

Awareness of Orthodontic Treatment in The Management of Malocclusion Amongst Selected Higher Institution Students in Imo State, Nigeria.

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Abstract- Background: Dental exposure has been known to be a stimulating factor for orthodontic awareness and treatment. In spite of the paucity, students in higher institutions of learning would have had some level of exposure, and this is what we intend to assess.

Materials and methods: A cross-sectional questionnaire-based study was conducted among selected higher institutions students in Owerri, Imo state, Nigeria. It is a 12-question questionnaire that was structured into three sections using general dental awareness as a prelude to questions on orthodontic awareness. It was then distributed among the respondents and the results was collected and statistically analyzed using Microsoft excel.

Results: The females know about orthodontic braces than the males, unlike dental visits where they both tend to have the same. Generally, the awareness of malocclusion and the awareness of the treatment of malocclusion was generally poor, asides two questions which larger percentage (above 70%) of the respondents claim to know. The result was statistically significant with $p < 0.00001$.

Conclusion: We concluded that the students are not adequately aware of malocclusion and its treatment. Hence, the significance of this study would help healthcare analyst and oral healthcare professionals in educating the populace, including higher institution students.

Indexed Terms- Awareness, Malocclusion, Orthodontic treatment

I. INTRODUCTION AND BACKGROUND

With the current trend in the beauty industry globally, Nigerians have followed the path of aesthesis, and the practice of orthodontics has helped to enhance smile

and promote confidence, especially among adults. This practice involves the management of facial growth, development of dentition and the prevention and correction of improperly arranged teeth also known as malocclusion. The main indications for the treatment are to improve oral function, aesthetics and general dental health¹. As reported in an earlier study in Nigeria, it was noticed that over 75% prevalence rate of malocclusion among children was recorded in the north, Ibadan and Benin; of which the north have the highest presentation². This practice therefore, spans from birth into adulthood, with current modalities aiming to establish optimal and stable occlusal relationship with dentofacial harmony.

Various studies have been conducted worldwide to assess the knowledge and attitude of patients towards malocclusion and the need for orthodontic treatment from childhood to adulthood. In a study conducted in the Kingdom of Saudi Arabia using 1,459 youth aged 9 to 17 years. They found that the majority of them (92%) believed correct occlusion is quite important against the rest who did not agree over the same. They noticed that they were well oriented and would crave to have a beautiful smile as they grow through age³. Comparatively, it is more frequently concerned with physiological adaptation and often symptom related in adults, whereas the dealing is with the signs in children. In the past three decades, a major reorientation of orthodontic thinking has occurred regarding adult patients⁴.

It is worthy of note that adults especially higher institution students are gradually tilting towards having great smiles but people who are supposed to teach them are ignorant of it. Future medical personnel are in the dark, even to the extent of having little idea about occlusal anomalies. This was revealed in a

preliminary survey to assess the Knowledge of Orthodontics as a Dental Specialty among Lagos State University College of Medicine Students. A total of 85 medical students that partook in the study showed that they had limited knowledge of orthodontics as a specialty and they also knew very little about the impact of malocclusion on the well-being of an individual. They would, therefore, benefit from basic education in orthodontics to stimulate their interest in the specialty and improve their ability to refer patients appropriately for treatment ². A similar study was conducted to investigate the Awareness of Orthodontics as a Specialty of Dentistry Amongst 130 Students of the University of Ghana Medical School. They concluded that the students did not have adequate knowledge of orthodontics and dentistry as a whole and would therefore benefit from increased introductory lectures that specifically address dental specialties including orthodontics ⁵.

Adult orthodontics is becoming a larger proportion of many practices, which involves striking a balance between achieving optimal, proximal and occlusal contact of the teeth, acceptable dentofacial esthetics, normal function, and reasonable stability. It is quite obvious globally that orthodontic treatment is gradually being accepted by adults ⁴. In an earlier cross sectional study, they concluded that there is an increase in the knowledge of orthodontics among adults. This reflects in their increased demand for treatment. However, cost was shown to be a major limitation ⁶.

Since people are beginning to gradually become aware of orthodontics in dental practice as a profession, factors such as lack of in-depth knowledge of orthodontic treatment, availability and accessibility of orthodontists, high cost of treatment will seem to be a mitigating factor towards achieving a standard and optimal early treatment. Individually, the knowledge of orthodontic problems varies and the identification for the need for orthodontic treatments among students in higher institutions at reduced cost will not only help increase awareness, but also help create attitudinal changes in achieving better smiles and improved confidence. This would make treatment readily available to those who know about the feasibility of dental malocclusion correction, especially in institutions of higher learning.

II. OBJECTIVES

To access the awareness of malocclusion and orthodontic treatment in selected higher institution students.

III. MATERIALS AND METHODS

• Study Location

Imo State is a located in the south-eastern part of Nigeria. It is estimated to have a 4,927,563-population size that is bordered by Abia State on the East, River Niger and Delta State to the West, Anambra State on the North and Rivers State to the South. The state lies within latitudes 4°45'N and 7°15'N, and longitude 6°50'E and 7°25'E with an area of around 5,100 sq km.

• Sample Selection

This is a cross sectional study which is observational and non-experimental. A descriptive questionnaire adopted from a previous study⁷ was remodified and distributed in the selected tertiary Institutions in Imo State, Nigeria. A 3-point Likert scale was embraced to evaluate the orthodontic awareness of the respondents (Yes, No, and Indifferent/No response) after a pilot study was carried out within the vicinity.

A total of 500 questionnaires were distributed to all consenting students in three higher institutions: Imo State University (IMSU), Federal University of Technology Owerri (FUTO) and Alvan Ikoku College of Education. As at the 16th of May, 2020, there are over 24,000 students in the Federal University of Technology, Owerri ⁸, over 13,000 students in Alvan Ikoku College of Education ⁹, and over 15,000 students in Imo State University ¹⁰. The total number of students amounted to over 52,000.

Using the Taro Yamane's formula, where $n = \frac{N}{1+N(e)^2}$ represents a statistical equation for a known population. n is for sample size, N is for population size, and e is the margin of error with standard value of 0.05. Computing the values appropriately in the given formula, the sample size of 397 was deduced. The deduction showed that over 183 students were selected from Federal University of Technology Owerri, 99 students from Alvan Ikoku College of Education, and 115 students from Imo State University for this study.

The values of each question was computed and factored into tables. Chi-square statistic was evaluated and its significance was noted.

- Inclusion criteria
Students with or without dental or orthodontic history
- Exclusion criteria
Higher institution students above the age of 35years.
The socioeconomic status of the respondents was not assessed.

IV. RESULTS

A total of 500 questionnaires were distributed to all consenting students in these institutions. This was made to cover for exigency and unresponsiveness we might encounter, after which 455 questionnaires were answered and returned.

There were 289 males and 166 females in a singular age group of 16-35years which represents a population of 63.5% of male and 36.5% of female respectively. Those who have visited a dentist amounts to 28.2%, which is less than half of those who haven't. As a preview, 44.6% of the total respondents know about orthodontic braces, in which, the male population made up a larger chunk of them. {Table 1}

38.9% of the total respondents claimed to have seen improperly arranged teeth either in themselves or others. It is surprising to see that about one-third (37.8%) of them know that oral habits could lead to malocclusion, and 35.6% of the total respondents know the side effects of malocclusion. {Table 2}

The question, “specialty in dentistry called orthodontics” was poorly answered. 20.2% of the respondents claimed they know about this specialty. Comparatively, those that know about this specialty were almost half of those that didn't respond at all. Almost half (48.4%) of the respondents know that an orthodontist can properly arrange teeth, and 71.2% of the respondents know that early proper orthodontic treatment would improve smile value and facial appearance. Majority of the respondents (71.9%) believed that possible extraction could be done during orthodontic management. As for the cost of orthodontic treatment, 11.2% of the respondents know

this. The percentage of the respondents that know about the timing of orthodontic treatment was 18.2%, and the respondents that know that teeth can still be arranged between 35 to 40years was 43.1%. {Table 3} The chi-square value of the (A) assessment of general dental awareness was evaluated based on gender of the respondents and a significant difference was found with $p < 0.00001$. Also, the chi-square values of the (B) assessment of the awareness of malocclusion, and the (C) assessment of the awareness of the treatment of malocclusion was evaluated, a significant difference was also found with $p < 0.00001$.

Table 1

A. Assessment of general dental awareness		Yes	No	Total
1. Have you ever visited a dentist?	Male	79 (17.4%)	210 (46.1%)	289
	Female	49 (10.8%)	117 (25.7%)	166
2. Do you know orthodontic braces?	Male	121 (26.6%)	168 (36.9%)	289
	Female	82 (18.0%)	84 (18.5%)	166
Total		331	579	910

Chi-square statistic=29.5089(based on gender). Degree of freedom=3. p-value<0.00001

Table 2

B. Assessment of the awareness of Malocclusion	Yes	No	Indifferent/ No Response	Total
3. Have you noticed or seen improperly arranged teeth in	177 (38.9%)	235 (51.6%)	43 (9.5%)	455

yourself or anyone?				
4. Do you know that different oral habits could lead to improperly arranged teeth?	172 (27.8%)	278 (61.1%)	5 (1.1%)	455
5. Do you know the side effects of improperly arranged teeth?	162 (35.6%)	290 (63.7%)	3 (0.7%)	455
Total	511	803	51	1365

Chi-square statistic=66.6987. Degree of freedom=4.
p < 0.00001

Table 3

C. Assessment of the awareness of the treatment of malocclusion	Yes	No	Indifferent/No Response	Total
6. Do you know there's a specialty in dentistry called orthodontics?	92 (20.2%)	182 (40.0%)	181 (39.8%)	312
7. Do you know that an Orthodontist can properly arrange teeth?	220(48.4%)	230(50.5%)	5(1.1%)	455
8. Do you know that early orthodontic treatment is needed for a	324(71.2%)	43(9.5%)	88(19.35%)	445

better look/smile and facial appearance?				
9. Do you know that in some cases, some teeth might have to be removed in the course of treatment?	327(71.9%)	123(27.0%)	5(1.1%)	454
10. Do you know the cost of orthodontic treatment?	51(11.2%)	400(87.9%)	4(0.9%)	451
11. Do you know how long it takes to complete orthodontic treatment?	83(18.2%)	271(59.6%)	101(22.2%)	443
12. Do you know that improperly arranged teeth can still be arranged between the ages of 35-40?	196(43.1%)	254(55.8%)	5(1.1%)	454
Total	1293	1503	218	3014

Chi-square statistic=995.025. Degree of freedom=12.
p-value < 0.00001

V. DISCUSSION

In this study, we were able to note some differences in tertiary institution students who we believed should have some level of exposure even under the auspices of poverty.

As a preview, we assessed the general dental awareness by asking questions on dental visits and orthodontic braces with respect to gender. We noticed that the response for both gender was almost the same for dental visits but dissimilar for orthodontic braces. It showed that females are more aware of orthodontic braces. Our deduction was that aesthetics is of major concern because people tend to see braces as an ornament of beauty and wealth. This is contrary to a study in which females were less aware. They attributed it to lack of exposure to the advances and developing aspects of the field⁷.

Using improperly arranged teeth as a synonym to malocclusion, we gathered that fewer respondents know about orthodontics. However, the section where smile and facial appearance, and the removal of teeth was mentioned, we noticed that more respondents know about it. This could be that the respondents are more familiar with dental lyrics such as smile, facial appearance and the removal of teeth. It could also be that the respondents owned up to any dental terminology that would improve dental health.

We could identify that most of the respondents have little or no knowledge of orthodontics and orthodontic treatment, which is analogous to other studies involving higher institution students^{2, 5}. On the contrary, people are becoming aware of orthodontic care irrespective of their background, and it has prompted their desire to seek treatment despite the cost^{3, 6, 7, 11}.

Each of the sections were evaluated using chi-square test. The general dental awareness was done with respect to gender while the other sections were assessed independently. They were all found to be significant at $p < 0.00001$ which is in tandem with similar studies done on the general population^{7, 11}. Another study where dental professionals were assessed, a significance difference was also found¹².

CONCLUSION

Although individual idiosyncrasies may have played a role in orthodontic awareness, we inferred that the students do not have adequate exposure on orthodontic care and treatment. Remarkably, the response was on both sides of the totem but more was felt on the side

of poor knowledge. It is now the responsibility of oral healthcare professionals, most especially orthodontists, and health care analysts to use the significance of this study, to educate the public about having a good smile with sheer confidence.

Source of support: None

Conflict of interest: None

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