

Original Research

Prevalence of Malocclusion and Orthodontic Treatment Needs in School Children of Patna, Bihar State

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ABSTRACT:

Background: Malocclusion is any deviation from normal occlusion of teeth. The present study was conducted to assess prevalence of malocclusion and Orthodontic Needs in school children. **Materials & Methods:** The present study was conducted on 574 school children age ranged 9-15 years of both genders. In all patients, a thorough clinical examination was done by an expert Orthodontist. The Dental Health Component (DHC) of the IOTN index was graded in five categories for each patient. Patients were examined for Missing teeth, Overjet, Crossbite, Displacement of contact points and Overbites. **Results:** Out of 574 school children, boys were 230 and girls were 344. Grade 1 & 2 was seen in 140 boys and 240 girls, Grade 3 in 30 boys and 46 girls and Grade 4 & 5 was seen in 60 boys and 50 girls. The difference was significant ($P < 0.05$). Missing teeth were present in 10.4%, overjet in 25.2%, overbite in 27.6%, cross bite in 24.5% and displacement of contact point in 51%. The difference was significant ($P < 0.05$). **Conclusion:** Most of the school going children does not require Orthodontic treatment, however most common anomaly was missing teeth, overbite and overjet.

Key words: Malocclusion, Overbite, Overjet.

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INTRODUCTION

Malocclusion is any deviation from normal occlusion of teeth.¹The goal of the orthodontic treatment is to attain optimal occlusion within framework of function, stability and aesthetics. As a result, patients who seek orthodontic treatment are concerned with improving their appearance and social acceptance, often more than they are with improving their oral function or oral health.²

The oral-facial region is usually an area of significant concern for the individual because it draws the most

attention from other people in inter personal interactions and is the primary source of vocal, physical, and emotional communication.³ Enhancing these aspects of quality of life is an important motive for undergoing orthodontic treatment. Regardless of age, patients and their parents or care givers expectations about improvements in oral function, esthetics, social acceptance, and body image are important for both general dentists and orthodontists to consider when advising patients about these procedures and during the treatment process.⁴

Orthodontic anomalies have been associated with psychosocial distress, poor periodontal condition and impaired masticatory function and so should be regarded as a health problem.⁵ Although data on Orthodontic awareness and treatment needs are very scanty, malocclusion is undoubtedly a public health concern in young population. There are few studies to estimate the proportion of the population that requires orthodontic treatment in India.^{6,7} The present study was conducted to assess prevalence of malocclusion and orthodontic need in school children.

MATERIALS & METHODS

The present study was conducted in the department of Pedodontics. It comprised of 574 school children age ranged 9-15 years of both genders. The purpose of the study was explained to the parents and written consent was

obtained. Ethical clearance was obtained prior to the institutional ethical committee.

Patient information such as name, age, gender etc. was recorded. In all patients, a thorough clinical examination was done by an expert Orthodontist. All survey forms were filled up after the examination of children by one Orthodontist and need for Orthodontic treatment was assessed using IOTN index and overall oral health status by DMFT index and summed –up.

The DHC of the IOTN index was graded in five categories for each patient. Patients were examined for Missing teeth, Overjet, Crossbite, Displacement of contact points and Overbites. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 574		
Gender	Boys	Girls
Number	230	344

Table I shows that out of 574 school children, boys were 230 and girls were 344.

Table II Dental health component grades

DHC grade	Need for treatment	Boys	Girls	P value
Grade 1 & 2	No treatment	140	240	0.01
Grade 3	Borderline	30	46	0.05
Grade 4 & 5	Definite treatment	60	50	0.12

Table II, graph I shows that grade I & 2 was seen in 140 boys and 240 girls, grade 3 in 30 boys and 46 girls and grade 4 & 5 was seen in 60 males and 50 females. The difference was significant (P< 0.05).

Graph I: Dental health component grades

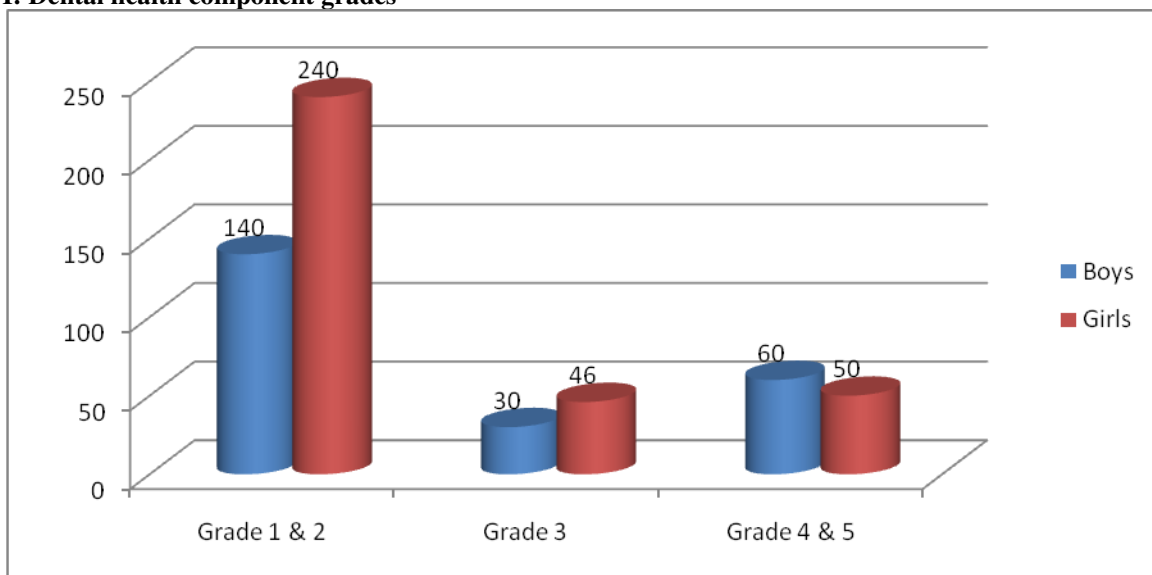
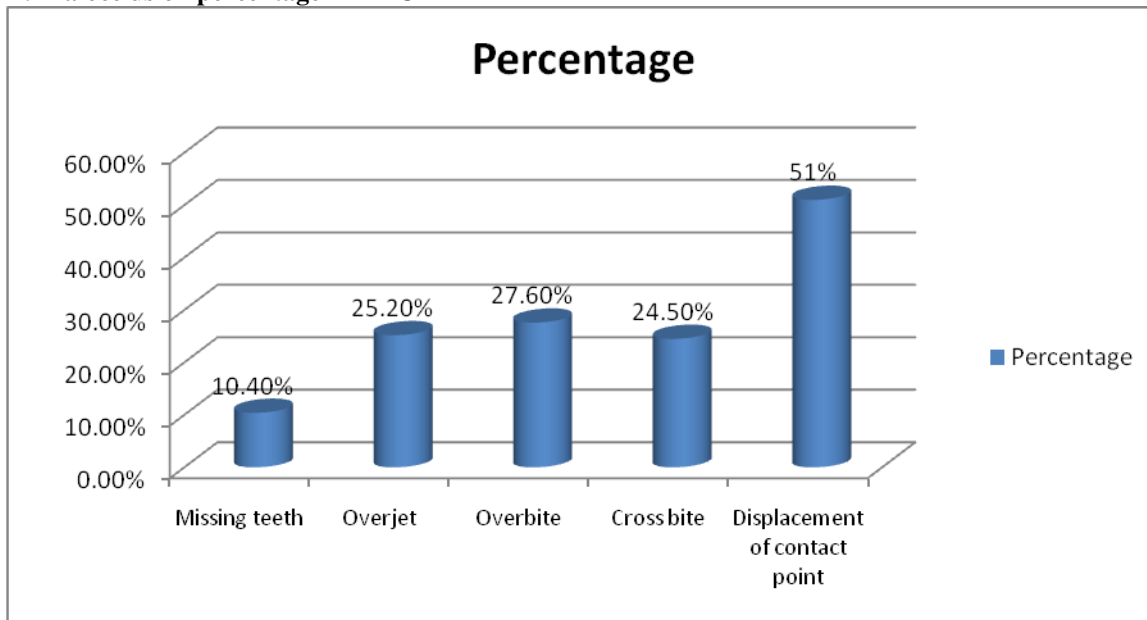


Table III Malocclusion percentage in DHC

Malocclusion	Percentage	P value
Missing teeth	10.4%	0.05
Overjet	25.2%	
Overbite	27.6%	
Cross bite	24.5%	
Displacement of contact point	51%	

Table III, graph II shows that missing teeth were present in 10.4%, overjet in 25.2%, overbite in 27.6%, cross bite in 24.5% and displacement of contact point in 51%. The difference was significant (P< 0.05).

Graph II: Malocclusion percentage in DHC



DISCUSSION

Malocclusion is any deviation from Normal Occlusion of teeth. The teeth are in abnormal position in relationship to the basal bone of the alveolar process, to the adjacent teeth and/or to the opposing teeth. According to Angle, occlusion is the normal relation of the occlusal inclined planes of the teeth when the jaws are closed.”⁸

Orthodontic anomalies have been associated with psychosocial distress, poor periodontal condition and impaired masticatory function and so should be regarded as health problem.⁹ The present study was conducted to assess prevalence of malocclusion and orthodontic need in school children.

In this study, out of 574 school children, boys were 230 and girls were 344. We found that dental health component grade was Grade I & 2 was seen in 140 boys and 240 girls, Grade 3 in 30 boys and 46 girls and Grade 4 & 5 was seen in 60 boys and 50 girls. Joshi et al¹⁰ found that Class I was found in 320 samples (66.3%), class II in 158 samples (32.7%) and class III in 5 samples (1%). The parameter was retained deciduous teeth 92% showed no retained teeth. 4% showed retained teeth in maxillary arch. 4% showed

retained teeth in mandibular arch. No sample showed retained teeth in both maxillary and mandibular arch at same time. The result also showed that most of the students showed maxillary deciduous teeth retained in the oral cavity. Caries is one of the factors for malocclusion as stated in previous studies. 99% samples showed no caries. 1% sample showed caries in either maxillary or mandibular arch. The retained deciduous teeth showed less number of caries prevalence.

We found that missing teeth were present in 10.4%, overjet in 25.2%, overbite in 27.6%, cross bite in 24.5% and displacement of contact point in 51%. Sumaet al¹¹ found that Dental Health Component (DHC) of IOTN index for all the patients when marked by one set of Orthodontists. The most severe occlusal trait was identified by the examiner for any particular patient and the patient was then categorized according to this most severe trait. AC of the IOTN was assessed by second orthodontist, individual and a lay person. It was observed that prevalence of malocclusion in the sample was 53.7%. 32.8% (239 males & 154 females) of samples are in need of Orthodontic

treatment. 55.1% of samples shown no caries risk, 38.1% had moderate caries risk and 6.8% had high caries risk.

The DHC has five categories classifying progressively increasing severity of malocclusions and indicating the relative need of orthodontic treatment (Grade 1: no treatment required, Grade 2: little need, Grade 3: borderline need, Grade 4: treatment required, Grade 5: great need of treatment). Within each category the different malocclusions are included (Missing teeth, Overjet, Crossbite, displacement of contact points, Overbites, etc.) according to their severity. The most severe occlusal trait is identified by the examiner for any particular patient and the patient is then categorized according to this most severe trait, with a score ranging therefore from 1 to 5. In AC is assessed by comparing photographs for each sample with intra oral charts given by esthetic component in IOTN.¹²

CONCLUSION

Authors found that most of the school going children does not require Orthodontic treatment, however most common anomaly was missing teeth, overbite and overjet.

REFERENCES

1. Kiyak HA. Does orthodontic treatment affect patients' quality of life? *J Dent Educ.* 2008;72(8):886-894.
2. Shaw WC. Factors influencing the desire for orthodontic treatment. *Eur J Orthod.* 1981;3:151-162.
3. Gray MM, Bradnock G, Gray HL. An analysis of the qualitative factors which influence young people's acceptance of orthodontic care. *Prim Dent Care.* 2000;7:157-161.
4. N'gom PI, Diagne F, Benoist H, Thiam F. Intraarch and interarch relationships of the anterior teeth and periodontal conditions. *Angle Orthod.* 2006;76:236-242.
5. N'gom PI, Diagne F, Aidara-Tamba AW, Sene A. Relationship between orthodontic anomalies and masticatory function in adult subjects. *Am J Orthod Dentofacial Orthop* 2007;131:216-222.
6. Singh MP, Chopra R, Bhatia A, Bains SK, Khichi A. Oral health status and treatment needs of individual residing in Amritsar branch of All India Pingalwala charitable society – A clinical study. *Baba Farid Univ Dent J* 2012; 3 (2); 36- 41.
7. Shaw WC, Addy M, Ray C. Dental and social effects of malocclusion and effectiveness of orthodontic treatment: A review. *Community Dent Oral Epidemiol.* 1980;8(1):36-45.
8. N'gom PI, Brown R, Diagne F, Normand F, Richmond S.A cultural comparison of treatment need. *Eur J Orthod.* 2005;27:597-600.
9. Kohn WG, Harte JA, Malvitz DM, Collins AS, Cleveland JL, Eklund KJ. Guidelines for infection control in dental healthcare settings 2003. *J Am Dent Assoc.* 2004;135(1):33-47.
10. Joshi MR, Makia PG. Some observation on spacing in normal deciduous dentition on 100 Indian children from Gujarat. *Br J Orthod.* 1984; 11:75-79.
11. Suma G, Usha Mohan Das. Crowding, Spacing and Closed dentition and its relationship with malocclusion in primary dentition. *IJDS* 2010; 1(1):16-19.
12. Brook PH, Shaw WC. The development of an index of orthodontic treatment priority. *Eur J Orthod.* 1989;11:309-320.