

**Pattern of Malocclusion at the Orthodontic Unit, Lagos State University  
Teaching Hospital (LASUTH), Lagos, Nigeria.**

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## **ABSTRACT**

### **Objective**

The aim of this study was to determine the pattern of malocclusion among patients attending the orthodontic clinic, Dental department, of the Lagos State University Teaching Hospital.

### **Method**

A retrospective study of one hundred and sixty nine patients who attended the orthodontic clinic, LASUTH from January 2007 to December 2008 was conducted. Information regarding age, sex, and type of malocclusion and index of orthodontic treatment need (The dental health component) was obtained from the patients' record files.

### **Results**

The patients' ages ranged from 4 to 34 years with a mean age of  $14.08 \pm 5.80$ . There were 95 (55.9%) females and 74 (44.1%) males. The commonest type of malocclusion was Angle's class 1 seen in 136 (80%), while Class 2 and Class 3 accounted for 26 (15.4%) and 7 (4.1%) respectively.

Crowding was noted in 64 (38.1%) patients while 73 (42.3%) had spacing. Only 14 (8.2%) had associated oral habits such as thumb-sucking, lip sucking, tongue sucking and tongue thrusting. No crowding, spacing or associated oral habit was observed in 18 (11.4%) of the patients.

Assessment of need for treatment, using the dental health component of the index of orthodontic treatment (IOTN), showed 62 (36.7%) had mild need, 76 (45.0%) moderate need, 24 (14.2%) severe treatment need and 7 (4.1%) extreme need for treatment. The degree of need for treatment was not significantly related to patient's age or gender ( $p\text{-value} > 0.005$ ).

## **Conclusion**

The pattern of malocclusion seen among patients attending orthodontic clinic, LASUTH is comparable to the outcome of previous studies done in other centers in Nigeria. There also seems to be an increasing number of adult patients seeking orthodontic treatment. Majority of the patients require mild to moderate orthodontic intervention.

Keywords: malocclusion, *Angles classification*, *oral habits*, *index of orthodontic treatment need*

## **INTRODUCTION**

Malocclusion, depending on the degree of its severity, can be a social handicap as it causes the impairment of oral functions such as speech and mastication. And this impairment of oral functions have been noted in many cases, especially those considered as severe. Mild occlusal anomalies can be treated by general dental practitioners while moderate to severe forms are better managed by orthodontists who are specially trained for treating these conditions.

The orthodontists focus on the understanding and supervision of the growth and development of the dentition and its related anatomical structures from birth to dental maturity.<sup>1</sup> Orthodontic services include all preventive and corrective procedures of dental irregularities requiring the repositioning of teeth by functional and mechanical means to establish normal occlusion and pleasing facial contours.<sup>1</sup>

Reports from different surveys indicate an increase in the demand for orthodontic care in most populations.<sup>2</sup> In recent years, the aim of orthodontic services has shifted from mere improvement of function by correction of dental irregularities to enhancement of psychological wellbeing through improvement in appearance.<sup>3,4</sup> Today, in the era of evidence-based dentistry a greater understanding of the prevalence of malocclusion, treatment needs assessment, treatment priority

and evaluation as well as factors affecting the receipt of orthodontic treatment is required by the busy orthodontist, the general dentist and the policy makers to address challenging problems of effective cost-benefit balance along with quality assurance and equitable distribution of public health resources.<sup>5,6</sup>

About 16,304 new patients presented at the dental centre, LASUTH, for various dental problems during the period under review. This study was designed to determine the pattern of malocclusion among patients attending the orthodontic clinic, Lagos State University Teaching Hospital with a view to planning the provision of effective and efficient orthodontic services for residents of Lagos State.

## **MATERIALS AND METHODS**

This is a retrospective study carried out at the orthodontic unit, Lagos State University Teaching Hospital, Lagos Nigeria from January 2007 to December 2008. Data were obtained from patients' record files and information obtained were the patient's age, sex, type of malocclusion (using Angle's, Incisal and Skeletal pattern classifications). Other information obtained include the presence of crowding, spacing and the need for orthodontic treatment assessed using the index of orthodontic treatment need (IOTN). A total of 169 patient records were included in the present study and they comprised all patients referred to the orthodontic unit in the specified period. Only the dental health component of the IOTN was used as the aesthetic component was not available from the record files. Data were entered into Microsoft excel software and analysed using Epi-info version 3.5. Frequency distribution tables of all variables were generated and measures of central tendency were generated for the quantitative variables. The chi-square

statistical test was used to test for significance of associations and differences where applicable. p-value was significant when less than 0.05

## RESULTS

A total of 169 patients visited the orthodontic unit, accounting for 0.96% of the total patients who attended the dental department within the period under review. The age range was 4 to 34 years, with a mean age of  $14.08 \pm 5.80$ . Most of the patients, 132 (78.6%), were in the age category 4 to 17 years while 36 (21.4%) were in the category between 18 and 50 years. There were more females 95 (55.9%) than males 74 (44.1%). Angle's class 1 malocclusion was the commonest pattern of presentation accounting for about 136 (80%), followed by class 2 with 26 (15.4%) and lastly class 3 with 7 (4.1%). Most of the patients seen i.e. 131 (77.5%) had Class 1 skeletal pattern while 28 (16.6%) had class 2 pattern and 10 (5.9%) had class 3 pattern. Only 14 (8%) reported having oral habits such as lip sucking, thumb sucking, tongue sucking and tongue thrusting. Most of the patients 158 (94%) presented with competent lips while the remaining 11 (6%) had incompetent lips.

A total of 64 (38.1%) of the patients had crowding with 39 (60.9%) occurring in females and 25 (39.1%) in males. Similarly, spacing was higher in females 40 (56.3%) compared to males 31 (43.7%) with a total of 71 (42.5%). Crowding was found to be higher in the lower labial segment while spacing was higher in the upper labial segment. These relationships were not statistically significant ( $p > 0.05$ ).

On assessment of need for treatment using the dental health component of the IOTN, 62 (36.7%) of the study population can be categorized as having mild need for treatment. In 76 (45.0%),

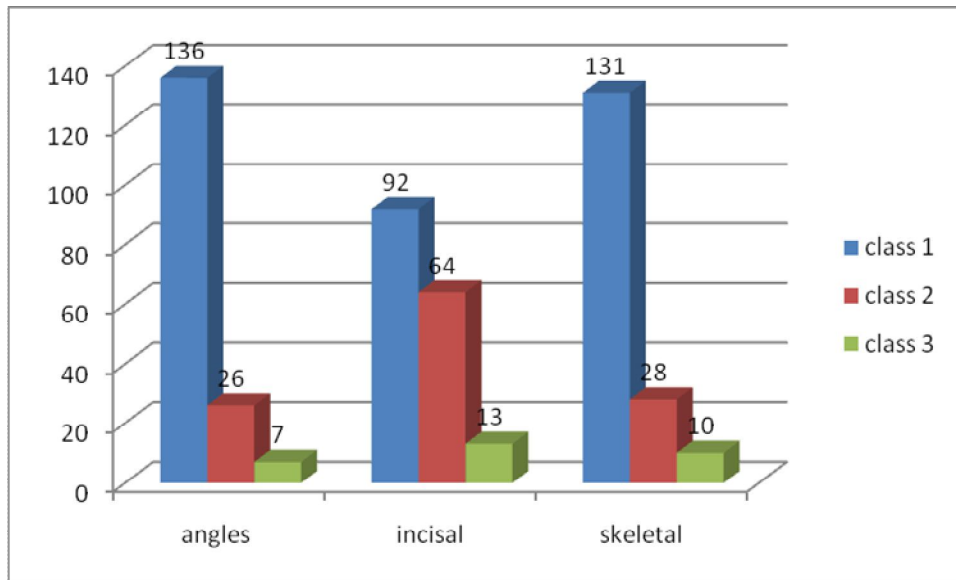
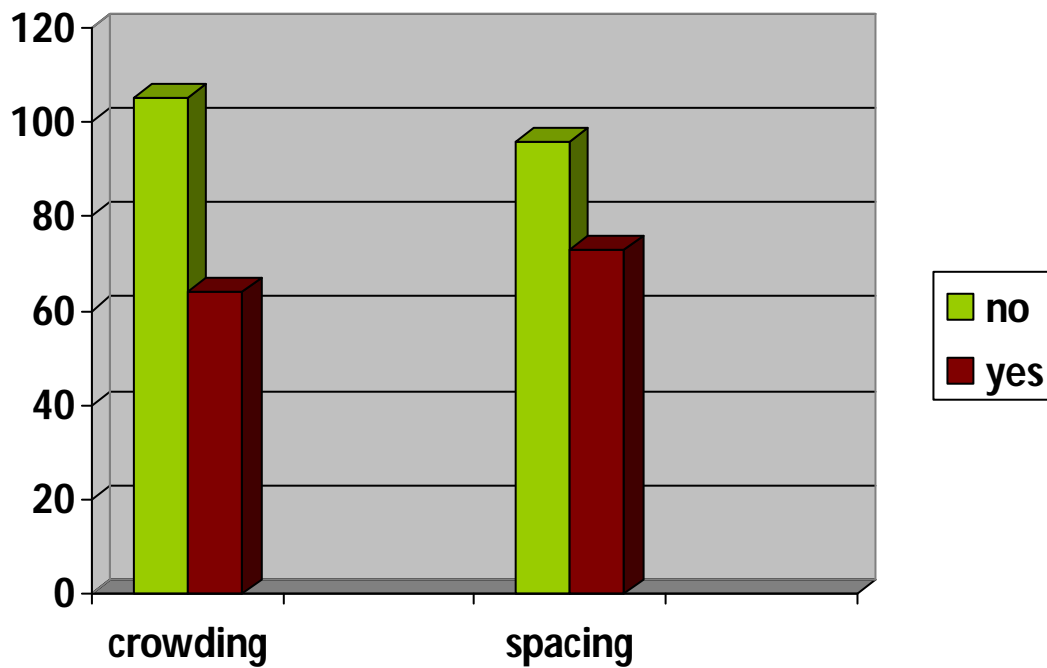
treatment need was moderate , 24 (14.2%) had severe treatment need while 7 ( 4.1%) presented with extreme need for treatment. The degree of need for treatment was observed not to be significantly related to age or gender as p-value was greater than 0.05.

**Table 1****Age distribution of patients in the study population**

<b>Age category(years)</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
<b>4-17</b>	133	78.6%	78.6%
<b>18-50</b>	36	21.4%	100.0%
<b>Total</b>	169	100.0%	100.0%

**TABLE 2: TREATMENT NEED OF PATIENTS ACCORDING TO SEX AND DENTAL HEALTH COMPONENT (DHC)**

<b>DHC</b>	<b>Treatment</b>	<b>M</b>	<b>F</b>	<b>Total</b>
<b>Grade 1</b>	<b>No need</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Grade 2</b>	<b>Mild need</b>	<b>33(19.53%)</b>	<b>29(17.16%)</b>	<b>62(36.69%)</b>
<b>Grade 3</b>	<b>Moderate need</b>	<b>33(19.53%)</b>	<b>43(25.44%)</b>	<b>76(44.97%)</b>
<b>Grade 4</b>	<b>Severe need</b>	<b>6(3.55%)</b>	<b>18(10.65%)</b>	<b>24(14.20%)</b>
<b>Grade 5</b>	<b>Extreme need</b>	<b>2(1.18%)</b>	<b>5(2.96%)</b>	<b>7(4.14%)</b>
<b>Total</b>		<b>74(43.79%)</b>	<b>95(56.21%)</b>	<b>169</b>

**FIGURE 1 : PATTERN OF MALOCCLUSION****Figure 2: STUDY POPULATION WITH CROWDING AND SPACING**



## DISCUSSION

The results of this study revealed that less than one percent of LASUTH dental clinic attendees attended the orthodontic unit. While this may be an indication that orthodontic care is not a major need among patients attending LASUTH, it could also be a reflection of the low awareness of the specialty. This is because the number of patients who attended the unit may have been lower than the number referred for treatment. The Dental Department functions in units and patients are referred from the diagnosis unit to other units for specialist attention. Many patients view orthodontic care as unnecessary and as such may have defaulted.

Angle's class I malocclusion was the most common presentation at the LASUTH orthodontic clinic. This has been reported in studies conducted both locally and internationally.<sup>1,2</sup> However, Angle's class II malocclusion was found to be predominant among whites of Northern European descent while class III malocclusion is most prevalent in oriental populations.<sup>2</sup> Majority of the patients seeking orthodontic treatment were within the age bracket 11-17 years. This findings is in consonance with studies done in the United States under the National Health and Nutrition Estimates Survey III (NHANESIII)<sup>1</sup> and in Saudi Arabia.<sup>2</sup> There was however a relatively high percentage of adults seeking orthodontic treatment 22 (12.9%). A similar finding was also reported in the US (NHANES III)<sup>1</sup>. This may be an indication of an increased awareness of adult orthodontic services among LASUTH dental clinic attendees. As observed in other studies, there were more females (55.9%) than males (44.1%). However, in this study statistical tests showed no association between pattern of malocclusion and the patients age or gender as p-value was found to be greater than 0.05. This finding was not surprising because these two factors are not known predisposing factors to malocclusion. Spacing was more prevalent than crowding and

both conditions occurred more in the upper and lower anterior segments. The incidence of crowding was higher in mandibular than in maxillary incisors. This finding is similar to that reported by Isiekwe MC<sup>7</sup>, Sanu OO,<sup>10</sup> Onyeaso CO<sup>10</sup>. The pattern of various degrees of malocclusion seen in this study, using the index of orthodontic treatment need, closely mirrors that reported earlier in the Nigerian population<sup>9</sup> and among Israeli-Arab urban children<sup>8</sup>. A similar finding was reported in the US (NHANES 111) with studies carried out among whites, blacks and Hispanics<sup>1</sup>. It is important to note that the present study has some limitations. Firstly, the short study period is attributed to the fact that old records could not be located due to the recent renovation of the centre. In addition, to this is the fact that the study is retrospective in nature. Nonetheless, these results provide an overview of orthodontic care in the study centre.

## **CONCLUSION**

The survey revealed that Angle's class I malocclusion was the most prevalent pattern of malocclusion, with more of the adolescent age group seeking orthodontic treatment. The adult population seeking treatment also appears to be on the increase. The vast majority of patients who seek orthodontic care belong to "mild treatment" and "moderate treatment" categories. Although those in definite need of treatment (grade 4-5) appear to be in the minority, probably due to financial constraints and lack of awareness. Efforts should be made to improve their quality of life through public oral health education as well as treatment subsidy by the government and non-governmental organizations

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