ORIGINAL ARTICLE

Perception of Midline Diastema and Lateral Diastema among Pakistani Dentists and Laypeople

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ABSTRACT

Background: The manner in which dentists and laypersons perceive a particular smile varies drastically. Observation relies on their awareness of dental anomalies and the influence of culture as well.
Aim: To observe the perception of midline diastema and lateral diastema in dentists
Methods: This cross sectional study was carried out on the population of Lahore city from 5th December 2019 to 4th March 2020. 406 questionnaires were submitted amongst dental, medical students and graduates of Lahore Medical and Dental College, housewives, school teachers, engineers and others (including charted accountant, army officers, businessmen, and journalist). Participants were selected randomly using convenient sampling technique. Questionnaires consisting of demographic data and manipulated images of midline and lateral diastemata, were filled after the informed consents were signed. 392 completed forms were returned. Chi-square test was done for proportionate variables to determine statistical significance.
Results: 170 (43.4%) respondents were dental surgeons and 222 (56.7%) were laypersons. 364 participants (92.9%) chose 0mm medial diastema whereas 304 (77.6%) chose 0mm lateral diastema. Most preferred smile was the one with no space or with little space that was 1.5 mm in case of midline diastema while for lateral diastema no space was favored the most followed by diastema on the distal side of the lateral incisors.
Conclusion: Perception of esthetics for every individual is different with some preferring smile with diastema while majority preferred smile no space irrespective of the location that is midline or lateral.
MeSH words: Diastema, Perception, Dental Esthetics, Dentists

INTRODUCTION

Smile is an imperative feature of an individual's personality. People with a pleasing smile are thought to be confident, ingenious and socially more interactive, exhibiting a positive behavior compared to those who think they have an unappealing smile[1].

Several interventions can be adapted to improve the attractiveness of the smile i.e., orthodontic, orthognathic surgery, periodontal-restorative or plastic surgery where there is manipulation with the soft tissue and teeth visible during smile. Attractiveness of smile is evaluated through several parameters being tooth display, gingival display, tooth morphology, size, buccal corridor, smile line, smile arc, smile index, diastema, midline deviation and smile symmetry[2,3].

A diastema is a space or gap between two teeth commonly found in maxillary anterior teeth i.e., in between central incisors but can also be present in other areas i.e., mesial or distal or both to lateral incisor and canine[4]. It is also referred to as median/midline/central maxillary diastema due to its location in the maxillary arch[5,6,7]. It can be considered as a malocclusion with esthetic and functional consequences requiring treatment or a normal feature in adults or children requiring no treatment at all[4].

Numerous studies have been carried out till now in order to determine the prevalence of diastema in various groups and populations. The findings ranged from 1.6% to 25.4% in adult population while more so in younger age groups[4,5,8].

Kokich et al observed that diastema ranging between 1-1.5mm was considered acceptable and pleasing by people belonging to dental background and layperson while Rosenstiel and Rashid established that more than 90% favored smile with no diastema[9,10].

When a patient seeks esthetic dental treatment, a dental surgeon may be more prone to over-treat by closing all available spaces, by restorative material, between teeth without consulting patients. The objective of this study was to determine the perception of diastema, midline or diastema lateral to lateral incisors among dentists and laypeople of Lahore. The results of this study would demonstrate that few lay people prefer diastemas.

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MATERIALS AND METHODS

A cross-sectional descriptive study was performed on the population of Lahore, Pakistan, including dental, medical students and graduates of Lahore Medical and Dental College; housewives, school teachers, engineers and others (including charted accountant, army officers, businessmen, and journalist). Ethical approval for the study was obtained from the research board, Lahore Medical and Dental College. The study duration was from 5th December 2019 to 4th March 2020. The objectives and principles of the study were explained to all participants. Their informed consent was collected and they were guaranteed confidentiality of the data collected. Participants were informed that their participation in the study was voluntary, and they could drop out at any point in time by prior

intimation. Convenience sampling technique was employed.

The manipulated photos were presented to the selected population in offices, clinics, homes, colleges in a form of survey with 7 numbered photographs, 3 for median diastema and 4 for lateral diastema. The following question was put as a heading for each of these slides: *"Which one do you prefer?"* The population answered in a predesigned answer sheets that included questions about their age, gender, education level and occupation. Three photographs were edited for median diastema with 0mm,1.5mm and 2mm wide diastema and four photographs for lateral incisor diastema were edited with picture 1 having no diastema, picture 2 having only mesial diastema to lateral incisor, picture 3 having distal diastema to lateral incisor and picture 4 having both proximal diastemata to lateral incisor. Sample size was calculated using the following formula:

$$\text{Sample size} = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1+(\frac{z^2 \times p\,(1-p)}{e^2 N})}$$

with population size (N) as 11.13 million (Census of Pakistan 2017), confidence level (z) 95%, margin of error (e) 5% and population proportion (p) 50%, that resulted as 385. Since the estimated 5% non-respondents' rate was added, so the final size calculated was 406.

Data was handled and analyzed using the SPSS, Version 20. The results were presented in the form of frequencies and cross tabulation. Chi-square test was done for proportionate variables to determine statistical significance. The statistical value of p≤0.05 was set as significant.

RESULTS

Three hundred and ninety two people filled and completed questionnaires, with 14 forms being incomplete. One hundred and 58(40.3%) were males while two hundred and thirty four (59.7%) were females. Age range was from 15 to 70 years with the mean being 28.21±11.37 years.

Out of 392 subjects 316 belonged to age range 15-35 years and 76 belonged to age range 36-70 years. The participants belonged to different level of education i.e., out of three hundred and ninety-two people 189(48.2%) were undergraduates, 150(38.3%) were graduates and 53(13.5%) were post graduates. Figure 1 shows the frequencies for different occupation that participated in the research. For midline diastema three values were used i.e., 0mm, 1.5 mm and 2 mm. Participants who chose 0mm were 364(92.9%), 1.5mm were 26(6.6%) and 2mm were 2(0.5%) while for lateral diastema refer to table 1. Chi square was applied on table 2, with p value being significant when less than 0.05.

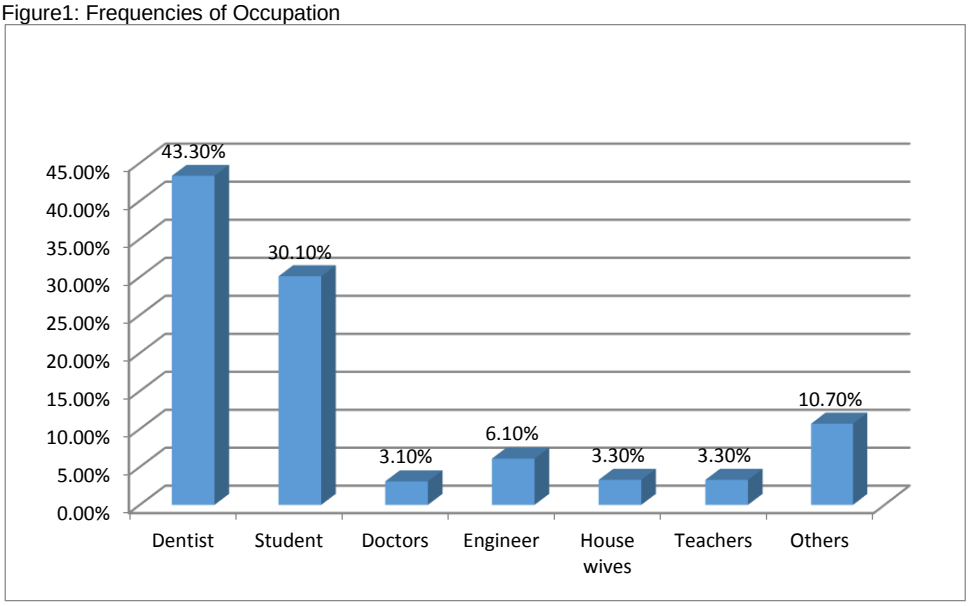
Table 1: Frequencies for lateral diastema.

Lateral diastema	Frequency	Percentage
0mm (Absent)	304	77.6
Mesial side	38	9.7
Distal side	41	10.5
Both mesial and distal	9	2.3
Total	392	100

Table 2. Cross tab for analysis of midline diastema and lateral diastema with age, gender, education and occupation

Age	**Midline diastema**				**p value**	**Lateral diastema**					**p value**
	0 mm	1.5 mm	2 mm	**Total**		0 mm	Mesial	Distal	Mesial and distal	**Total**	
15-35	299	15	2	316		253	23	31	9	316	
36-70	65	11	0	76		51	21	10	0	76	
Total	364	26	2	392	0.008	304	38	41	9	392	0.003
Gender	**Midline diastema**				**p value**	**Lateral diastema**					**P value**
	0 mm	1.5 mm	2 mm	**Total**		0 mm	Mesial	Distal	Mesial and distal	**Total**	
Male	140	18	0	158		120	19	15	4	158	
Female	224	8	2	234		184	19	26	5	234	
Total	364	26	2	392	0.004	304	38	41	9	392	0.599
Education	**Midline diastema**				**p value**	**Lateral diastema**					**p value**
	0 mm	1.5 mm	2 mm	**Total**		0 mm	Mesial	Distal	Mesial and distal	**Total**	
Undergraduate	179	9	1	189		140	17	23	9	189	
Graduate	141	8	1	150		120	12	18	0	150	
Post graduate	44	9	0	53	0.027	44	9	0	0	53	0.03
Total	364	26	2	392		304	38	41	9	392	
Occupation	**Midline diastema**				**p value**	**Lateral diastema**					**p value**
	0 mm	1.5 mm	2 mm	**Total**		0 mm	Mesial	Distal	Mesial and distal	**Total**	
Dentist	168	2	1	170		166	1	3	0	170	
Laypeople	196	25	1	222	0.00	138	37	38	9	222	
Total	364	26	2	392		304	38	41	9	392	0.00

Figure1: Frequencies of Occupation



DISCUSSION

Beauty is the true value behind attraction which provides an individual with a perceptual knowledge of pleasure and contentment.[11] Everyone has their own opinion in relation to beauty and esthetics. Similarly, people show diverse approach and attitude in relation to diastemata. There are number of studies that state different prevalence and perception of diastema among various age groups and population. Broadbent termed midline diastema during childhood as 'ugly duckling' stage which is short term and is corrected with time by the eruption of permanent canines[4,5,10].

This study was carried out among Pakistani dentists and laypeople to perceive their preferences regarding diastemata in relation to their age, gender, education and occupation. Three hundred and ninety two questionnaires were filled by the selected population, with manipulated pictures, age ranging from 15 to 70 years old out of which 158(40.3%) were males while 234(59.7%) were females.

Midline Diastemas of 0 mm, 1.5mm and 2 mm sizes were selected for this study because previous literature stated that diastemas of 1.5 mm width or less were perceived as attractive while wider diastemas (≥2mm) were perceived as unappealing[12,13,14]. A.W Machado carried out his study in which he manipulated 10 pictures with 0.5 mm increment in the mesial, distal and both sides of lateral incisors[9]. Whereas in our study we only took 4 pictures and made changes accordingly and nationally this is the first study carried out for lateral diastema.

Our result showed that in either case, midline or lateral diastema, people belonging to every age group preferred a smile with no spacing that is 0 mm and spacing distal to lateral incisor while least attractive were diastema of 2mm or spacing found mesial or on both mesial and distal side of lateral incisor[15]. Similarly, people of different gender, education and occupation also prefer smile with no space with very little inclination towards diastema of 1 or 2 mm and spacing found on mesial or both mesial and distal side. Our results showed that three hundred and sixty four participants for midline diastema and three hundred and four participants for lateral diastema chose no space that is 0 mm, with majority belonging to age range 15 to 25 years; female; with undergraduate level of education and students.

The presence or absence of spaces in the esthetic zone plays a significant role in the perception of smile esthetics. The results of our study indicates that the presence of diastemas in the midline or upper lateral incisor (mesial, distal, or both surfaces) is considered unattractive, and the most pleasant smile was the one without spacing or with little spacing. This agrees with previous studies that large diastema may have an undesirable effect on attractiveness of the smile[13,16,17].

In this study, it was noticed that participants viewed and perceived midline diastema differently. Some individuals preferred midline diastema irrespective of its width; meanwhile, others didn't prefer it as an esthetic feature. This refers to the presence of other essential factors that might affect participants' views regarding the appeal of midline diastema. The width and site of the diastemas were also important information regarding the awareness of esthetics. When the three areas with diastemas were evaluated, it was found that more the space, less attractive the image was rated, and also that the more mesially located diastema, more unattractive was the smile. This information states that the clinical supposition that diastemas found distant from the midline are more difficult to notice. In general, the smiles with diastema in both mesial and distal were the least attractive, followed by the mesial surface and distal surface diastemata, respectively[9].

Presently, female models belonging to fashion industry prefer smile with midline diastema and appear more often in famous fashion magazines[18]. This trend might change perception of midline diastema, which in turn

makes an individual on planning esthetic dental treatments and orthodontic treatments.

Similarly, people belonging to some areas of Africa artificially create midline diastemas as it is considered very esthetic and symbol of beauty over there[19,20]**.** However, the majority of the dentists did not support the artificial creation of midline diastema[16]**.** Furthermore, a higher occurrence of midline diastema in the Nigerian population with age range 21 to 30 years has been noted with compared to a low prevalence in Caucasians[20,21]**.**

CONCLUSION

Where majority preferred smile without any space or gap, there were some people who thought that little space did no harm to their smile. This study thus concludes that an attractive smile is that with no space irrespective of its location, either midline or lateral, although few people would prefer keeping interdental spaces in their dental esthetic make-over.

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