

Midline Diastema Amongst South-Western Nigerians

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Citation

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Abstract

This study was carried out to determine the incidence and heredity of midline diastema amongst the Yoruba-speaking southwest Nigerians. A total of 589 self-administered questionnaires were randomly sent to 271 female and 318 male students of the University of Ilorin, whose biological parents were from the south-western part of Nigeria. Information sought included, presence of (and perception on) diastema in both respondents and their parents. The incidence of midline diastema was 26.1% ($p < .05$) (maxillary - 21.0%, mandibular - 1.9%, and both arches- 3.2%). It occurred more frequently in females (33.9%) than males (19.5%), and also better appreciated in females (50.6%) than in males (4.1%). A female is more likely to have a maxillary midline diastema (65.3% females: 34.7% males), while a male is more likely to have a mandibular midline diastema (9.1% females: 90.9% males). Most people (75.4%: $p < .05$) attached some aesthetic significance to diastema, and 29.7% signified interest in artificial diastema. Close to two-thirds (64.9%: $p > 0.05$) of the cases of diastema were inherited, with a higher likelihood in the males. Differences abound in the occurrence of diastema among various population groups. Further studies on the variations and hereditary patterns of midline diastema among different population will help furnish growing anthropological data with necessary facts, and also impact greatly on cosmetic dentistry.

INTRODUCTION

Diastema is a distinctive gap or space between two teeth (1). It is also called “open-teeth” or “gapped teeth”. It is most commonly applied to an open space between the upper incisors, that is, maxillary midline diastema, being the most common of all the various types (2, 3). True midline diastema has been defined as the one without periodontal/periapical involvement and with the presence of all anterior teeth in the arch (2).

The incidence of midline diastema varies greatly with the age-group, gender, population and race. This condition is very common in the paediatric age-group at the early stages of dental development (1). Naturally, after the eruption of the permanent teeth, the gap closes in majority of them. However, where the diastema remains after the eruption of the permanent incisors and canine, such may not close on its own (1). Oesterle and Shellhart, in 1999, reported 97% incidence in 5-year-old patients, and this decreased with age (4). Diastema, however, occurs more in females than males (3).

The Black population has a higher incidence of maxillary midline diastema (5.5%) compared to the White population (3.4%) and people of Chinese descent (1.7%) (4).

There are divergent views on diastema. The aesthetic importance varies in relation to culture, age group and racial background. Influenced by such culture and societal norms, individuals without a diastema may desire to have it created through cosmetic dentistry, while some others with diastema would rather want it closed or removed, because they find it aesthetically displeasing and unappealing (4, 5). By some, maxillary midline diastema is regarded as an attractive dental feature, a sign of beauty, especially in the females (3), and is used by notable entertainment celebrities as a successful trademark (4). Meanwhile, a study by Oboro et al in 2008 reported that majority of dentists interviewed did not support the artificial creation of midline diastema (6).

Different factors contribute to the occurrence of diastema. It could be by the action of a superior labial frenum (7, 8), causing high mucosal attachment and less attached keratinised tissue which is more prone to recession, or by tongue thrusting, which can push the teeth apart (1). Lip biting, missing teeth, size mismatch between teeth and jaws, or abnormal jaw bone structure, are also possible factors implicated in the formation of diastema (1). A possible genetic basis has been suggested for diastema, with a greater role of environmental factors in the Black, than the White population (9).

This study aimed at determining the incidence and heredity of diastema among the Yoruba-speaking south-western population of Nigeria.

MATERIALS AND METHODS

Five hundred and eighty-nine Yoruba-speaking individuals whose parents were from the south-western states of Nigeria were included in this study. Students who were indigenes of other states outside the south-western states were excluded. The participants, who were students at the University of Ilorin, Ilorin, Nigeria, comprised 271 females and 318 males whose age range was 16-35 years. They were selected at random, and structured questionnaires delivered to them by hand. Participants were required to provide information on: the presence or absence of diastema; their perception on, and preference for, diastema; and, the presence or absence of diastema in their parents. The questionnaires were returned by hand, and all the selected students responded to the study. The incidence and percentage of diastema were determined by simple percentage method, subjected to statistical analysis using the chi-square, with the SPSS software package (version 15.0).

RESULTS

All the five hundred and eighty-nine (589) students responded to the study. Findings from the study showed that 26.1% ($p < 0.05$) of the students had midline diastema (Table 1). Out of this percentage, the incidence of maxillary midline diastema was 21.0%, mandibular midline diastema was 1.9%, and that of co-existing maxillary and mandibular midline diastema was 3.2% (Table 2a)

Figure 1

Table 1: Occurrence of Diastema

Occurrence	Female (%)	Male (%)	Total (%)
Present	92 (33.9)	62 (19.5)	154 (26.1)
Absent	179 (66.1)	256 (80.5)	435 (73.9)
Total	271 (100.0)	318 (100.0)	589 (100.0)

Figure 2

Table 2a: Distribution of the types of Diastema

Types of diastema			
Maxillary midline (%)	Mandibular midline (%)	Coexisting maxillary and mandibular midline (%)	Total (%)
21.0	1.9	3.2	26.1

The difference in the types of diastema and gender was statistically significant. Majority of the population with diastema (80.5%: comprising 65.3% females and 34.7% males) had maxillary midline diastema ($p < 0.05$), while 7.2%

(9.1% females; 90.9% males, $p < 0.05$) had mandibular midline diastema, and 12.3% (52.6% females; 47.4% males, $p < 0.05$) of them had co-existing maxillary and mandibular midline diastema (Table 2b).

Figure 3

Table 2b: Gender distribution of types of Diastema

Types	Female (%)	Male (%)	Total (%)
Maxillary midline	81 (65.3)	43 (34.7)	124 (80.5)
Mandibular midline	1 (9.1)	10 (90.9)	11 (7.2)
Both	10 (52.6)	9 (47.4)	19 (12.3)
Total	92 (59.7)	62 (40.3)	154 (100.0)

Among the people without diastema, 29.7% signified interest in artificial creation of diastema; this however, was not statistically significant, $p > 0.05$ (Table 3).

Figure 4

Table 3: Willingness for Artificial Diastema

	Female (%)	Male (%)	Total (%)
Willing	65 (36.3)	64 (25.0)	129 (29.7)
Not willing	114 (63.7)	192 (75.0)	306 (70.3)
	179 (100.0)	256 (100.0)	435 (100.0)

Majority of the respondents (72.8%, $p < 0.05$) considered diastema as a sign of beauty (Table 4).

Figure 5

Table 4: Diastema as a sign of beauty

	Female (%)	Male (%)	Total (%)
Agreed	216 (79.7)	213 (67.0)	429 (72.8)
Disagreed	55 (20.3)	105 (33.0)	160 (27.2)
Total	271 (100.0)	318 (100.0)	589 (100.0)

Half of the participants (50.6%) preferred a female with diastema over a male with diastema, while only 4.1% preferred a male having diastema over a female ($p > 0.05$) (Table 5a).

Figure 6

Table 5a: Gender preference for Diastema

In which gender would you prefer diastema?	Female respondents (%)	Male respondents (%)	Total (%)
Male	8 (3.0)	16 (5.0)	24 (4.1)
Female	157 (57.9)	141 (44.3)	298 (50.6)
Either Male or Female	84 (31.0)	40 (12.6)	124 (21.1)
Don't know	22 (8.1)	121 (38.1)	143 (24.3)
Total	271 (100.0)	318 (100.0)	589 (100.0)

Figure 7

Table 5b: Gender preference for maxillary midline diastema

Gender preference	Female respondents (%)	Male respondents (%)	Total (%)
Preferred in Females	227 (83.8)	195 (61.3)	422 (71.6)
Preferred in Males	44 (16.2)	123 (38.7)	167 (28.4)
Total	271 (100.0)	318 (100.0)	589 (100.0)

Figure 8

Table 5c: Gender preference for mandibular midline diastema

Gender preference	Female respondents (%)	Male respondents (%)	Total (%)
Preferred in Females	92 (33.9)	152 (47.8)	244 (41.4)
Preferred in Males	179 (66.1)	166 (52.2)	345 (58.6)
Total	271 (100.0)	318 (100.0)	589 (100.0)

Maxillary midline diastema was considered to be more appropriate for a female than a male by 71.6% (83.8% of the female population and 61.3% of the male population; $p>0.05$) of the respondents (Table 5b); while for mandibular midline diastema, 58.6% preferred its occurrence in males than females (66.1% and 52.2% of the female and male population respectively) (Table 5c).

It was shown that the heredity of midline diastema amongst southwest Nigerians was found to be 64.9% ($p>0.05$) (Table 6).

Figure 9

Table 6: Presence of Diastema in either or both parents (Heredity)

	Female (%)	Male (%)	Total (%)
Present	56 (60.9)	44 (71.0)	100 (64.9)
Absent	36 (39.1)	18 (29.0)	54 (35.1)
Total	92 (100.0)	62 (100.0)	154 (100.0)

DISCUSSION

Various factors have been implicated as the possible aetiology of diastema among which are the presence of a superior labial frenum, a mismatch between teeth and jaws, tongue thrusting, or an abnormal jaw bone structure (1, 8).

Previous studies have shown that there are variations in the incidence of this dental feature from one population to another, among people of different racial background, age-group, gender, as well as the importance attached to it by people of different culture (2,3,9).

In the current study of diastema among the Yoruba-speaking population of south-west Nigeria, an incidence of 26.1% was found, of which 21.0% had maxillary midline diastema,

1.9% had mandibular midline diastema, and 3.2% had coexisting maxillary and mandibular midline diastema. A study among Tanzanians found the incidence to be 26%, 11% and 8% for maxillary, mandibular, and both arches midline diastema respectively (10). These figures were higher in this population than in the current study. While the incidence of mandibular midline diastema in this study was lower than that of diastema occurring in both arches, the study by Athumani and Mugonzibwa (2006) showed higher incidence in the Tanzanian population (10). Occurrence of diastema was more in the females, as 92 (33.9%: $p>0.05$) of the female respondents (271) had diastema, while only 62 (19.5%: $p<0.05$) of the male respondents (318) had it. An earlier study by Oji and Obiechina (1994) also found diastema to be more prevalent in females (3).

Studies among different population groups consistently showed that maxillary midline diastema occurs more frequently than mandibular midline diastema (2,3,11). This was also observed in the present study where out of the 26.1% incidence of midline diastema, 21.0% was maxillary, 1.9% was mandibular, and the remaining 3.2% comprised of coexisting maxillary and mandibular midline diastema. Meanwhile, mandibular midline diastema occurred more in males (90.9%) than females (9.1%), just as maxillary midline diastema occurred more in females (65.3%) than males (34.7%).

Half (50.6%) of the respondents agreed that a midline diastema was preferred in females, while only 4.1% were of the opinion that a midline diastema was better in males than females. However, when asked to match gender with the appropriate midline diastema, 83.8% of the female respondents and 61.3% of the males indicated that maxillary midline diastema was preferred in the females, while 66.1% of the female respondents and 52.2% of the male population considered mandibular midline diastema better in males. Although more females (66.1%) than males (52.2%) reported mandibular midline diastema as better for the male population, this proportion was not as high as that reported by Athumani and Mugonzibwa (2006), where as much as 90.9% females considered it better for males (10).

Cultural influence was one of the reasons why some people considered diastema as a disfiguring dental feature requiring intervention, while some others saw it as an advantage to their personality, an enhancement of their beauty, giving them an admirable look and smile (1, 6). This survey observed that majority of people in the south-western zone of Nigeria considered diastema very significant. Most people

(72.8%) saw it as a sign of beauty, and 29.7% of those not having diastema would love it created through cosmetic dentistry, showing the importance attached to it in this part of the world. Meanwhile, a study by Oboro et al (2008) indicated that some Nigerian dentists did not support the artificial creation of midline diastema; probably due to influence of Western culture (6).

However, people that see diastema as an aesthetic problem have the opportunity of closing the space. Procedures for closure include frenectomy, orthodontics, restorative dentistry, use of veneers, and various combinations of several dental treatments (1,12,13).

The heredity of midline diastema from the present study was 64.9%, with a higher probability for males (71.0%) than for females (60.9%) to inherit it.

CONCLUSION

Variations abound in the occurrence of midline diastema from one population to the other. This study shows that maxillary midline diastema occurs more frequently than mandibular midline diastema, and that females are more likely to have a maxillary midline diastema, while males are more likely to have a mandibular midline diastema. Diastema runs in families, and it is suggested that male children are more likely to inherit it. Because of the importance attached to it by some individuals, an artificial creation of diastema through cosmetic dentistry is usually considered.

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