



Knowledge and awareness of orthodontics among Nigerian school children in selected private and public schools in Lagos

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Abstract

Objective: This study sought to assess the knowledge and awareness of Nigerian adolescents concerning orthodontics, to determine possible factors influencing their knowledge of orthodontics as well as to find out if socioeconomic status has any effect on their knowledge and awareness.

Method: This cross-sectional descriptive questionnaire based study was conducted in two secondary schools (one private and one public) in Lagos State.

Result: A total of 408 students, participated in the study of which only 98 (24.0%) had ever heard the term 'orthodontics', and of this number only 16 could correctly explain the meaning of the term orthodontics. Majority of the respondents with correct responses attended a private school. Significantly more of the private school students correctly identified that orthodontists are involved in rearranging the teeth ($p=0.006$) and not involved in cleaning the teeth ($p=0.008$). There was a significant difference in the knowledge of the students from the public and private school concerning the impact of malocclusion on speech ($p=0.002$) and appearance ($p=0.000$).

The overall orthodontic knowledge is deficient. However knowledge was better among the children from the private school compared to those from the public school. The results obtained from this study, clearly show that there is need to provide oral health education especially to improve the orthodontic knowledge of these adolescents especially about malocclusion and its consequences. It is expected that this would improve their knowledge and consequently increase the demand for and the uptake of the available orthodontic services.

Introduction

Adolescence is a phase of rapid pubertal growth accompanied by hormonal and emotional changes⁽¹⁾. These changes often increase their self consciousness and concern about their appearance and peer rating approval⁽²⁾. Consequently adolescents are usually very willing to undergo necessary treatment to enhance their appearance. The period of adolescence is also a very good time to start orthodontic treatment because of the enhanced significant and favourable skeletal changes that occur at this time⁽³⁾.

In recent times, there has been an increased demand for correction of malocclusion and malalignment of teeth in Nigeria, particularly among adolescents. However, the number of patients who actually present for orthodontic assessment is considerably lower than expected when compared to the reported prevalence of malocclusion in this environment⁽⁴⁻⁷⁾.

Among children, parents especially the mother often initiate the decision to seek orthodontic treatment⁽⁸⁾. Several factors may motivate the decision of an adolescent to seek orthodontic care, the major factor being desire to enhance appearance⁽⁹⁾. In a study conducted in Australia⁽¹⁰⁾, a very large percentage of respondents considered the need for "straight teeth and a nice smile" very important indicating the value of facial attractiveness

as a factor in seeking orthodontic treatment.

Other factors include the level awareness of orthodontic care, as well as the ability to afford the cost of care⁽¹¹⁾. Adolescents have various sources of information including their parents, teachers, peers and more recently the social media, being an important factor because of the recent increase in the use of the internet and the social networking media amongst adolescents⁽¹²⁾. This has led to an increased awareness of health and health related issues as well as an increased awareness of the need for enhanced facial aesthetics⁽¹³⁾.

In developed countries, oral health education is included in the school curriculum from a very early age^(13,14). The content of the oral health curriculum becomes more in-depth as the child gets older and by the teenage years, information on malocclusion and its management is included. Also orthodontic services are very widely available and this has increased orthodontic awareness in that environment. Consequently, children in developed countries are well informed about malocclusion and orthodontics and are therefore more likely to seek treatment and optimally use the orthodontic services available to them. In Nigeria however there are only about 30 orthodontists to a population of about 150 million people⁽¹⁵⁾, thus limiting availability of orthodontic services. Demand for orthodontic treatment has been related directly to the availability of orthodontic



services⁽¹¹⁾. This may however be a plausible reason for higher demand for orthodontic services in the developed world compared to Nigeria.

This study therefore sought to assess the knowledge of Nigerian adolescents concerning orthodontics, to determine possible factors influencing their knowledge and to find out if socioeconomic status has any effect on their orthodontic knowledge and awareness. This will help in the planning of intervention to improve their knowledge of orthodontics thus improving accessibility and utilization of orthodontic services among school children in Nigeria.

Materials and method

Study design

This cross-sectional descriptive questionnaire based study was conducted in two secondary schools (one private and one public) in Lagos State. The type of school attended was adopted as a proxy for socioeconomic status thus children attending private schools were considered to be in the high or middle strata while children in public schools were considered as in the low social strata.

The minimum sample size was computed using a prevalence of 50% since there were no previously conducted studies on the topic. This yielded a minimum sample size of 384.

A multi-staged sampling method was employed in the selection of samples for this study. All students present in the school on the day of data collection were eligible to participate and those who consented to taking part were included in the study.

The total population of students in the selected Public school was 980 and 320 in the private school, giving a ratio of about 3:1. Therefore for every three public school students, 1 private school student was included in the study. A total of 400 questionnaires were distributed in the public school while 150 questionnaires were distributed in the private school, giving a total of 550 questionnaires. In all 408 were filled correctly and returned, giving a response rate of 74.2%.

The survey instrument was a questionnaire which consisted of two parts. The first part was designed to obtain socio-demographic information, past dental history and dental knowledge information while the second part addressed issues relating to orthodontic perception and awareness amongst the study participants. The questionnaire was pre-tested for construct validity and reliability and modifications were made before it was administered.

Written consent of the school administration and the parents was sought before administering the questionnaires.

Data entry and analysis

The data was entered into Microsoft excel software and analysed using Epi-info version 3.5. Frequency distribution was generated for all variables and measures of central tendency generated for all numerical variables. Differences in proportion were tested using the chi-squared test and significance level was set at $p < 0.05$ with 95% confidence level.

Result

A total of 408 students, of which 192 (47.1%) were females and 216 (52.9%) were males participated in this study (**Table 1**). The age range of participants was 9-16 years, (mean 13.19 ± 2.10 years). Only 147 (36.0%) of the respondents had visited a dentist prior to this study, while 215 (52.7%) had previous information about dentistry and oral health. The most common source of information was from dentists (34.4%) (**Figure 1**).

Only 45 respondents (11.0%) had previously received orthodontic treatment. When disaggregated, 23.2% of the respondents from the private schools had previous orthodontic treatment compared with only 8.9% of those in public school. When asked if they had friends or relatives who had previous orthodontic experience, all children from the private school responded in the affirmative while only 27.6% of the children in the public school responded in the affirmative.

Table 1: Age and sex distribution of the study population

Age group (years)	Public school		Private school		Total n (%)
	M n (%)	F n (%)	M n (%)	F n (%)	
9-12	60 (14.7)	49 (12.0)	25 (6.1)	24 (5.9)	158 (38.7)
13-16	102 (25.0)	90 (22.0)	29 (7.1)	29 (7.1)	250 (61.3)
Total	162 (39.7)	139 (34.0)	54 (13.2)	53 (13.0)	408 (100.0)

Table 2: Orthodontic awareness of the study population

Ever heard of orthodontics?	Public school n (%)		Private school n (%)		P Value
	Yes	36 (12.0)	62 (57.9)	0.000	
No	265 (88.0)	45 (42.0)	0.000		
	53 (17.6)	94 (87.9)	0.000		
	248 (82.4)	13 (12.1)			
Total	301 100.0	107 100.0			

Significant

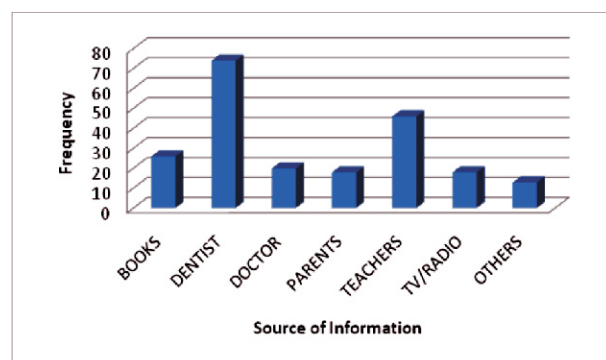


Figure 1. Sources of information among study population

Orthodontic awareness

Of the 408 respondents, only 98 (24.0%) had ever heard the term orthodontics and of this number only 16 (3.9%) could correctly explain the meaning of the term orthodontics. Consequently, 251 (61.5%) reported not knowing who an orthodontist is, 113 (27.7%) provided incorrect responses while 44 (10.80%) correctly identified



an orthodontist as a person who corrects poorly arranged teeth. Of those who correctly identified the role of an orthodontist, 64% attended private school, while 36% were from the public school (Table 2).

Table 3. Distribution of responses on treatment modalities carried out by orthodontists.

	Public		Private		p-value (Fisher's exact)
	Correct no (%)	Incorrect no (%)	Correct no (%)	Incorrect no (%)	
Cleaning of teeth	98 (32.7)	203 (67.3)	55 (51.5)	52 (48.5)	0.008*
Removal of teeth	106 (35.3)	195 (64.7)	37 (34.7)	70 (65.3)	0.526
Replacement of missing teeth	125 (41.6)	176 (58.4)	37 (34.7)	70 (65.3)	0.182
Rearrangement of teeth	177 (58.8)	124 (41.3)	81 (75.9)	26 (24.1)	0.006*
Filling of teeth	141 (46.7)	160 (53.3)	46 (42.6)	61 (57.4)	0.340

Table 4. Distribution of respondents' knowledge of appliances used by orthodontists Which of the following do you think is used in orthodontics

	Public		Private		p-value (Fisher's exact)
	Correct no (%)	Incorrect no (%)	Correct no (%)	Incorrect no (%)	
Dentures	111 (36.8)	190 (63.2)	57 (53.4)	50 (46.6)	0.021*
Braces	181 (60.2)	120 (39.8)	101(94.2)	6 (5.8)	0.000*
Removable appliance	214 (71.0)	87 (29.0)	61 (57.1)	46 (42.9)	0.032*

*Significant

Table 5. Participants responses to effects of abnormally arranged teeth.

	Public	Private	Total	p-value (Fisher's exact)
	no (%)	no (%)	no (%)	
Speech				
Incorrect	76 (25.1)	10 (9.2)	86 (21.1)	
Correct	225 (74.9)	97 (90.8)	322 (78.9)	0.002*
Appearance				
Incorrect	121 (40.3)	12 (11.3)	133 (32.6)	
Correct	180 (59.7)	95 (88.8)	275 (67.4)	0.00*
Chewing				
Incorrect	124 (41.2)	46 (43.1)	170 (41.7)	
Correct	177 (58.8)	61 (56.9)	238 (58.3)	0.452
Quality of Life				
Incorrect	181 (60.1)	82 (77.0)	263 (64.5)	
Correct	120 (39.9)	25 (23.0)	145 (35.5)	0.0138

Only a small percentage of respondents could properly identify the type of treatment carried out by orthodontists. The majority of the respondents with correct responses attend the private school. Significantly more of the private school students correctly identified that orthodontists are involved in rearranging the teeth (p=0.006) and are not involved in cleaning the teeth (p=0.008) (Table 3). Similarly a large proportion could not identify any appliance used in orthodontics. However, overall more of the children in the private school correctly identified some the appliances used by the orthodontist (Table 4).

While most of the respondents agreed that malocclusion affects speech and appearance, a lower proportion agreed that malocclusion affects chewing. An even lower

proportion agreed that malocclusion could affect quality of life. There was a significant difference in the knowledge of the students from the public and private schools concerning the impact of malocclusion on speech (p=0.002) and appearance (p=0.000)(Table 5).

Discussion

Orthodontics is an important aspect of oral health care and has been identified as an important component of achieving good health. The decision to seek orthodontic care is usually related to the awareness of the need for and importance of orthodontics. Since children especially adolescents constitute the larger proportion of patients seen in many orthodontic clinics, this survey was carried out to determine their knowledge concerning orthodontics, as a first step in developing oral health education interventions concerning orthodontic care for this population.

The results obtained from this survey indicate limited knowledge of orthodontics among the study respondents. Many of the questions were answered incorrectly by majority of the study participants. Many of the respondents could not correctly identify the procedures carried out by an orthodontist. This is not surprising since a good number of the subjects, especially from the public school had never been to an orthodontist or even a dentist and only few of the respondents had heard the term orthodontics before this study.

The differences in the responses received from the two groups of adolescents when asked about treatment modalities carried out by orthodontists and appliances used by orthodontists was quite significant demonstrating that adolescents from the private school had greater knowledge of orthodontics than the children from the public school. This may be related to the fact that, all the adolescents from the private school had a friend or a relation who had previous orthodontic treatment, unlike the respondents from the public school, of which only very few (27.6%) had any relative or friend with previous orthodontic experience. A probable reason for this trend is the fact that orthodontic treatment is relatively expensive in Nigeria and as such not readily affordable by those in the lower socioeconomic group(16).

Concerning the effect of malocclusion, the majority of participants in this study agreed that appearance would be affected by abnormally arranged teeth and this is in line with other studies that showed that a great motivation for seeking orthodontic treatment is to improve appearance(1,17). Only very few of the respondents believed that malocclusion affects quality of life. This is probably because many of the students are not aware of the concept of quality of life and most likely did not understand the question. However studies suggest that children with malocclusion report a significantly worse impact on quality of life, as compared with a non-malocclusion group(18,19).

When asked about the effect of malocclusion on speech, majority agreed that speech would be affected by malocclusion and this is in agreement with findings from previous studies.(10,20)There was no significant difference in the responses obtained from both groups of adolescents when asked if chewing is affected by malocclusion, even though their responses were largely incorrect in quite a



large number of cases, as most of the respondents felt malocclusion had no effect on chewing and this differs from earlier studies which show that malocclusion affects chewing^(10,21). This may be due to the fact that a lot of the respondents can still eat even with poor arrangement of their teeth and so do not appreciate the effect of malocclusion on chewing.

The fact that their knowledge of orthodontics is very limited cannot be overemphasised especially among the respondents from the public school. While we acknowledge that the absence of oral health education in the school curriculum is a plausible reason for the deficient knowledge, it is also very important to consider other issues such as the number of orthodontists in Nigeria, compared to the size of our population. If there are more orthodontists, the services would be more readily available and this would increase awareness. Also the fact that orthodontic treatment is relatively expensive, may also account for the reason why the students in the private school, who are from a higher socioeconomic background would have better knowledge of orthodontics than those from the public school. The positive correlation between socioeconomic factors and orthodontic perception and uptake has been noted in other studies.⁽¹⁶⁾ These gaps in the orthodontic knowledge of the adolescents surveyed suggest that there is a need to provide oral health education especially in the area of orthodontics.

Conclusion

This study provides an overview of the knowledge of orthodontics among a sample of Nigerian adolescents and shows that the overall orthodontic knowledge is deficient. However knowledge was better among the children from the private school compared to those from the public school. The results obtained from this study, clearly show that there is need to provide oral health education especially to improve the orthodontic knowledge of these adolescents especially about malocclusion and its consequences to this population. It is expected that this would improve their knowledge and consequently increase the demand for and the uptake of the available orthodontic services.

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