groups taken might be difficult task.

Amongst all the groups, crowding is more concerned factor for the Orthodontists than the laypeople and Clinicians.According to the

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study by Cotrim ER et al[2], disproportional teeth are main concern for laypeople and less gingival display for the Orthodontists. A study by Malkinson et al[9], smile esthetics was assessed by clinicians who found that excess gingival display influenced smile attractiveness and affected patients attraction, reliability, intelligence and self confidence. Therefore, in our study increased gingival display will be responsible for smile unpleasantness.

According to Kekich Vo et al[10]- symmetry alteration is less attractive to dental Professionals. Symmetry is a concern for both the Laypeople and Orthodontists.

Spacing is more concerned for the Orthodontists and laypeople. Omar H et al conducted a study between dental and non dental students and concluded that dental students emphasized on the spacing.

According to a study by Omar H et al[11], spacing and teeth size when compared between dental and non dental students was of more concern for the Dental students. In the present study, midline and teeth size are main concern for laypeople and Orthodontists. Lip Thickess in the present study is of more concern for the Orthodontists and laypeople.

The present study differs from other researches which characterizes smile unpleasantness instead of smile pleasantness.

The questionare applied in the study comprised pre-determined features of smile unpleasantness; however, other features could have been included, for instance, buccal corridor and curve of spee. Ioi et al[12] found that narrow or intermediate buccal corridors are considered more esthetic. But these features are not included in the present study because of being difficult to be understood by laypeople.

This study evinced the importance of assessing patient's chief complaint and clinicians requirements so as to guide treatment planning. The Orthodontists must be careful not to impose his own perception of smile esthetics.

CONCLUSION

From the present study it can be concluded that:

- The group conducting most strict smile assessment are the Orthodontists, followed by the Clinicians and laypeople.
- Orthodontists are more concerned about the esthetics, crowding, gingival display, symmetry, midline, spacing, teeth size, and lip thickness.
- The laypersons are more concern about gingival display, midline diastema, symmetry, tooth size and spacing.

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