

## Sociocultural Beliefs Regarding Midline Diastema Among Undergraduate Students Attending a Nigerian University

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### ABSTRACT

**Introduction:** Perception of maxillary midline diastema as an aesthetic trait varies in relation to culture, age group, and racial background. This study determined the self-reported prevalence of maxillary midline diastema as well as assessed the sociocultural beliefs regarding maxillary midline diastema among undergraduate students of different ethnicity attending a Nigerian university.

**Methods:** A descriptive cross-sectional study of undergraduate students in University of Benin. A self-administered structured questionnaire was utilized for this study. The questionnaire sought information on socio-demographic profile of the participants, self-reported presence of midline diastema, the characteristics of the diastema and sociocultural beliefs regarding midline diastema. Statistical analysis was done using IBM SPSS 21.0. Cross tabulation was used to report categorical variables which were presented as counts and percentages. Chi-square test was applied to determine associations between variables with the level of significance set at  $p < 0.05$ .

**Results:** A total of 400 students aged 16 to 46 years and a mean age of 21.86 years ( $\pm 3.07$ ) took part in this study. 29% of the study population had maxillary midline diastema. Most cases were recorded in the maxillary arch (96.6%). All ethnic groups and students in lower age group saw maxillary midline diastema as a sign of beauty and perceived it to be more attractive in female.

**Conclusion:** Based on the study, midline diastema is regarded as a sign of beauty, all ethnic groups perceived midline diastema as an aesthetic attribute.

**Keywords:** socio-cultural, belief, midline diastema.

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#### Introduction

Diastema, which means interval in Greek, is a gap or space between two or more consecutive teeth, it occurs more frequently in the median plane of the maxillary arch between the two

central incisors and hence called the median, central or midline diastema.<sup>1</sup> True midline diastema is one without periodontal/periapical involvement and with the presence of all anterior teeth in the arch.<sup>2</sup>

Maxillary midline diastema has been observed to be higher in blacks (5.5-26%) than in Caucasians (3.4-17%)<sup>3</sup> and this high incidence has also been confirmed by some Nigerian studies.<sup>4,5</sup> Reports on sex predilection vary with a study conducted among whites suggesting it is more common among males<sup>6</sup> while another study conducted among blacks revealed that it is more common among females.<sup>7</sup>

The perception of diastema tends to vary in relation to culture, age group, and racial background. Midline diastema in some climes is a common aesthetic complaint<sup>8</sup> with interventions sought to correct it.<sup>1, 9-11</sup>

In Nigeria, maxillary midline diastema is generally regarded as a symbol of beauty,<sup>7,12,13</sup> hence individuals with maxillary midline diastema often enjoy a lot of compliments in the

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society.<sup>14</sup> In Nigeria, the presence of maxillary midline diastema is thought to enhance the attractiveness of an individual especially women, unlike in the western societies where it is regarded as a malocclusion. Hence, many individuals submit themselves to undergo mutilation of their anterior teeth in order to create an artificial diastema.<sup>13-15</sup>

In a previous Nigerian study<sup>7</sup> about 30% of the participants would not mind having artificial maxillary midline diastema.

It has also been observed that it was not uncommon among some Africans to demand for artificially created maxillary midline diastema from dental practitioners.<sup>14,16</sup> However, majority of dentists did not support the artificial creation of maxillary midline diastema.<sup>16</sup>

A situation that has caused many individuals to seek the creation of artificial maxillary midline diastema from quacks with resultant deleterious effects.<sup>14,16,17</sup>

Given the varying perception of diastema it is possible that socio-cultural beliefs differ with regards to maxillary midline diastema as in some climes it is regarded as a common aesthetic complaint<sup>8</sup> with people seeking interventions to correct it.<sup>1, 9-11</sup>

However, in some other climes it is commonly viewed as a feature of beauty.<sup>7,12,13</sup> Also there is a call for studies among Nigerian ethnicities to establish their perception of midline diastema.<sup>14</sup> Furthermore, there is paucity of research on sociocultural beliefs regarding maxillary midline diastema available, hence, this study was designed to determine the self-reported prevalence of maxillary midline diastema as well as assess the sociocultural beliefs regarding maxillary midline diastema among undergraduate students of different ethnicity attending a Nigerian university.

**Methodology**

This was a descriptive cross sectional study of undergraduate students in the University of Benin, Benin City, Edo State, Nigeria. Undergraduate students who were available at the time of study (November 2016 to August 2017), and were willing to participate in the study

were recruited for the study. The formula below was used to calculate the sample size

$N = \frac{Z^2 \times P \times Q}{d^2}$  when estimated population size is more than 10000

Where N = The desired sample size if population size is more than 10000

Z = The Standard Normal deviate usually set at 1.96 corresponding to the 95% confidence level

P = The proportion in the target population estimated to have a particular characteristics, q = 1 - p

d = Degree of accuracy desired set at 0.05

Therefore,

It was taken that Z = 1.96, p = 37% or 0.37<sup>16</sup> and d was set at 0.05

Therefore  $N = \frac{1.96^2 \times 0.37 \times (1 - 0.37)}{0.05^2}$

$N = \frac{3.8416 \times 0.2371}{0.0025}$

N = 358.

A 10% non-response rate was added making the sample size 394 which was approximated to 400.

Ethical approval was obtained from the Ethics and Research committee of the College of Medical Sciences, University of Benin. Written informed consent was obtained from all participants.

A self-administered structured questionnaire was utilized for this study. The questionnaire consisted of three sections. The first section was the socio-demographic profile of the participants. Information sought was age, gender, tribe and religion. The second section sought to find out if the respondents had midline diastema, the characteristics of the diastema (artificially created or natural, arch with the diastema) and if the respondents like the diastema. The third section sought to determine the sociocultural belief regarding midline diastema among the respondents. It consisted of a set of 16 questions with Likert scale responses. The filled questionnaires were screened for completeness by the researcher, coded and entered into the IBM-SPSS statistics 21.0 software. Cross tabulation was used to report categorical variables which were presented as counts and percentages. Chi-square test was applied to determine associations between variables with the level of significance set at p<0.05.



### Results

A total of 400 questionnaires were administered and all filled and returned giving a 100% response rate. The respondents consisted of 284 (71%) males and 116 (29%) females. The age of the participants ranged between 16 to 46 years with the mean age of  $21.86 \pm 3.07$  years. Table 1 shows that most of the participants were Benin (32.3%), followed by Igbo (21.8%). There were 390 (97.5%) Christians and 6 (1.5%) Muslims.

Figure 1 shows the prevalence of diastema to be 29% in the study population with a higher incidence in females (29.3%) and most of the diastema were recorded in the maxilla (96.6%).

Table 2 shows that 29% of the respondents have diastema with 7.8% of them artificially created. More than half 50.9% of the respondents with diastema were very satisfied with it.

Table 3 shows sociocultural beliefs regarding midline diastema among the respondents. Less than half (47.0%) of the respondents agreed that diastema is a sign of beauty. However, majority (77.8%) of the respondents did not think it was aesthetically appealing. More than half (52%) of the respondents did not perceive diastema to be significant in their culture. Majority 62.5% and 82.8% respectively of the respondents were of the opinion that diastema was neither a blessing from the gods nor a curse from the gods. A lot (61.0%) of the participants believed that diastema can be created in the dental clinic while less than half of the respondents were neutral (42.8) regarding the creation of diastema traditionally. Majority (79.3%) of the respondents opined that diastema is not a disease (79.3%). A little above half (51.7%) of the respondents believed that diastema can be inherited. A higher proportion (42.8%) of the respondents were of the opinion that diastema cannot close on its own as an individual gets older. About two-thirds (65.5%) of the respondents felt that diastema was not due to broken teeth that refused to grow back. Some (42.8%) of the respondents felt that diastema does not increase in size as an individual gets older. With regards to perception of diastema on males, 42% of the respondents were of the opinion that diastema is not common among males while 39.8% felt diastema was less attractive on males. On the other hand, 45.5% of the respondents agreed that diastema is a common finding among

females and 52.3% opined that diastema looks more attractive on females.

Table 4 shows that majority of the respondents within the age group 16-19, 20-24, >30 years agreed that diastema is a sign of beauty (50%, 48.4% and 66.7% respectively) and this was statistically significant ( $p=0.045$ ). There was statistically significant association between the gender of the participants and the perception that diastema is a sign of beauty with more than half of the male respondents (51.1%) agreeing that diastema as a sign of beauty ( $p=0.009$ ). Majority of the Benin, Delta indigenes, Hausa, Igbo and Yoruba also had the perception that diastema is a sign of beauty (45%, 46.8%, 50%, 54% and 63.6% respectively). However, this was not statistically significant ( $p=0.123$ ). Majority of the Christians and Muslims perceive diastema as a sign of beauty (46.7% and 66.7% respectively) however, this was not statistically significant ( $p=0.592$ ).

There was no statistically significant association between the faculty or level of study of the respondents and perception of diastema as a sign of beauty.

Table 5 depicts the relationship between demographic characteristics of the respondents and the perception regarding the significance of diastema in our culture. More than half of all the age groups opined that diastema is not significant in their culture however, this was not statistically significant (0.124). With regards to gender, 52.1% of males and 51.7% of females were of the opinion that diastema is not significant in their culture and this was not statistically significant ( $p=0.414$ ). A higher proportion of the Benins, other Edoindigenes, Delta indigenes and Igbo respondents also opined that diastema is not significant in their culture and this was statistically significant ( $P=0.03$ ).

**Table 1:** Sociodemographic characteristics of participants

Characteristics	Frequency	Percent
<b>Age (years)</b>		
16-19	96	24.0
20-24	246	61.5
25-29	49	12.3
>30	9	2.3
<b>Gender</b>		
Male	284	71
Female	116	29
<b>Tribe</b>		
Benin	129	32.3
Other Edo indigenes	55	13.8
Delta Indigenes	62	15.5
Hausa	16	4.0
Igbo	87	21.8
Yoruba	33	8.3
Others	18	4.5
<b>Religion</b>		
Atheist	4	1
Christian	390	97.5
Islam	6	1.5
<b>Total</b>	<b>400</b>	<b>100.0</b>

**Table 2:** Presence and characteristics of diastema among the participants

Characteristics	Frequency	Percent
Presence of diastema		
Yes	116	29.0
No	284	71.0
If yes, are you satisfied with it		
Very satisfied	59	50.9
Satisfied	38	32.8
Unsure	9	7.8
Dissatisfied	9	7.8
Very dissatisfied	1	0.9
Was it artificially created		
Yes	9	7.8
No	107	92.2
Diastema in the maxillary segment		
Yes	112	96.6
No	4	3.4
Diastema in the mandibular segment		
Yes	19	16.4
No	97	83.6



## Socio Cultural Beliefs Regarding Midline Diastema

**Table 3:** Social Cultural beliefs regarding diastema among the participants

Characteristics	Disagree n(%)	Neutral n(%)	Agree n(%)
Diastema is a sign of Beauty	77(19.3)	135(33.8)	188(47)
Diastema is significant in our culture	208(52)	138(34.5)	54(13.5)
Diastema is a blessing from the gods	250(62.5)	107(26.8)	43(10.8)
Diastema is a curse from the gods	331(82.8)	59(14.8)	10(2.5)
Midline diastema can be created in the dental clinic	34(8.5)	122(30.5)	244(61)
Midline diastema can be created traditionally	109(27.3)	171(42.8)	120(30)
Diastema is aesthetically appalling	311(77.8)	79(19.8)	10(2.5)
Diastema is a disease	317(79.3)	59(14.8)	24(6.0)
Midline diastema can be inherited	60(15)	133(33.3)	207(51.7)
Diastema closes on its own as an individual gets older	196(49)	162(40.5)	42(10.5)
Diastema is due to broken tooth that refuses to grow back	262(65.5)	102(25.5)	36(9)
Diastema increases in size as an individual gets older	171(42.8)	149(37.3)	80(20)
Diastema is common among the males	168(42)	191(47.8)	41(10.3)
Diastema looks more attractive in males	159(39.8)	168(42)	73(18.3)
Diastema looks more attractive in females	61(15.3)	130(32.5)	209(52.3)
Diastema is common among the females	54(13.5)	164(41)	182(45.5)

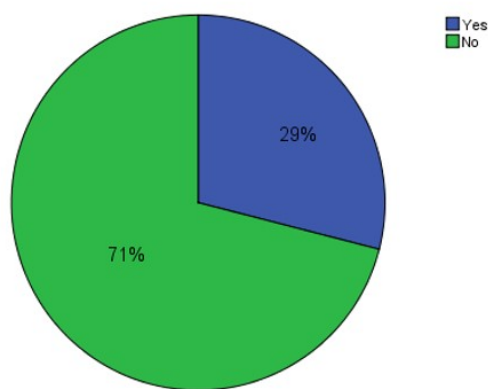
**Table 4:** Relationship between demographic characteristics of the respondents and their belief that diastema is a sign of beauty

Demographic	Disagree n(%)	Neutral n(%)	Agree n(%)	Total n(%)	P-value
<b>Age group</b>					0.045
16-19	15(14.6)	34(35.4)	48(50)	96(100)	
20-24	46(18.7)	81(32.9)	119(48.4)	246(100)	
25-29	17(34.7)	17(34.7)	15(30.6)	49(100)	
>30	0(0)	3(33.3)	6(66.7)	9(100)	
<b>Gender</b>					0.009
Male	56(19.7)	83(29.2)	145(51.1)	284(100)	
Female	21(18.1)	52(44.8)	43(37.1)	116(100)	
<b>Tribe</b>					0.123
Benin	26(20.2)	45(34.9)	58(45)	129(100)	
Other Edo indigenes	9(16.4)	27(49.1)	19(34.5)	55(100)	
Delta Indigenes	11(17.7)	22(35.5)	29(46.8)	62(100)	
Hausa	2(12.5)	6(37.5)	8(50)	16(100)	
Igbo	18(20.7)	22(25.3)	47(54)	87(100)	
Yoruba	4(12.1)	8(24.2)	21(63.6)	33(100)	
Others	7(38.9)	5(27.8)	6(33.3)	18(100)	
<b>Religion</b>					0.592
Atheist	0(0)	2(50)	2(50)	4(100)	
Christian	77(19.7)	131(33.6)	182(46.7)	390(100)	
Islam	0(0)	2(33.3)	4(66.7)	6(100)	



**Table 5:** Relationship between demographic characteristics of the respondents and perception that diastema is significant in our culture

Demographic	Disagree n(%)	Neutral n(%)	Agree n(%)	Total n(%)	P-value
<b>Age group</b>					0.124
16-19	49(51)	33(34.4)	14(14.6)	96(100)	
20-24	128(52)	90(36.6)	28(11.4)	246(100)	
25-29	27(55.1)	14(28.6)	8(16.3)	49(100)	
>30	4(44.4)	1(11.1)	4(44.4)	9(100)	
<b>Gender</b>					0.414
Male	148(52.1)	94(33.1)	42(14.8)	284(100)	
Female	60(51.7)	44(37.9)	12(10.3)	116(100)	
<b>Tribe</b>					0.030
Benin	78(60.5)	36(27.9)	15(11.6)	129(100)	
Other Edo indigenes	26(47.3)	18(32.7)	11(20)	55(100)	
Delta Indigenes	31(50)	21(33.9)	10(16.1)	62(100)	
Hausa	5(31.3)	11(68.8)	0(0)	16(100)	
Igbo	49(56.3)	27(31)	11(12.6)	87(100)	
Yoruba	12(36.4)	15(45.5)	6(18.2)	33(100)	
Others	7(38.9)	10(55.6)	1(5.6)	18(100)	
<b>Faculty</b>					0.443
Medicine	64(49.6)	48(37.2)	17(13.2)	129(100)	
Dentistry	25(48.1)	16(30.8)	11(21.2)	52(100)	
Other Faculties	119(54.3)	74(33.8)	26(11.9)	219(100)	
<b>Level</b>					0.038
100	22(53.7)	14(34.1)	5(12.2)	41(100)	
200	43(53.8)	33(41.3)	4(5)	80(100)	
300	39(48.8)	23(28.7)	18(22.5)	80(100)	
400	68(50.7)	50(37.3)	16(11.9)	134(100)	
500	23(62.2)	11(29.7)	3(8.1)	37(100)	
600	13(46.4)	7(25)	8(28.6)	28(100)	
<b>Religion</b>					0.716
Atheist	2(50)	2(50)	0(0)	4(100)	
Christian	203(52.1)	133(34.1)	54(13.8)	390(100)	
Islam	3(50)	3(50)	0(0)	6(100)	



**Figure I:** Prevalence of diastema in the population

### Discussion

The prevalence of midline diastema (29%) observed in this study is slightly higher than that reported by Omotosho and Kadir(26.1%)<sup>7</sup> and similar to the reports by Umanah et al (28.4%).<sup>15</sup> There seems to be gender variation in the prevalence of midline diastema, a finding that supports previous reports<sup>7,13,15,18</sup> that females have a higher prevalence of midline diastema than males, although no reason has been proposed for this gender variation in prevalence of midline diastema.

A higher incidence of midline diastema was observed in the maxilla compared to the mandible, a finding similar to previous observations.<sup>2,7,13,15</sup> This could be as a result of imperfect fusion at the midline of the premaxilla and possible presence of prominent labial frenum as reported from previous studies.<sup>1,19,20</sup>

In Nigeria, maxillary midline diastema is generally regarded as a symbol of beauty especially in women with individuals who have it often enjoying a lot of compliments in the society.<sup>7,12</sup> Furthermore, having a maxillary midline diastema seems to be trendy and in vogue.<sup>15</sup> It is not surprising therefore that people submit themselves to its artificial creation as observed in this study and previous studies.<sup>14,15,17</sup> Enhancement of beauty and aesthetics as well as peer pressure have also been adduced as reasons for this dental treatment abuse.<sup>15</sup>

The influence of culture is seen in every discipline of health and medical practice with dentistry not being an exception with socio-cultural factors, false traditional beliefs, lack of proper education and non-scientific knowledge thought to seed dental myths.<sup>21-23</sup> The perception of beauty is an individual preference<sup>11</sup> and it has been demonstrated that blacks perceive diastema as a sign of beauty.<sup>1,7,15,18</sup>

This was also depicted in this study with about half of the respondents regarding diastema as a sign of beauty with the male respondents upholding the belief more compared to the females, a finding similar to report of a previous study.<sup>7</sup> The society does not seem to regard midline diastema as a sign of attractiveness among the males<sup>7,15</sup> and this was also observed in this study.

This perception that midline diastema is a sign of beauty seems to be more prevalent among the younger age groups a finding similar to previous reports<sup>7,13,15,18</sup> and may be a pointer to the fact that younger individuals tend to care more about aesthetics.<sup>15</sup>

It has been revealed that there exists a hereditary component to the occurrence of diastema.<sup>7,13</sup> This may be the reason why the respondents in this study were of the opinion that diastema can be inherited. Also it is possible that respondents have observed diastema running in families with several family members having one.

The findings of this study suggest that midline diastema is widely accepted in our society unlike the western population who see it as a form of malocclusion and hence need for treatment or closure of the diastema. The desire to artificially create midline diastema has been reported in the literature<sup>7,15,22</sup> with actual creation of artificial midline diastema and its attendant complications reported in the literature.<sup>14,15,17</sup> It is therefore not surprising to find that the respondents in this study believed diastema can be created in the dental clinic. Despite this belief, a study by Oboro et al<sup>16</sup> indicated that some Nigerian dentists did not support the artificial creation of midline diastema; probably due to influence dental education where midline diastema is taught as a form of malocclusion.

There was also lack of understanding of the possible aetiology of diastema and its possible evolution. 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.<sup>1</sup>

### Conclusion

Midline diastema is not uncommon among Nigerians with it being more prevalent among the female folks. Midline diastema occurring especially in the maxillary arch and in females is regarded to be of additional aesthetic value. The male gender perceives maxillary midline diastema to be more attractive in females as opposed to the males with those who do not have desiring to have it artificially created. All ethnic groups and majority of the younger age groups



perceived maxillary midline diastema to be an aesthetic attribute.

This shows a conflict between socio-cultural belief and science as what science has termed an anomaly is acceptable to this Nigerian population. The opinions to intervene or treat all diastema is basically western and should not be taken as a professional standard as aesthetic issues are subjective and patient opinion regarding their care is of utmost importance especially in aesthetic dentistry.

**Limitations:** The study subjects were not examined, so the prevalence figure may have been exaggerated.

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