Original Article

ACCEPTABILITY OF MIDLINE DIASTEMA AMONG DENTAL TECHNICIAN STUDENTS AT THE UNIVERSITY COLLEGE HOSPITAL, IBADAN

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ABSTRACT

Background: There has being divergent views expressed concerning the acceptability or otherwise of midline diastema based on socio-cultural factors. Some have accepted the trait to the extent of artificially creating it, while others considered it as unacceptable.

Materials and Methods: The sample consisted of dental technician students who were on clinical attachment at the University College Hospital, Ibadan. They were assessed for the presence or absence of midline diastema and the severity of midline diastema was then measured in millimeter. Level of attachment of the median labial frenum was also assessed in relationship to the diastema.

Results: One hundred and sixty-four of the students completed and returned the questionnaire consisting of 16 (9.8%) males and 148 (90.2%) females. Forty-six (28.0%) had diastema, which majorly were found in relationship with the maxilla (32/46) and eleven of the diastemas affected both jaws. Majority of the affected individuals (31/46) accepted the condition, while 4/46 found it unacceptable. There was a statistically significant relationship when the presence of midline diastema was compared with the level of frenal attachment ($p<0.001$).

Conclusion: The fact that a few of the respondents considered that midline diastema is not acceptable may be a shift in the normal trend of accepting the phenomenon as adding to beauty in this environment. This may have an implication in the future management of dental patient.

Keywords: Midline Diastema, Acceptability, Student, Dental Technicians

Running title: Acceptability of midline diastema

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INTRODUCTION

Midline diastema is a gap that is occasionally seen either between the maxillary central incisors or the mandibular central incisors or seen in both arches of an individual that is greater than 0.5mm.[1,2] It is also referred to in literature as 'open teeth' or 'gapped teeth'.[1,3] This gap could be observed in primary, mixed and the permanent dentition but it is more often commonly seen in the primary dentition or developing dentition.[1,3-5] Hence, it could be said to be part of the normal developmental feature of a developing dentition, as it will give that extra arch length for better alignment of the larger permanent teeth. Several aetiological factors have been identified as the possible cause of this dento-alveolar disproportion. They are broadly divided into developmental, pathological, and iatrogenic factors. Amongst the developmental is the ugly duckling phenomenon which is an intra arch features resulting from the developing maxillary canines exerting pressure on the apical root portion of the lateral incisors around the age of 9 years. One of the pathological causes is high frenal attachment, which had been reported in a study as an effect and not a

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cause for the incidence of diastema.[6] Other pathological causes include proclination of incisors following finger sucking oral habits, muscular imbalance, tooth size-arch length discrepancy, microdontia, mesiodens and dental anomalies (peg shaped lateral incisors).[1,4,5,7,8] Iatrogenic cause includes the self-inflicted diastema, in which case an individual desiring to have diastema create one by reducing the size of natural teeth. This has some level of cultural attachment as diastema is regarded in some culture as a sign of beauty.[3]

There are divergent views reported relating to the acceptability of midline diastema. These views vary in relation to factors such as cultural belief, racial background and social environment.[3,9] While some individuals dislike the presence of a midline diastema because it is aesthetically displeasing and unappealing hence, they tend to seek improvement from orthodontic and or other restorative treatment, [10]others see it as very acceptable, attractive and a notable trademark.[3] Some individuals have been reported to be willing to go to any extent to have diastema created for them notwithstanding the health hazards that may follow its creation such as dentinal exposure, dentinal hypersensitivity and pulpal necrosis.[11]When these happens, root canal therapy and subsequent restoration of the tooth may be necessary to preserve the tooth or even extraction of the affected tooth.[11] Oji and Obiechina in their study reported that midline diastema is regarded as an attractive dental feature and a sign of beauty especially among females and it is considered to be a notable trademark.[3] Despite the acceptability of midline diastema by some culture and race, it is regarded as a major aesthetic concern by some other cultures, while there are reports that it is gradually becoming more fashionable among some other groups that had previously considered it has not been aesthetically pleasing.[12-14]The prevalence of midline diastema varies according to racial background, age group, gender, culture and ethnicity. Keene reported a prevalence of 14.8% and 1.6% for midline diastema in the maxilla and mandible respectively.[2] A prevalence of 12.59% was reported among Pakistanis', 3.4% of Caucasians in United Kingdom and 37% of adolescents in Nigeria.[3,4]

Dental Technicians are an integral member of the Dental team, hence they are expected to have a bit of knowledge in the area of normal intra and inter arch teeth presentations. This trait is regarded as a form of malocclusion from the orthodontist point of view who are specialist in the treating of abnormal teeth and jaw positioning. Therefore, this study is set out to assess the prevalence, knowledge and the trend of acceptability of midline diastema among Dental Technician students on posting to the University College Hospital, Ibadan.

MATERIALS AND METHODS

One hundred and sixty-fourDental technician students on clinical posting at the Dental Centre of University College Hospital, Ibadan who had not undergone any form of orthodontic treatment in the past were recruited for the study. Data obtained was in keeping with ethical standards for human studies. A structured questionnaire made up of two sections A and B was used in the data collection. Section A consisted of the respondents' biodata while section B was used to record data from the clinical findings following examination by one of the investigators. Midline diastema was considered to be present if a respondent had a gap in-between the central incisors that is greater than 0.5mm measured with the use of a meter rule measuring from the mid-point of the mesial surface of one central incisor to

the other (contact points) to the nearest millimeter. The presence of midline diastema in either the maxillary or mandibular jaws was recorded and anyone with the condition was requested to personally assess the effect of diastema using a face mirror on his/her appearance. All the measurements were done by one of the researchers after initial calibration with ten cases that were not included in the study. The level of the median labial frenum was also assessed in relation to the midline diastema as follows:

- Low-level – when it does not extend beyond the mucogingival junction
- Normal-level – when it extends to the attached gingivae
- High-level – when it extends beyond the attached gingivae to the gingival papilla

Data was entered into a personal computer and analyzed using SPSS version 23 and results were generated in the form of tables and charts.

RESULTS

A total of 164 consecutive respondents participated in the study consisting of16 (9.8%)males and 148 (90.2%) females with ages ranging from 18 to 47 years and mean age of 24.4 ±4.02 years. Forty-six out of the 164 respondents had midline diastema giving a prevalence of 28%. Majority of the cases 32/46 (69.6%) were found in relationship with the maxilla, 11/46 (23.9%) were in relationship with both jaws, and the remaining were in relationship with the mandible alone 3/46 (6.5%) (Fig.1). The respondents that had diastema consisted of 44 (95.7%) females and 2 (4.3%) males. Over two thirds of the respondents 31/46 (67.4%), reported that their midline diastemata were acceptable, adding beauty onto their person, while a few of the respondents 4/46 (8.7%) were indifferent about the presence of their midline diastemata. The others making up over one fifth of those with the feature believed that the diastema was actually unacceptable. Interestingly, the two males found with midline diastema claimed they love it because it makes them more handsome (Fig. 2).

Over two third of the respondents 33/46 (71.7%) with midline diastema reported that at least one of their first-degree relatives had this feature. The mean dimension for the maxillary midline diastema was 2.35 ± 1.04 mm and that for mandible was 1.85± 1.11 mm (Table 1). Comparing the presence of midline diastema with the level of labial frenal attachment in the respondents showed that majority of those that had midline diastema also had normal frenal height (31/46), though close to a third 14/46 (30.4%) had high level of frenal attachment. A few 4/118 (3.4%) of the respondents without diastema presented with high frenal attachment and this was found to be statistically significant, p<0.001 (Table 2).

FIGURE 1: FREQUENCY DISTRIBUTION OF MIDLINE DIASTEMA ACCORDING TO AFFECTED JAW

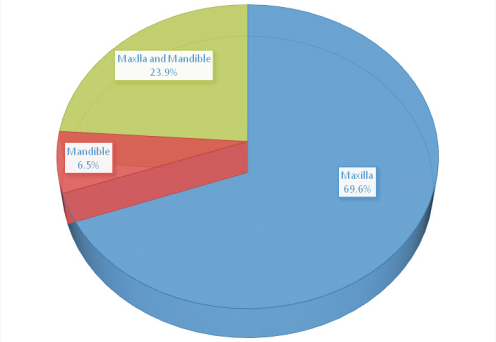

FIGURE 2: FREQUENCY DISTRIBUTION OF RESPONDENTS ACCORDING TO THEIR ACCEPTANCE OF MIDLINE DIASTEMA

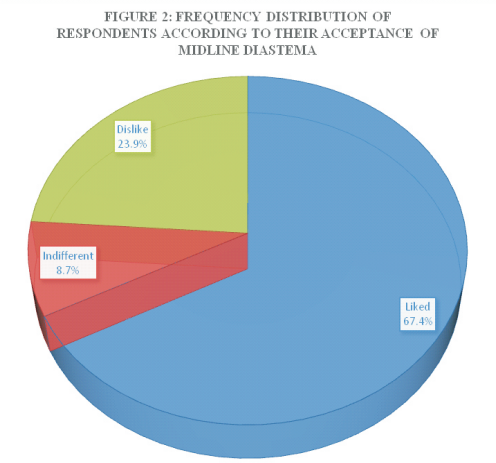

Table 1: Frequency distribution of midline diastema according to size and affected jaw

		Affected Jaw (%)	
		Maxilla	Mandible
Dimension of	1.0	10 (23.2)	7 (50.0)
diastema (mm)	2.0	15 (34.9)	3 (21.4)
	3.0	12 (27.9)	1 (7.2)
	4.0	6 (14.0)	3 (21.4)
Total		43 (100)	14 (100)

N.B: The total did not add up to 46 because some of the respondents had diastema in both jaws.

TABLE 2: Comparison of the presence of midline diastema with the level of labial frenal attachment seen in respondents

		Level of labial frenal attachment (%)			Total (%)
		High	Low	Normal	
Midline	Present	14 (8.5)	1(0.6)	31 (18.9)	46 (28.0)
diastema	Absent	4 (2.4)	4 (2.4)	110 (67.1)	118 (72.0)
Total		18 (11.0)	5 (3.0)	141 (86.0)	164 (100)

p<0.001, likelihood ratio = 22.029

DISCUSSION

Majority of respondents in this study considered midline diastema as part of their natural beauty, which is in agreement with some studies that had been reported in this part of the world. These various studies have reported midline diastema as being viewed as an addition to natural beauty depending on ethnicity, race and cultural perspective. [3,10,11] This assertion is totally wrong from the professional point of view especially when it involves the evaluation of occlusion by the orthodontists. In normal and acceptable occlusion, the teeth should stand and align perfectly on the arch making contact with one another at the contact point in permanent dentition. In the primary and mixed dentition stages, some form of spacing is acceptable for the purpose of better alignment of the larger permanent teeth. The effect of this socio-cultural acceptance of the diastema becomes relevant in the seeking for "artificially" created midline diastema in those who naturally had none. This practice had led to mutilation of teeth by quacks with dire consequences as reported by some studies. [11,15]This acceptance of the midline diastema is not cutting across the entire African continent as a study in Tanzania reported that midline diastema was not widely accepted. [13]

The prevalence of midline diastema in this study 46/164 (28%), is in agreement with that reported by Al-Rubayee(maxillary 22.5%, mandibular 2.3%, and both arch 3.2%),[1] but a little higher than the 26.1% (21.0% in maxillary, 1.9% in the mandible and 3.2% for both jaws) reported by Omotosho and Kadir. [10] However, lower occurrence of this trait was reported in a study among Tanzanians where a prevalence of 22.5% (26%, 11% and 8% for maxillary, mandibular, and both arches respectively) was reported.[13]A much lower occurrence of 7.3% was reported among Sudanese.[16] This variation could have been due to the difference in the ethnicity of the studied population, which had been reported to be a factor in the prevalence of midline diastema.

A higher percentage of the female respondents had the midline diastema, with a prevalence of 29.7% among females and 12.5% among males. This is in agreement with previous studies that reported higher prevalence among females in comparison with their male counterparts. [3,10,16]Omotosho and Kadir, reported a prevalence of 33.9% among females and 19.5% among males out of the 589 respondents that were assessed.[10] Among those who had this trait in this study, 67.4% felt satisfied with this tooth arch discrepancy but interestingly, the only two males with this trait were found to belong to this group. Majority of the female respondents (93.5%) with this trait were satisfied with the trait, which is in agreement with the findings of Omotosho and Kadir who reported that a large

proportion of the female respondents appreciated their midline diastema.[10] In contrast to this finding, Prabhu et al reported that a large proportion (87.5%) with midline diastema felt dissatisfied with their esthetic and hence sought treatment for the closure.[9] Though the study reported social and cultural influences as being reasons for the dislike this was not so in this study where the reverse was the case and the same socio – cultural reasons influenced the acceptability. Differences in socio-cultural factors between the two studied groups must have been the reason for the differing opinions.

Dental Surgery Technicians are one of the paradental service providers as they work hand-in-hand with the Dental Surgeons to achieve the much needed four handed dentistry for good patients' management. This group of individuals undergoing training are expected to be aware of the fact that midline diastema is professionally viewed as occlusal abnormality and that they should discourage the act of "artificially" creating the phenomenon.

Conclusion: The fact that a few of the respondents considered that midline diastema is not acceptable may be a shift in the normal trend of accepting the phenomenon as adding to beauty in this environment, which may have an implication in the future management of dental patient.

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