

Prevalence of Malocclusion & Orthodontic Treatment need in Children 12 & 15 Years in Lucknow City

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Abstract

Introduction-The literal meaning of malocclusion means 'bad bite'. The prevalence of malocclusion varies in different parts of the world among various populations. Ethnic, genetic and environmental factors are the major contributors in the specific cause of malocclusion. Materials and methods- An observational cross sectional study was done to assess the prevalence of malocclusion and orthodontic treatment need among school going children aged 12 and 15 years in Lucknow city using DAI index. After sample size calculation it was estimated that study population comprised of 580 children, i.e. Total of 145 children to be examined from each zone. Result - In this study the prevalence of malocclusion among 12 yrs old was found to be 48.4% while for 15 yrs old was 46.5% with higher in females than males. The results of this study reveals that a higher percentage of the school children aged 12 and 15 years of Lucknow city are affected with malocclusion. . Therefore it can be concluded that the need for orthodontic correction is higher among these study subjects of Lucknow city.

Key Words- malocclusion, DAI index, school going children in Lucknow city.

Introduction

The literal meaning of malocclusion means 'bad bite'. Malocclusion can be defined as an occlusion in which there is molar relationship between the arches in any of the planes or in which there are anomalies in tooth position beyond normal limits¹. Malocclusion can lead to Poor facial appearance, Risk of caries, predisposition to periodontal disease. Psychological disturbances. Risk of trauma, Abnormalities of function. Temporomandibular joint problem.

The prevalence of malocclusion varies in different parts of the world among various populations. Ethnic, genetic and environmental factors are the major contributors in the specific cause of

malocclusion.

Orthodontic treatment is often carried out for aesthetic rather than functional considerations, since it is assumed that failure to meet social norms for dental aesthetics will have negative psychosocial effects and these effects may well exceed the biological problems. Dentists predict that psychosocial component of malocclusion will continue to be one of the strongest motivator for orthodontic treatment²

Although no absolute consensus has been reached on the individual characteristics and occlusal features that should based in order to objectively establish treatment need. Such indices include the Dental Aesthetic Index (DAI; Cons et al. 1986) and the Index of Orthodontic Treatment Need (IOTN;

Brook, and Shaw 1989)." The present study aims to assess the prevalence of malocclusion and orthodontic treatment needs among school going children aged 12 and 15 years in the city of Lucknow.

Knowledge of occlusal disharmonies is not only important from an academic viewpoint, but is Essential For Determining The Treatment Needs of The Population, The Planning of Orthodontic Services, Assessing The Resources Required And For Establishing Orthodontic Training Programmes.

Aim

- To study the prevalence of malocclusion and orthodontic treatment need among school going children aged 12 and 15 years in the city of Lucknow.

Objectives

- Ø To assess the prevalence of malocclusion among children aged 12 and 15 years in Lucknow city.
- Ø To plan and organize preventive and curative programs.
- Ø To determine the correlation of oral habits with presence of malocclusion among them.
- Ø To assess the need of orthodontic treatment among children aged 12 and 15 years in Lucknow city.

Materials & Method

An observational cross sectional study was done to assess the prevalence of malocclusion and orthodontic treatment need among school going children aged 12 and 15 years in Lucknow city.

Ethical clearance was obtained from the ethical committee of Sardar Patel Post Graduate Institute of Medical And Dental Sciences Lucknow. Necessary permission was obtained from authorities of concerned schools. A pilot study was conducted on 25 children .it was done to assess the validity and feasibility of the study.

Inclusion criteria:

- Children who had completed 12 years or were running in 12th year and 15 years or were running in 15th year were included.
- Students who were present on the scheduled date of survey were included.
- Subjects must be physically and mentally sound.
- Subjects giving verbal informed consent.

Exclusion criteria:

Subjects having history of trauma or injury which could affect the occlusion.

Subjects who had completed orthodontic treatment or under going orthodontic treatment.

Survey instrument:

Data was collected by using a pre tested proforma. Proforma was divided into two parts: First part contained questions on demographic Calibration:

Before the start of the survey the examination procedure was standardized for the reliability, variability and reproducibility of data.

Study population:

After sample size calculation it was estimated that study population comprised of 580 children, i.e. Total of 145 children to be examined from each zone.

Sampling technique :

All required information regarding urban and rural area was obtained from district map of Lucknow. In the first stage city of Lucknow was divided into four zones.

The four wards Selected Were:

1. East zone-Indiranagar, Gomtinagar

2. West zone - Alambagh, Krishnanagar, Chowk, Rajajipuram

3. North zone - Khurramnagar, Jankipuram, Aliganj

4. South zone- Telibagh, South City, Vrindavanyojna Schools were selected from each ward by multistage sampling. In every school two classes were chosen i.e. 9th and 11th.

These standards had children of age 12 and 15 years.

Each standard had 2 to 3 sections. one or two sections were chosen from each school. A total of 580 children were examined from all these schools i.e. Total of 145 children to be examined from each zone.

Observations & Results

Table – 1 : Basic Characteristics of School Going Children

Characteristics	12 Year		15 Year		Total	
	No.	%	No.	%	No.	%
Gender						
Males	190	59.38	155	59.62	345	59.48
Females	130	40.63	105	40.38	235	40.52

Personal Oral Habits						
Mouth Breathing	70	21.88	74	28.46	144	24.83
Thumb Sucking	24	7.50	18	6.92	42	7.24
Tongue Thrusting	32	10.00	38	14.62	70	12.07
Bruxism	86	26.88	48	18.46	134	23.10
Lip/nail/pencil biting	108	33.75	82	31.54	190	32.76

Figure – 1 : Prevalence of Malocclusion

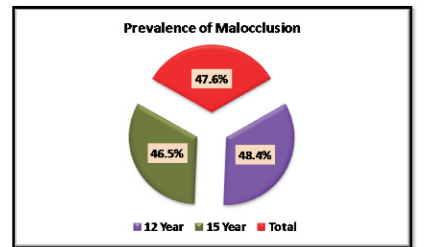


Figure – 2 : Association of Personal Oral Habits with Malocclusion

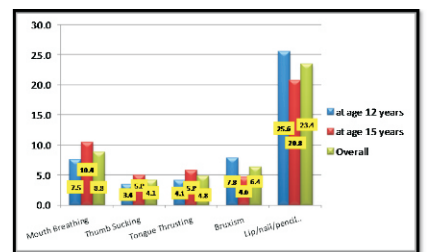
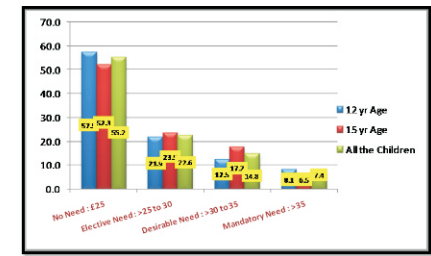


Figure – 3 :Treatment need according to DAI in the children of Malocclusion



Discussion

Malocclusion is considered to be one of the important problems in oral health care programme. The epidemiological data on prevalence of malocclusion is an important determinant in planning appropriate levels of orthodontic services³. The uptake of orthodontic treatment is influenced by the desire to look attractive, self perception and self esteem of dental appearance. The benefits are to prevention of tissue damage, correction of aesthetic component and to improve the physical function.⁴

There are many orthodontic indices provided to measure the degree of malocclusion; among which Dental Aesthetic Index (DAI) has been adopted by the World Health Organization as an international cross- cultural Index.⁵

A total of 580 school going children was selected randomly from different schools of Lucknow city. Of this total, 320 children were 12 yrs aged and 260 were 15 year old. In the present study, most of the population examined was without the family history of malocclusion.

Taking oral habit into consideration, in the present study lip/nail/pencil biting habits was the most common in both the ages although in 12 yrs old Bruxism (26.88%) and in 15 yrs old mouth breathing (28.46%) was the second most common habit. This result is in contrast to Kharbanda et al⁶ where tongue thrust was the most prevalent habit affecting 18.1% of children, mouth breathing affected 6.6% of the population, followed by thumb sucking 0.7% and lip biting affected 0.04% of the children examined .Tongue thrusting and mouth breathing were the most prevalent oral habits in the study done by Shetty et al⁷

Mouth breathing habit was the second most prevalent habit in the study done by Bhayya D et al⁸ with the incidence rate of 17%. This incidence was higher when compared to the findings of the study by AmrAbou-El-Ezz et al⁹, where the prevalence of mouth breathing habit and its probability as etiological factor of malocclusion have concluded that

malocclusion is highly associated with habits existence and this relationship is statistically highly significant. Digit sucking was the most frequently occurring oral habits seen in 50% of the children in the study reported by Massler et al¹⁰ Dacosta et al¹¹.

The finger-sucking habit, normal in the first two or three years of life, "may cause permanent damage if continued beyond this time. Reported maxillary changes associated with a prolonged sucking habit are proclination of the maxillary incisors increased maxillary arch length, anterior placement of the maxillary apical base, and decreased palatal arch width¹¹.

The prevalence of bruxism and lip biting was found to be 0.4% in the study done by Shetty et al⁷. This observation is in disagreement with the findings of Shetty⁷ and Munshi⁷ who reported 12.7% of children with nail biting. All these study results are in contrast with our findings where lip/nail/pencil biting habits was found to be most common.

In this study the prevalence of malocclusion among 12 yrs old was found to be 48.4% while for 15 yrs old was 46.5% with higher in females than males. This result is in contrast with the study done by Mohan .U et al¹² where a higher prevalence of 71% was reported, which is similar to the findings of Hamamci N et al¹³ where a higher prevalence of 85.7% was reported, whereas a lower prevalence of 28% was reported by Nainani J et al¹⁴.

Dental Aesthetic Index:

In the present study higher percentage of population that is (57.3% and 52.3% among 12 and 15 yrs old) had the mean DAI score of <25 which required slight or no orthodontic treatment, further (21.9% and 23.5% among 12 and 15 yrs old) elective need: with >25 to 30 DAI score, followed by (12.5% and 17.7%) with a DAI score of 31-35 indicating severe malocclusion and treatment highly desirable with a DAI score of 31-35 indicating severe malocclusion and treatment highly desirable. This result is in complete disagreement with findings of Naveen K et al¹⁵, where only 1.17 % of the study population had a DAI score of 31-35. A similar study in American population reported 16% with this degree of orthodontic need. This difference could be because the later was a retrospective study done in study models. On the contrary studies done on Japanese population, Iranian and American population had higher DAI scores of 30.5, 23.5 and 36.9 respectively. Large difference in the mean DAI scores of the above mentioned studies as compared to the present study may be due to racial variation, different sample size, genetic predisposition, differences in

lifestyle and variations in growth and facial skeleton.

Prevalence of missing anterior teeth was almost equal in both the age groups (i.e. 10.35% and 7.44% among 12 and 15 yrs old), while according K et al¹⁶ 11% of study population had one or more I1 anterior teeth. This is in accordance with Jenny et al¹⁷, Esa et al¹⁸.

The DAI, on the other hand, takes 10 occlusal situations into account, weights them according to their relative contribution to the aesthetic impairment caused by the malocclusion, then sums them to arrive at a final score¹⁴. As each of the situations can contribute to a small degree to the final score.

Although the proportion of individuals in need of treatment I detected by both indices is very similar, there are differences in the assessment of need for the same individuals depending on which index is used. This difference has to be taken in consideration when measuring, recording, or quantifying orthodontic treatment need.

According to the results it can be stated that higher prevalence of malocclusion is found among 15 year than 12 year old age groups.

Conclusion

The results of this study reveals that a higher percentage of the school children aged 12 and 15 years of Lucknow city are affected with malocclusion. Therefore it can be concluded that the need for orthodontic correction is higher among these study subjects of Lucknow city.

References

1. Graber T. Orthodontics principles and practice. Third edition. Saunders Publishers.
2. Gelgor IE, et al. Prevalence of malocclusion among adolescents in central anatolia. Eur J Dent 2007. Vol 1. Iss 3. Pags 125-31.
3. Ansai T, Miyazaki H et al. Prevalence of malocclusion in high school I students in Japan according to the dental aesthetic index. Community Dentistry and Oral Epidemiology, 1993.vol 21:pags 303-05.
4. Takahashi F et al. Assessment of malocclusion of Japanese junior high I school pupils aged 12-13 years in Iwate prefecture according to the Dental Aesthetic Index. Asia Pac J Public Health 1995; vol8. Iss no.2) Pags 81-84.
5. Kumar P et al. Prevalence of malocclusion and orthodontic treatment need in schoolchildren dependent on armed forces personnel. An epidemiological study Medical journal armed forces India 2012. Vol 1.I Iss 6. Pags 25-32
6. Kharbanda O, Sidhu S, et al. Oral habits in school going children of I Delhi: a prevalence study. J Indian Society of Pedodontics and Preventive Dentistry. 2003; vol 21. Iss 3: pgs 120-124.
7. Shetty et al. Oral Habits in children of Rajnandgaon, Chhattisgarh, India- A prevalence study. International Journal of Public Health Dentistry 2013; Vol 4, Iss no.1. Pages 1-7.
8. Bhayya D et al. Prevalence of Oral Habits in 11-13 year-old School Children in Gulbarga city, India. Virtual Journal of Orthodontics 2009.F Vol 10; Iss 8. Pages 1-4.
9. Abdulaziz A et al. Assessment of parafunctional oral habits among a F sample of Saudi Dental Patients. JKAU: Med Sci 2007; voll4. Iss 4: pgs 35-47.
10. Massler M. Oral Habits: Development and

Management J Pedod I 1983; Vol 7 Iss 2: Pags 09-19.

11. Dacosta OO et al. The prevalence of oral habits among 4 to 15 year old I school children in Lagos, Nigeria. Nigeria Postgraduate Medical J L 2010; voll7 Iss 2: pgs 113-117.
12. Mohan U et al. Prevalence of Malocclusion among school children in Bangalore, India. Jaypee's International clinical pediatric Dentistry. L 2008. Vol 1. Iss 1. Pages 10-15.
13. Hamamci N et al. Dental Aesthetic Index scores and perception of L personal dental appearance among Turkish university students. J European Journal of Orthodontics (2009) .Vol 31 .pages 168-173.
14. Nainani J et al. Prevalence of Malocclusion in School Children of Nagpur Rural Region - An Epidemiological Study. JIDA. August 2011. Vol. 5, No. 8, Pages 865-67.
15. Naveen K et al. Prevalence of malocclusion and orthodontic treatment need among 12-15 years old school children in Davangere, kamataka, India. Pakistan oral and Dental Journal (2010). Vol. 30 Iss No. 1 Pg. 181-84.
16. Shivkumar K et al. Prevalence of malocclusion and orthodontic treatment needs among 13-15 year old school going children of Davangere city, Kamatakaj Indian Assoc Public Health Dent 2005; Vol 6: Pgs 32-35.
17. Jenny J et al. Establishing malocclusion severity level on dental aesthetic index scale. Aust Dental Journal. 1996. Vol 41. Pages 43-46.
18. Esa R et al. Epidemiology of malocclusion and orthodontic treatment need of 12-13-year-old Malaysian schoolchildren. Community Dental Health 2001. Vol 18: Pags 31-36.