Short Communication

Orthodontic treatment need in Nigerian children

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Objective   The purpose of this study was to assess the need for orthodontic treatment among Nigerian children aged 12-14 years old in Benin City, south-southern region of Nigeria. ***Research Design***   The sample consisted of 261 randomly selected school children, 122 boys (47%) and 139 girls (53%) with mean age of 12.9 ± 0.1. The survey was conducted by clinical examination and both components of the Index of Orthodontic Treatment Need (IOTN) were used to determine the need for orthodontic treatment. ***Results***   The results revealed that 50 (19.2%) of the children had a definite need for orthodontic treatment according to dental health component while aesthetic component of IOTN indicated definite need in 12 (4.6%). Increased overjet, severe contact displacements and impeded eruption of teeth were the common occlusal features in the definite treatment need group. ***Conclusion***   This study provided data on the need for orthodontic treatment among Nigerian school children which is useful to plan and prioritise orthodontic care and services.

Key words: Index of Orthodontic treatment need, malocclusion, Nigerian children, orthodontic treatment need.

Introduction

The successful planning and provision of orthodontic care and services in a region requires information on the need for orthodontic treatment. A review of literature reveals a large variation in the reported need for orthodontic treatment in different populations. Some of these variations have been attributed to differences between the specific ethnic groups evaluated and also subjectivity of the method of evaluation with an inherent problem of validity and reliability (Foster, 1980; Thilander *et al*, 2001). The Index of Orthodontic Treatment Need (IOTN) developed by Brook and Shaw (1989) and later modified (Richmond *et al*, 1995) has been widely accepted, validated and found reliable as a method of objectively assessing orthodontic treatment need.

In Nigeria, there is insufficient baseline data on the prevalence of orthodontic treatment need. The only published orthodontic treatment need study was by Otuyemi *et al* (1997) who reported that 12.6% of rural Nigerian adolescents need orthodontic treatment.

This paper outlines the results of a survey of orthodontic treatment need among Nigerian children at Benin City and compares the results with other similar studies.

Materials and methods

The study population consisted of 261 school children in Benin City, south-southern region of Nigeria. The sample was randomly selected from four public and private schools in order to have representation from wide social backgrounds in order to provide an overview of urban Nigerian children. The subjects aged 12 – 14 years old (mean age of 12.9 year ± 0.1) consisted of 122 boys

(47%) and 139 girls (53%). None of the children had a previous history of orthodontic treatment.

Authorisation was obtained from the schools' administrators and the parents who agreed to have their children examined gave informed consent.

The subjects were examined for malocclusion and occlusal traits using the Dental Health (DHC) and Aesthetic (AC) Components of the IOTN within their school compound. Illumination was provided by natural light. The author, who had been previously calibrated on the use of IOTN, performed all the examination.

The Aesthetic Component consists of a scale of 10 colour photographs showing different levels of dental attractiveness with grade 1 representing the most attractive and grade 10 the least attractive dentitions. The Dental Health Component records the various occlusal traits considered to increase the morbidity of the dentition and has five grades. These grades have been grouped to represent the need for orthodontic treatment (Richmond *et al*, 1995) with AC grades 1 – 4 and DHC grades 1 – 2 representing no or little need for treatment, AC grades 5 – 7 and DHC grade 3 representing moderate or borderline need while AC grades 8 – 10 and DHC grades 4 – 5 represent a definite need for treatment.

The intra-examiner reproducibility was assessed by re-examination of twenty five randomly selected children four weeks after their initial examination. Kappa values for the Dental Health Component and Aesthetic Component were 0.78 and 0.81 respectively indicating substantial agreement (Landis and Koch, 1977).

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Results

The survey showed that 50 (19.2%) of the children had definite need (grades 4 and 5), 46 (17.6%) had borderline or moderate need (grade 3) while 165 (63.2%) of the children had no or little need (grades 1 and 2) for orthodontic treatment according to Dental Health component of IOTN (Table 1).

Table 2 shows the distribution of AC grades and 12 (4.6%) of the children had great need (grades 8 - 10) for orthodontic treatment according to the Aesthetic component of IOTN while 20 (7.7%) had moderate or borderline need (grades 5 - 7) and 229 (87.7%) of the children had no or little need (grades 1 - 4).

Discussion

This survey revealed that 19.2% of the subjects had definite need for orthodontic treatment on the basis of dental health component of IOTN which suggested only about one-fifth of Nigerian children in the south-southern region greatly required orthodontic treatment. The need for orthodontic treatment obtained was lower than the average of 33% reported for British children (Brook and Shaw, 1989; Holmes, 1992; Shaw *et al*, 1995). Similarly higher need of 38.8% and 28% were reported by Ucuncu and Ertugay (2001) and Hamdan (2001) for Turkish and Jordanian school populations respectively. However, the need for orthodontic treatment in Nigerian children was close to 22% reported in African Tanzanian children by Mugonzibwa *et al* (2004). The present study further revealed that 17.6% of the Nigerian subjects required moderate or borderline need while 63.2% had no or little need for orthodontic treatment on dental health grounds. Otuyemi *et al* (1997) had also reported lower objective need of orthodontic treatment of 12.6% in rural Nigerian adolescents according to IOTN. Although the sample size and differences in the age of subjects evaluated in different populations could contribute to the difference in reported need, the low prevalence of great need for orthodontic treatment in Nigerian children could possibly be attributed to lower frequency of severe occlusal anomalies in this population when compared to Caucasians. The main occlusal traits responsible for great need of orthodontic treatment in this study were overjet greater than 6mm but less than or equal to 9mm, severe contact displacements, and impeded eruption of teeth.

The assessment with aesthetic component of IOTN revealed definite need for orthodontic treatment in 4.6% of the Nigerian children. The lower need on aesthetic grounds was close to 4.8% reported for Turkish children (Ucuncu and Ertugay, 2001) and 5.4% for British children (Brook and Shaw, 1989) but higher need of 11% were reported for Tanzanian children (Mugonzibwa *et al*,

Table 1. Distribution of Dental Health Component (DHC grades of IOTN in Nigerian children

	DHC grade	N	%
No / little need	Grade 1	135	51.7
	Grade 2	30	11.5
Moderate / borderline need	Grade 3	46	17.6
Great / definite need	Grade 4	30	11.5
	Grade 5	20	7.7
Total		261	100.0

Table 2. Distribution of Aesthetic Component (AC) Grades of IOTN in Nigerian children

	AC grade	N	%
No / little need	Grade 1	113	43.3
	Grade 2	65	24.9
	Grade 3	21	8.0
	Grade 4	30	11.5
Moderate / borderline need	Grade 5	13	5.0
	Grade 6	2	0.8
	Grade 7	5	1.9
Great / definite need	Grade 8	7	2.7
	Grade 9	4	1.5
	Grade 10	1	0.4
Total		261	100.0

2004). This study was also consistent with other studies where a higher proportion of subjects had definite treatment need based on dental health rather than on dental aesthetics reasons.

Conclusion

This study has provided the necessary baseline data on the orthodontic treatment need of Nigerian children aged 12 – 14 years old which will aid in planning and provision of orthodontic services in Nigeria. Further population studies on orthodontic treatment need in other regions of the country are recommended.

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