

To Determine the Need for Orthodontic Treatment in School Going Children in the Age Group of 12 to 16 Years, of Kodava Community in Coorg District in Karnataka State

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ABSTRACT

Background: For Orthodontic treatment to become an integral part of oral health care programs, basic information on treatment needs is required for a particular population or age group. In this context, epidemiological surveys are of utmost importance for planning, analysing and implementing orthodontic health programmes. Also, this provides information to the orthodontist regarding prevalence and severity of the various malocclusions exhibited by an ethnic group or population.

Materials and Method: The sample consisted of 360 school children. They were chosen in order to obtain reliable data concerning the orthodontic treatment need for schoolchildren population of 12 to 16 years of Kodava community through stratified random sampling with in clusters, given that the pupils are clustered in classrooms

Results: The results of this study provide information to the orthodontist regarding prevalence, severity and need of orthodontic treatment of the various malocclusions exhibited by schoolchildren population of 12 to 16 years of Kodava community an ethnic group.

Conclusion: Our study showed that out of 360 subjects, 38.9% of the subjects exhibited definitive need for orthodontic treatment. The same was true in gender distribution where 19.2% males' and 19.7% females showed the need for orthodontic treatment in the study population.

Keywords: Children, orthodontics, school.

INTRODUCTION

Malocclusion is the second commonest dental anomaly. It may be handicapping to the functional needs and interfering with the wellbeing of the person by adversely affecting dentofacial aesthetics, mandibular function or speech and psychosocial health of an individual. For Orthodontic treatment to become an integral part of oral health care programs, basic information on

treatment needs is required for a particular population or age group. In this context epidemiological surveys are of utmost importance for planning, analysing and implementing orthodontic health programmes. Also this provides information to the orthodontist regarding prevalence and severity of the various malocclusions exhibited by an ethnic group or population.

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Since its development by Brook and Shaw in (1989), the index of orthodontic treatment need (IOTN) has been widely used, in many different epidemiological studies, to analyse orthodontic treatment need in the general population.¹ Occlusal characteristics and prevalence of occlusal anomalies vary in different populations and ethnic groups.

IOTN consists of two separate components:
The Aesthetic Component (AC) and
The Dental Health Component (DHC).

Occlusal characteristics and prevalence of occlusal anomalies vary in different populations and ethnic groups, and differences have been found, especially with regard to the sagittal relationship of the dental arches and crowding of teeth. The same is true for the ethnic Kodava population in Coorg district of Karnataka, a state in INDIA. Till date there has been no epidemiological survey using IOTN has been done for the above mentioned ethnic group and hence there is very little or no information regarding the prevalence, severity and presence of any dental malocclusions.

AIMS AND OBJECTIVES

This study was conducted with the following aims and objectives: To determine the need for orthodontic treatment in school going children in the age group of 12 to 16 years, of Kodava community in Coorg district in Karnataka state.

MATERIALS AND METHODS

The sample consisted of 360 school children. They were chosen in order to obtain reliable data concerning the orthodontic treatment need for schoolchildren population of 12 to 16 years of Kodava community through stratified random sampling with in clusters, given that the pupils are clustered in classrooms.

Inclusion criteria:

1. Male and female students between the age group of 12 to 16 years.
2. Individuals who have not undergone orthodontic treatment previously.

Exclusion criteria:

1. Individuals who had undergone orthodontic treatment previously.
2. Individuals who are mentally retarded, epileptic or suffering from any systemic disease.

MATERIALS

The following instruments were used in the study:

1. Plane mouth mirrors
2. WHO Probes
3. Tweezers
4. Kidney trays
5. Sterilized cotton and gauze
6. Disposable Gloves
7. Disposable mouth masks
8. Hot Water Sterilizer
9. Hand wash
10. Disposable glasses

METHOD

The clinical examinations were performed in schools of Coorg district, with the child seated on a chair with a portable 60W white loose spectrum lamp as a source of illumination. No more than 25 children were examined during one session to avoid the effects of tiredness. No radiographs or plaster model were taken. The examination instruments employed were, a WHO-type periodontal probe and a no 5 plane mouth mirror. All the malocclusion features needed to determine the DHC(overjet, overbite, anterior and posterior cross bite, open bite, displacement of the teeth, impeded eruption, hypodontia, cleft lip, and/or palate, and class II and class III malocclusion.) , as well as personal details, name, gender and age, were included.

The Modified IOTN [Index of Orthodontic Treatment Need] used in this study was given in the year 2001, by Burden DJ, Pine CM, Burnside G, in article titled Modified IOTN: an orthodontic treatment need index for use in oral health surveys², is composed of two independent components. One component records the dental health need for orthodontic treatment. The other component records the aesthetic need for orthodontic treatment

Instead of a 5 grade scale with 30 sub-categories, the DHC in the Modified IOTN became a 2 grade scale (no definite need for orthodontic treatment; definite need for orthodontic treatment)

with no sub-categories. Combining borderline need and no need groups into one group (no definite need for orthodontic treatment) simplified the teaching and the use of the index. When using the Modified IOTN, only those malocclusions with a definite dental health need for treatment and those malocclusions with a definite aesthetic need for treatment (AC grades 8, 9, and 10) are recorded.

RESULTS

Our study showed that out of 360 subjects, 38.9% of the subjects exhibited definitive need for orthodontic treatment. . The same was true in gender distribution where 19.2% males' and 19.7% females showed the need for orthodontic treatment in the study population.

CONCLUSION

The Index of Orthodontic Treatment Need has proved to be a useful, reliable, reproducible Orthodontic Treatment Need Index due to its simplicity and objective nature of application. The IOTN assesses the need for Orthodontic treatment according to the highest potential risk to the integrity of the teeth or supporting structures from the malocclusion. The IOTN index in this study has been used as a helpful tool in allocating treatment services where resources are limited in a fair and transparent way. The use of IOTN index is hence recommended in order to prioritize the treatment need of malocclusion. The use of this index in epidemiological surveys and in clinical settings should be encouraged.

The selection of an index for measuring any condition is dependent upon two main factors. First, the objective of the investigation in which the index is to be used and hence the nature of the information required; and second, the ability of the examiner to consistently reproduce the diagnosis on which the index is based. In general, the simplest index compatible with the objectives of the study should be used, as this is, on the whole, more reproducible, especially where more subjective judgements are necessary. In this study, modified index for orthodontic treatment need [IOTN] was used.

This study concluded that of the 360 subjects our study showed that 38.9% of the

subjects exhibiting definitive need for orthodontic treatment. . The same was true in gender distribution where it was statistically non-significant also with 19.2% males' and 19.7% females showing the need for orthodontic treatment in the study population.



Fig 1: IOTN AC Scale

GRAPHS AND TABLE

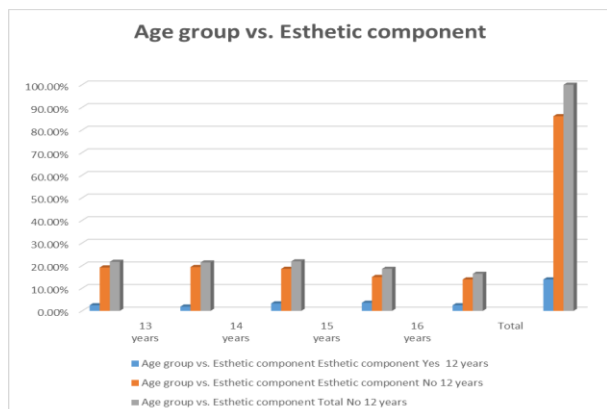
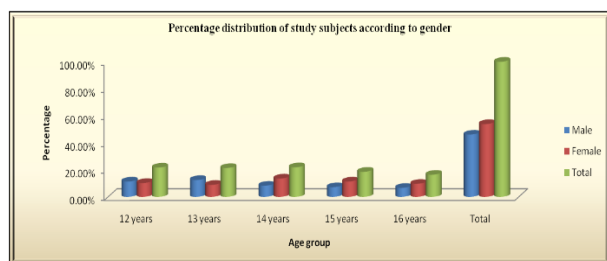
The sample consisted of 360 school children. They were chosen in order to obtain reliable data concerning the orthodontic treatment need for schoolchildren population of 12 to 16 years of Kodava community through stratified random sampling with in clusters, given that the pupils are clustered in classrooms.

Table I: Distribution of study participants according to age and gender

Age group	Gender		Total
	Male	Female	
12 years	41 11.4%	37 10.3%	78 21.7%

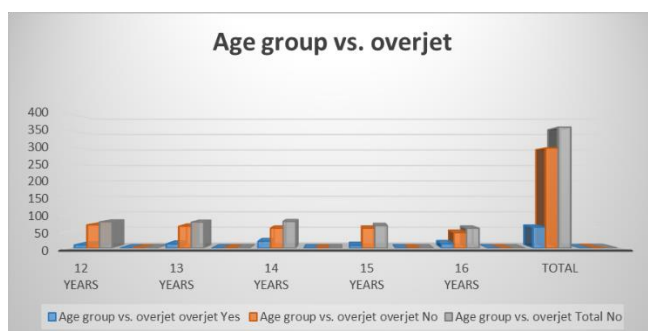
13 years	45 12.5%	32 8.9%	77 21.4%
14 years	30 8.3%	49 13.6%	79 21.9%
15 years	26 7.2%	41 11.4%	67 18.6%
16 years	24 6.7%	35 9.7%	59 16.4%
Total	166 46.1%	194 53.9%	360 100.0%

Graph 1: Percentage distribution of study subjects according to gender.



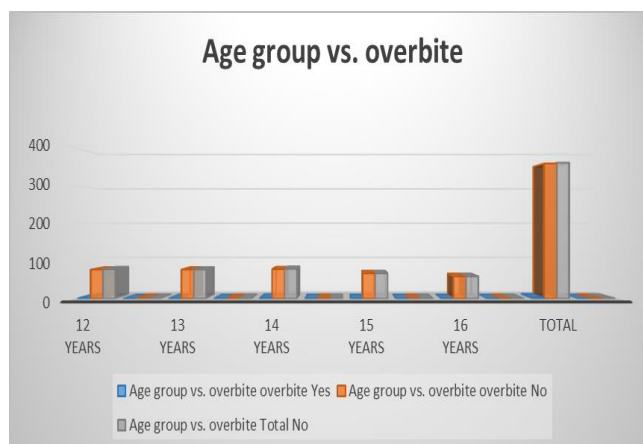
Graph 2: Interpretation **Non Significant**.

Graph 3: Age group vs. overjet



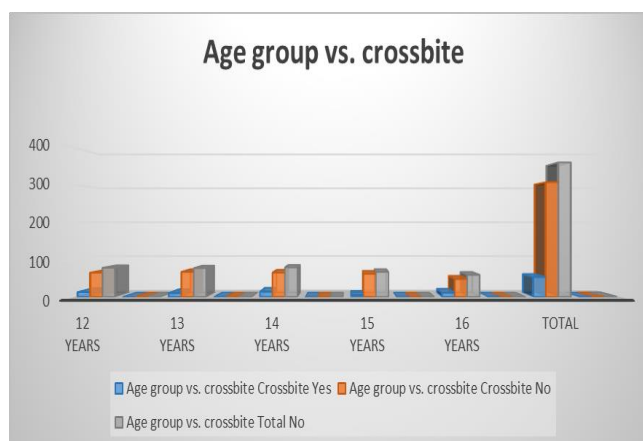
Interpretation **Non Significant**

Graph 4: Age group vs. overbite.



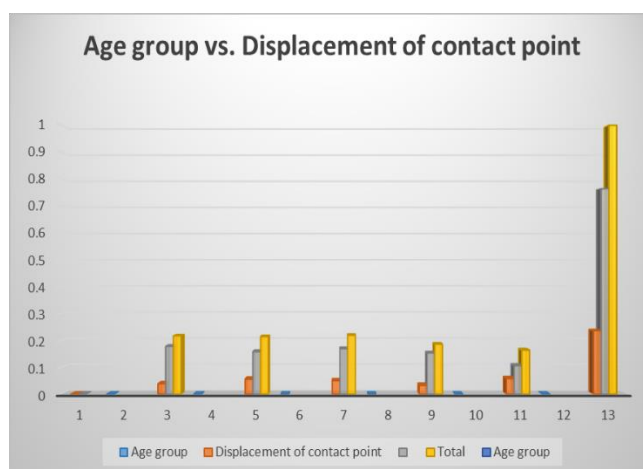
Interpretation **Non Significant**

Graph 5: Age group vs. crossbite



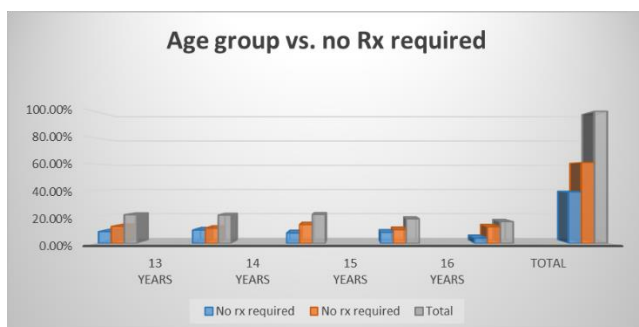
Interpretation **Non Significant**

Graph 8: Age group vs. Displacement of contact point.



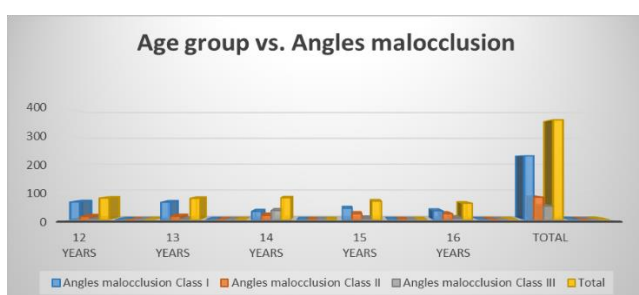
Interpretation **Non Significant**.

Graph 9: Age group vs. no Rx required.



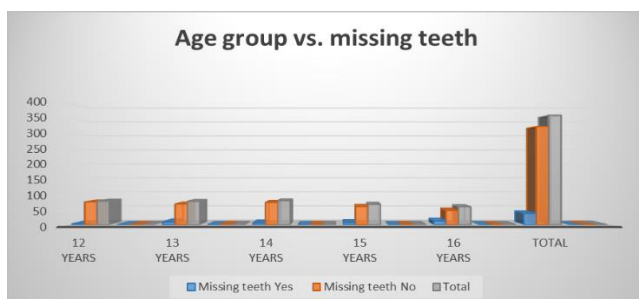
Interpretation **Non Significant**

Graph10: Age group vs. Angles malocclusion.



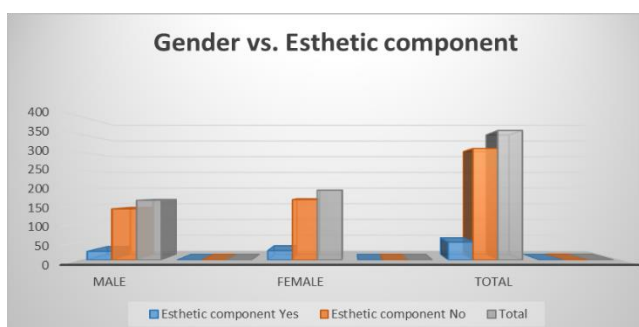
Interpretation **Highly Significant**

Graph 11: Age group vs. missing teeth



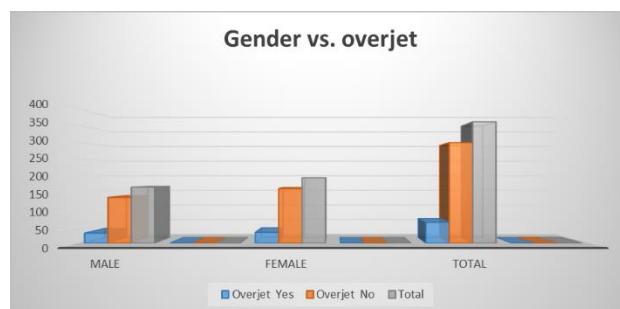
Interpretation **Significant**

Graph 12: Gender vs. Esthetic component.



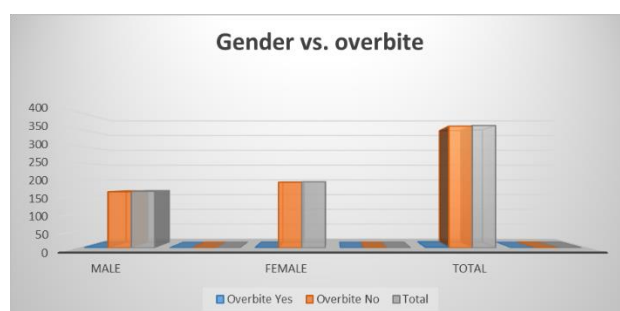
Interpretation **Non Significant**

Graph 13: Gender vs. overjet.



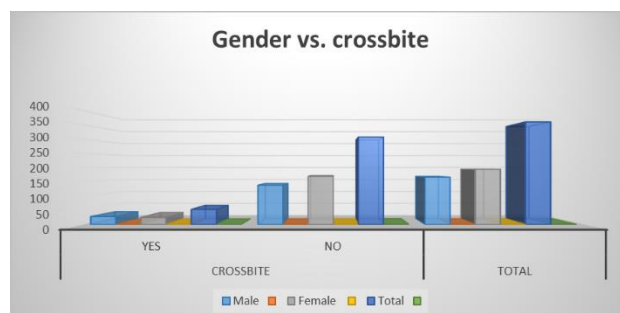
Interpretation **Non Significant**

Graph 14: Gender vs. overbite.



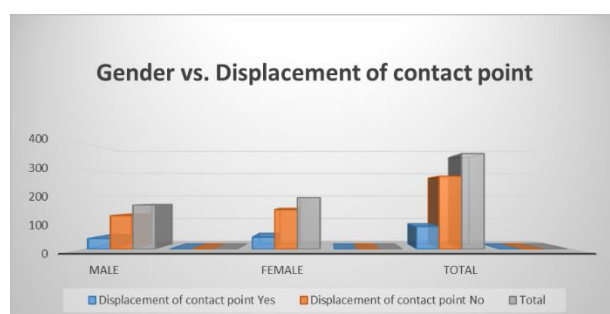
Interpretation **Non Significant**

Graph 15: Gender vs. crossbite



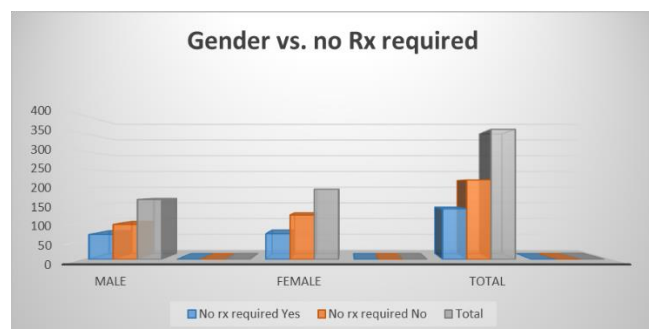
Interpretation **Non Significant**

Graph 16: Gender vs. Displacement of contact point.



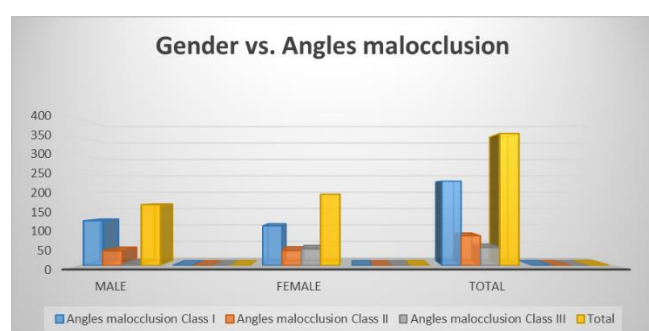
Interpretation **Non Significant**

Graph 17: Gender vs. no Rx required



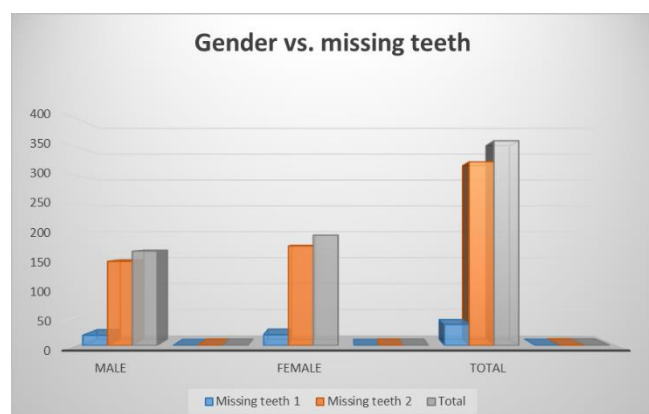
Interpretation **Non Significant**

Graph 18: Gender vs. Angles malocclusion



Interpretation **Highly Significant**

Graph 19: Gender vs. missing teeth.



Interpretation **Non Significant**

DISCUSSION

The need for orthodontic treatment in the study population was statistically nonsignificant. With 38.9% of the subjects exhibiting definitive need for orthodontic treatment. . The same was true in gender distribution with 19.2% males' and 19.7% females showing the need for orthodontic treatment

in the study population. Our results of orthodontic treatment need, as were assessed by the DHC of the IOTN comparable to which were similar to reported in Turkish (38.8%), Irish (30.4%), Kuwaiti (28%), and Malaysian schoolchildren (47.9%), but were below those which were reported in Singaporean adult male recruits (50.1%). Available African studies which used the IOTN reported much lower prevalence's among Nigerian children (13%) and Tanzanian children (22%). However, the treatment needed in the latter study was assessed by making study cast measurements. In such cases, some malocclusion related complications such as incompetent lips, functional mandibular shifts, and masticatory and speech difficulties were assumed to be present, even though they may have been clinically absent.

The percentage of the population needing orthodontic treatment according to the IOTN DHC in the present study at 12 years of age was 2.1 per cent, which is not similar to results obtained in a study in France (Souames et al. , 2006), of 21 per cent in a sample of 9- to 12-year-olds, and in Iran (Hedayati et al. , 2007), of 18.4 per cent 11- and 14-year-olds. Other studies have reported higher percentages: 59.5 per cent in 11- and 15-year-old Italian children (N obile et al., 2007) , 37 per cent in 12- to 13-yearold Swedish children (J osefsson et al., 2007) , 36 per cent in Northern Ireland (Burden, 1995), 31 per cent in Jordanians (H amdan, 2001) , and 47.9 per cent in 12- to 13-year-old Malays (Abdullah and Rock, 2001)¹.

The estimate of one-third of 12-14-year-old children in need of orthodontic treatment is similar to the figures reported by Holmes (1992a), Burden and Holmes (1994) and Shaw et al. (1995) for British children, but higher than those found by Hamdan (2001) for Jordanians in Amman (central Jordan). Hamdan (2001) examined 320 children aged 14-17 years using the DHC of the IOTN. He reported that 28 per cent of the children examined were in great need of orthodontic treatment. The smaller sample size and the different age group used may have contributed to the difference in the reported need.⁴

CONCLUSION

The selection of an index for measuring any condition is dependent upon two main factors. First,

the objective of the investigation in which the index is to be used and hence the nature of the information required; and second, the ability of the examiner to consistently reproduce the diagnosis on which the index is based. In general, the simplest index compatible with the objectives of the study should be used, as this is, on the whole, more reproducible, especially where more subjective judgements are necessary. In this study, modified index for orthodontic treatment need [IOTN] was used.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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