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INTRODUCTION

The proportional relationship between the different craniofacial regions is the key to judge the individual attractiveness.[1] Many of the studies impressed the need of the set standards for the facial attractiveness.[2-7]
The concept of beauty is subjective, and it has evolved since from ages.[9]
The requirement of the day is to check the perception of the beauty of the faces by the laypersons and the professionals dealing with the facial attractiveness in their day-to-day life.[3,6,10-12]
The present study was taken up with the aim to evaluate the perception of facial attractiveness when the lower vertical proportion of face was altered using a series of silhouettes of varying lower facial vertical proportion among the Indian population.

METHODS & MATERIAL

In this cross-sectional study, the sample of 123 participants judged the total seven silhouette photographs with varying degree of lower vertical facial proportion. The sample included 63 laypersons and 63 orthodontists.
All the professional orthodontists who either worked as a faculty in different dental colleges or were doing the private practice were selected. The laypersons were selected from the Outpatient Department of Orthodontics. For the profile photographs, dental students were evaluated manually for the vertical proportion, and inclusion criteria included a normal occlusion with minor or no crowding, all teeth present except third molars, and competent lips. Individuals who have undergone orthodontic treatment and any prosthetic replacement of teeth were excluded from the study.

The procured lateral cephalograms were traced, and the different soft and hard tissue measurements were made [Table 1]. The cephalogram which fell under the normal cephalometric reading was chosen for the study.

The selected cephalogram was converted into a profile silhouette using Corel software. This was considered as the master silhouette [Figure 1].

Table 1: Frequency distribution of gender among laypersons and orthodontists

	Groups		Total (%)	P
	Laypersons (%)	Orthodontist (%)		
Sex				
Male	33 (52.4)	35 (55.6)	68 (54.0)	0.721
Female	30 (47.6)	28 (44.4)	58 (46.0)	
Total	63 (100.0)	63 (100.0)	126 (100.0)	

P>0.001

Figure 1: Master silhouettes

The master silhouette was manipulated as per the recommendation of the previous study,[13] keeping SN and ME' as reference points.
The lower vertical proportions were reduced and increased by 2, 4, and 6 mm which generated a total of seven profile silhouettes [Figure 2].
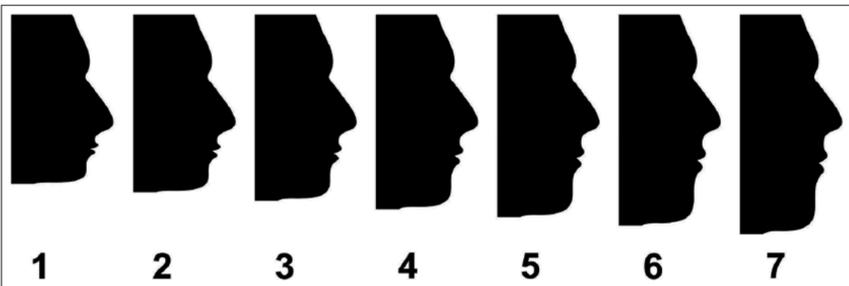
Figure 2: Various silhouette profiles by increasing or decreasing lower facial height

The profile silhouettes were randomly arranged on a Microsoft PowerPoint which were shown to a group of laypersons and the orthodontists. Each slide was displayed for a span of 20s.
They were asked to record their perception on a visual analog scale of 10 cm length with 1 cm denoting as least attractive and 10 cm as most attractive score.
After recording the perception score, the data were subjected to statistical analysis.
Independent t-test and paired t-test were used to determine the difference between the scores of various profile silhouette photographs and difference of perception among laypersons and orthodontists, respectively.
The P value equal or less than 0.001 was considered as statistically significant. For the gender wise difference, the P value equal to or less than 0.05 was considered as statistically significant.

RESULTS

Table 1 shows the characteristics of the study population. Overall of 54% were males and 46% were females. Among laypersons and orthodontists, males were more in comparison to females who judged the profile silhouette.
Comparison for the different modified profiles by the orthodontist is depicted in Table 2. There existed a significant difference for all the pairs of silhouettes except for the pair 2, pair 3, and pair 4.

Table 2: Comparison of various profile silhouettes by orthodontists

	Paired differences					t	Df	P
	Mean	SD	SEM	95% CI of the difference				
				Lower	Upper			
Pair 1								
Decreased 6 mm-increased 2 mm	−1.36508	1.72553	0.21740	−1.79965	−0.93051	−6.279	62	0.000*
Pair 2								
Decreased 6 mm-increased 4 mm	−0.22222	1.54966	0.19524	−0.61250	0.16805	−1.138	62	0.259
Pair 3								
Decreased 6 mm-increased 6 mm	0.44444	1.83846	0.23162	−0.01857	0.90745	1.919	62	0.060
Pair 4								
Decreased 4 mm-increased 2 mm	−0.14286	1.80373	0.22725	−0.59712	0.31141	−0.629	62	0.532
Pair 5								
Decreased 4 mm-increased 4 mm	1.00000	1.94273	0.24476	0.51073	1.48927	4.086	62	0.000*
Pair 6								
Decreased 4 mm-increased 6 mm	1.66667	2.17018	0.27342	1.12011	2.21322	6.096	62	0.000*
Pair 7								
Decreased 2 mm-increased 2 mm	0.65079	1.60803	0.20259	0.24582	1.05577	3.212	62	0.002
Pair 8								
Decreased 2 mm-increased 4 mm	1.79365	2.05692	0.25915	1.27562	2.31168	6.921	62	0.000*
Pair 9								
Decreased 2 mm-increased 6 mm	2.46032	2.03062	0.25583	1.94891	2.97172	9.617	62	0.000*

*P>0.001. SD: Standard deviation, SEM: Standard error of mean, CI: Confidence interval

In Table 3, There was a significant difference for all the pairs except for the pair 2 where the comparison was for the anterior lower facial height (ALFH) decreased by 6 mm with the ALFH increased by 4 mm, and pair 4 where the comparison was between the ALFH increased by 4 mm with ALFH decreased by 2 mm.

Table 3: Comparison of various profile silhouettes by laypersons

	Paired differences					t	df	P
	Mean	SD	SEM	95% CI of the difference				
				Lower	Upper			
Pair 1								
Decreased 6 mm-increased 2 mm	−1.22222	1.70809	0.21520	−1.65240	−0.79205	−5.680	62	0.000*
Pair 2								
Decreased 6 mm-increased 4 mm	−0.12698	1.67035	0.21044	−0.54766	0.29369	−0.603	62	0.548
Pair 3								
Decreased 6 mm-increased 6 mm	0.57143	1.84666	0.23266	0.10635	1.03650	2.456	62	0.017
Pair 4								
Decreased 4 mm-increased 2 mm	−0.33333	1.65588	0.20862	−0.75036	0.08369	−1.598	62	0.115
Pair 5								
Decreased 4 mm-increased 4 mm	0.76190	1.75714	0.22138	0.31937	1.20444	3.442	62	0.001*
Pair 6								
Decreased 4 mm-increased 6 mm	1.46032	1.98239	0.24976	0.96106	1.95957	5.847	62	0.000*
Pair 7								
Decreased 2 mm-increased 2 mm	0.61905	1.47483	0.18581	0.24762	0.99048	3.332	62	0.001*
Pair 8								
Decreased 2 mm - increased 4 mm	1.71429	1.68894	0.21279	1.28893	2.13964	8.056	62	0.000*
Pair 9								
Decreased 2 mm - increased 6 mm	2.41270	1.80175	0.22700	1.95893	2.86646	10.629	62	0.000*

*P≤0.001. SD: Standard deviation, SEM: Standard error of mean, CI: Confidence interval

Comparative data for the judgment between orthodontists and the laypersons are depicted in Table 4. Statistically significant difference was noted for the normal profile, where normal profile was preferred more by the layperson than the orthodontist.
In Tables 5 and 6. There existed no significant difference in judgment between male and female orthodontists. However, there existed a significant difference between male and female laypersons for the lower face decreased by 4 mm and 6 mm silhouettes when the P value was set for P = 0.05.

Table 4: Comparison of judgment of profile silhouettes by orthodontists and the laypersons

Silhouette	Group	n	Mean	SD	P
Decreased 6 mm	Expert (Orthodontists)	63	4.5079	1.34252	0.499
	Respondents (laypersons)	63	4.6667	1.28264	
Decreased 4 mm	Expert (orthodontists)	63	5.7302	1.47239	0.491
	Respondents (laypersons)	63	5.5556	1.36521	
Decreased 2 mm	Expert (orthodontists)	63	6.5238	1.41258	0.946
	Respondents (laypersons)	63	6.5079	1.18965	
Normal	Expert (orthodontists)	63	6.7778	1.59074	0.006
	Respondents (laypersons)	63	7.4603	1.13344	
Increased 2 mm	Expert (orthodontists)	63	5.8730	1.22464	0.941
	Respondents (laypersons)	63	5.8889	1.16551	
Increased 4 mm	Expert (orthodontists)	63	4.7302	1.38198	0.793
	Respondents (laypersons)	63	4.7937	1.33391	
Increased 6 mm	Expert (orthodontists)	63	4.0635	1.54370	0.905
	Respondents (laypersons)	63	4.0952	1.43363	

SD: Standard deviation

Table 5: Gender-wise comparison of judgment of profile silhouettes by orthodontists

Silhouette	Sex	n	Mean	SD	P
Decreased 6 mm	Male	35	4.3429	1.41302	0.279
	Female	28	4.7143	1.24297	
Decreased 4 mm	Male	35	5.5714	1.53940	0.343
	Female	28	5.9286	1.38587	
Decreased 2 mm	Male	35	6.3143	1.47072	0.190
	Female	28	6.7857	1.31535	
Normal	Male	35	6.7429	1.59874	0.847
	Female	28	6.8214	1.61138	
Increased 2 mm	Male	35	5.7429	1.33599	0.350
	Female	28	6.0357	1.07090	
Increased 4 mm	Male	35	4.7714	1.47699	0.793
	Female	28	4.6786	1.27812	
Increased 6 mm	Male	35	4.1714	1.74028	0.539
	Female	28	3.9286	1.27450	

SD: Standard deviation

Table 6: Gender-wise comparison of various profile silhouettes by Laypersons

Silhouette	Sex	n	Mean	SD	P
Decreased 6 mm	Male	33	4.3636	1.19421	0.048*
	Female	30	5.0000	1.31306	
Decreased 4 mm	Male	33	5.2121	1.29319	0.035*
	Female	30	5.9333	1.36289	
Decreased 2 mm	Male	33	6.3030	1.21153	0.153
	Female	30	6.7333	1.14289	
Normal	Male	33	7.4242	0.96922	0.793
	Female	30	7.5000	1.30648	
Increased 2 mm	Male	33	5.9697	1.01504	0.568
	Female	30	5.8000	1.32353	
Increased 4 mm	Male	33	4.6667	1.38444	0.433
	Female	30	4.9333	1.28475	
Increased 6 mm	Male	33	4.1515	1.43878	0.747
	Female	30	4.0333	1.44993	

*P=0.05. Standard deviation

CONCLUSION

- Both the orthodontists and the laypersons considered the normal ALFH was most attractive.
- The increased ALEH was considered least attractive by both the laypersons and the orthodontists.
- There was a significant difference between female and male laypersons in judging the ALFH.

The results of the present study will help the clinician to consider the patient preference of the facial profiles in the vertical dimension and to plan the treatment accordingly.