

Prevalence of Malocclusion among 13-17 Years Old Individuals in Raichur Taluk- A Descriptive Study

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Abstract:-

Introduction: Malocclusion, along with dental caries and periodontal disease, is ranked as one of the most significant oral health problems by the World Health Organization (WHO). Lack of treatment for a malocclusion that persists can have detrimental effects on a child's quality of life. There could be issues with phonation, functional, and aesthetics. Our study's goal is to determine the prevalence of malocclusion across Rural and Urban areas Of Raichur Taluk given the significance of malocclusion in dentistry.

Materials and Methods: School students of age group 13-17 years were selected. Each participant was assessed for occlusal traits - sagittal occlusion, overjet, overbite, crowding, midline diastema, and crossbite. Examinations were entered in excel sheet and analyzed using SPSS Software.

Results: 93% of participants had malocclusion. Out of which 85% had class I, 11% had class II, and 4% had class III malocclusion. Normal overjet and overbite was seen in 51% and 53% of subjects, respectively. Prevalence of crowding was 61% and 12% of subjects had midline diastema. Anterior crossbite was present in 9% and posterior crossbite in 13%. Urban population had twice the class II Malocclusion, and Posterior crossbite was high in Rural population.

Conclusions: Malocclusion is extensively spread among population of Raichur Taluk, with greater prevalence in urban population. Early exfoliation of primary teeth and highly refined diet can be considered as viable etiological factors.

Keywords:- Malocclusion, Midline, Diastema, Overjet, Overbite, Sagittal Occlusion, Crossbite, Crowding.

I. INTRODUCTION

Any disease's significance in a given location can be determined by looking at its prevalence. For a developing nation like India, where oral health programs and preventive measures fall well short of meeting demands, this becomes even more crucial.

Malocclusion is ranked third on the WHO's list of the most serious oral health issues, after periodontal disease and caries ¹. Between 39% - 93% of children and adolescents are thought to be affected and estimates the prevalence of malocclusion^{2,3}. This prevalence range is highly diverse and extensive. The ethnic and age disparities of the individuals included in research determining the prevalence of malocclusion may be the cause of this homogeneity ^{4,5}.

Numerous studies have been in various populations to assess the prevalence of malocclusion.

Raichur Taluk is an active agriculture place with people from a wide spectrum of cultural and religious background. There are no current statistics on the prevalence of malocclusion in Raichur Taluk. Thus, the study's objectives were to characterize the prevalence of malocclusion in urban and rural populations and to document its occurrence.

II. MATERIALS AND METHODS

The study was conducted among 476 school going children in the age group of 13-17 years. The study sample was taken both from urban and rural areas in the proportion of 1:1, respectively using simple random sampling procedure.

➤ Inclusion criteria

- No history of previous orthodontic treatment done
- No lingering deciduous teeth
- Occurrence of first permanent molars.

➤ Exclusion criteria

- Ongoing/ history of orthodontic treatment
- Individuals with disabilities
- Individuals with systemic diseases
- Uncooperative children

The criterion was limited to occlusal antero-posterior (A-P) relationship, crowding, overjet, overbite, midline diastema, and crossbite. Ethical clearance from authorities. Permission was taken from District Medical Officer. Pilot study was done to check the reliability and validity of the methodology. Informed consent was taken.

➤ Examination method

All subjects were examined by a sole examiner. Broad day light was used for examination. Occlusal characteristics were assessed with the help of mouth mirror and metallic scale.

➤ Method of registration

- Sagittal occlusion – Angle's classification
- Overjet- More than 3 mm was considered as increased and less than 2 mm was taken as decreased
- Overbite- It was taken as increased if it was >2 mm and decreased if less than 2 mm
- Crowding - It was considered as present when there was overlapping of one tooth with respect to other tooth
- Midline diastema – It was considered as present if there was space of more than 1 mm between the central incisors in either arch
- Crossbite - If 1 or more maxillary teeth are placed palatal/ lingual to the mandibular teeth

III. RESULTS

Mean age of Population was 16.2 years. Population consisted of 271 males and 205 females. Among males 130 were from Urban and 141 from rural population. Females were predominant in Urban (108) population than Rural (97). Table 1

➤ OCCLUSION

7% of population had ideal class I occlusion. 80% of people in Raichur Taluk consists of class I Malocclusion out of which 193 are from Rural and 190 are from Urban population. Among the 53 class II Malocclusion 24 are from Urban Population and 7 are from Rural Population. Class III Malocclusion is higher among Urban (5%) population than Rural (3%) . Fig. 2

➤ OVERJET

It is normal in 51% of the whole population highest being in rural areas (136). Excessive overjet is seen more in Urban population (34%). Reduced overjet is seen in 17% of population 52 in Urban and 31 in Rural. Fig. 3

➤ OVERBITE

It is normal in 53% of the population more predominantly in Rural population (131). Excessive overbite is seen in 34% of population whereas reduced overbite is seen in 14% of population. Both are more prevalent in Urban areas. Fig. 4

➤ CROWDING

It is present in 61% of the whole population with majority of cases seen in Urban population (148). Fig. 5

➤ MIDLINE DIASTEMA

It is seen in 12% of population. The prevalence of midline diastema is 14% in Urban and 10% in Rural population. Fig. 6

➤ ANTERIOR CROSSBITE

9% of population has anterior crossbite with 24 cases from Urban and 17 cases from Rural. Fig. 7

➤ POSTERIOR CROSSBITE

It is absent 87% of population and present in 13% of population. It is predominant in Rural population (33). Fig. 8

IV. DISCUSSION

Malocclusion has often been referred to as a “disease of civilization”, signifying that it is seen primarily in urbanized populations. This calls for rural-urban dichotomy. This is the first study to evaluate the prevalence of malocclusion in Raichur Taluk. Sagittal occlusion was assessed using Angle's classification, which is reliable, repeatable⁶, and idealistically orientated for a large population study⁷.

Because of the ease of access, the examination was limited to high school pupils with a complete permanent dentition, as malocclusion in the mixed dentition is occasionally transitory, leading to incorrect results.

The current study's findings (85%) contradicted Guaba's (1998)⁸ findings in the Ambala district where only 70.8% had normal occlusion. The prevalence of malocclusion was considerably similar to study conducted by Kaur et al⁹.

The prevalence of overjet and overbite identified in this study was similar to that found in urban Iranian school children, Yoruba teenagers in Ibadan, Nigeria,^{10,11} and a Malaysian study on three ethnic races: Chinese, Malay, and Indian.[21]

Crowding was found in 61% of the participants. Crowding was prevalent among Lithuanian schoolchildren¹². Crowding was shown to be far less prevalent among adolescents in Ibadan, Nigeria (20%)¹¹.

The current study discovered midline diastema in 12% of the participants. This incidence was significantly higher than the study conducted by Gnanasundaram et al.,¹³ on the prevalence of midline diastema (1.6%) in Chennai. Adolescents in Ibadan, Nigeria had a substantially higher prevalence of midline diastema (37%).¹¹

Anterior cross bite was present in 9% and posterior cross-bite was present in 13%. Posterior crossbite was recorded much less (8.8%) in urban Iranian school children and in Lahore city it was 24%, Pakistan¹⁰

Urban population had twice the class II sagittal occlusion and increased overjet as compared to rural population similar to the study done Kaur et al.,⁹. Diet can be considered as possible reason as the posterior region of mandible is associated with muscles of mastication,¹⁴As far as anterior region is concerned habits can be considered as reason for discrepancy in urban and rural population.

More investigation is needed to discover whether there is a link between the aforementioned conditions and malocclusion. This study is limited in that it only observed malocclusion in children aged 13 to 17, which cannot be extended to the full population.

Because orthodontically treated individuals were omitted, the prevalence of occlusal characteristics may have been underestimated. The statistics obtained differ significantly because different researchers utilized different criteria to assess the same occlusal characteristic. This emphasized the importance of standardizing criteria for assessing malocclusion.

V. CONCLUSION

Even though Class I malocclusion is largely prevalent occlusal pattern, Malocclusion is widespread in population. Prevalence of malocclusion was more in urban population as compared to rural population. Posterior crossbite was the only feature higher among Rural population. Require further studies in area to find etiology for various occlusal traits.

REFERENCES

- [1]. Dos Santos, R.R.; Nayme, J.G.; Garbin, A.J.; Saliba, N.; Garbin, C.A.; Moimaz, S.A. Prevalence of malocclusion and related oral habits in 5-to 6-year-old children. *Oral Health Prev. Dent.* 2012, 10, 311–318.
- [2]. Mtaya, M.; Brudvik, P.; Astrøm, A.N. Prevalence of malocclusion and its relationship with socio-demographic factors, dental caries, and oral hygiene in 12- to 14-year-old Tanzanian schoolchildren. *Eur. J. Orthod.* 2009, 31, 467–476.
- [3]. Khan, M.; Fida, M. Assessment of psychosocial impact of dental aesthetics. *J. Coll. Physicians Surg. Pak.* 2008, 18, 559–564.
- [4]. Gelgör, I.E.; Karaman, A.I.; Ercan, E. Prevalence of malocclusion among adolescents in central anatolia. *Eur. J. Dent.* 2007, 1, 125–131.
- [5]. Garbin, A.J. l.; Perin, P.C.P.; Garbin, C.A.S.; Lolli, L.F. Malocclusion prevalence and comparison between the Angle classification and the Dental Aesthetic Index in scholars in the interior of São Paulo state Brazil. *Dent. Press J. Orthod.* 2010, 15, 94–102.
- [6]. Silva RG, Kang DS. Prevalence of malocclusion among Latino adolescents. *Am J Orthod Dentofacial Orthop* 2001;119:313-5.
- [7]. Graber TM. *Orthodontic: Principles and Practice.* 3rd ed. Philadelphia: W.B. Saunders Co; 1972.
- [8]. Guaba K, Ashima G, Tewari A, Utreja A. Prevalence of malocclusion and abnormal oral habits in North Indian rural children. *J Indian Soc Pedod Prev Dent* 1998;16:26-30.
- [9]. Kaur H, Pavithra US, Abraham R. Prevalence of malocclusion among adolescents in South Indian population. *J Int Soc Prevent Communit Dent* 2013;3:97-102.
- [10]. Borzabadi-Farahani A, Borzabadi-Farahani A, Eslamipour F. Malocclusion and occlusal traits in an urban Iranian population. An epidemiological study of 11 to 14-year-old children. *Eur J Orthop* 2009;31:477-84.
- [11]. Onyeaso CO. Prevalence of malocclusion among adolescents in Ibadan, Nigeria. *Am J Orthod Dentofacial Orthop* 2004;126:604-7.
- [12]. Perillo L, Masucci C, Ferro F, Apicella D, Baccetti T. Prevalence of orthodontic treatment need in southern Italian schoolchildren. *Eur J Orthop* 2010;32:49-53.
- [13]. Nainar SM, Gnanasundaram N. Incidence and etiology of midline diastema in a population in south India (Madras). *Angle Orthod* 1989;59:277-82.
- [14]. Mcfaddan LR, Mcfadden KD. Effect of controlled dietary consistency and cage environment on the rat mandibular growth. *Anat Rect* 1986;215:390-6.

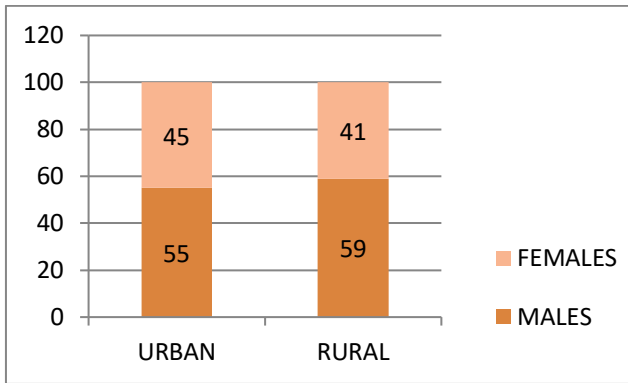


Fig 1: Gender distribution among population

Table 1: Gender distribution among population

Location	MALES	FEMALES	TOTAL
Urban	55%(130)	45%(108)	100%(238)
Rural	59%(141)	41%(97)	100%(238)
Total	57%(271)	43%(205)	100%(476)

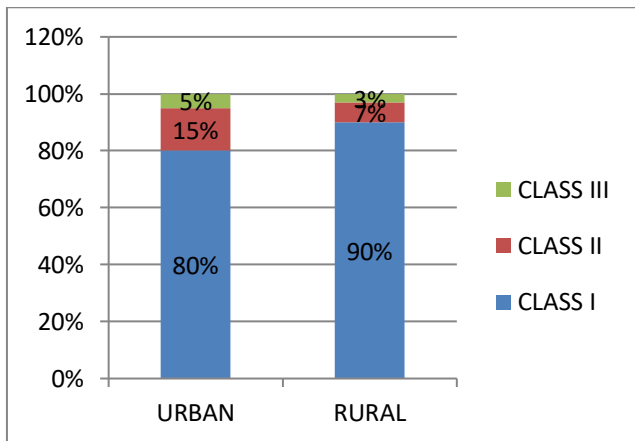


Fig 2: Occlusion in population

Table 2: Occlusal Traits in population

	URBAN	RURAL	TOTAL
Ideal			
Class I	5%(12)	9%(21)	7%(33)
Occlusion			
Class I	80%(190)	81%(193)	80%(383)
Class II	10%(24)	7%(17)	9%(41)
Class III	5%(12)	3%(7)	4%(19)
Overjet			
Normal	44%(105)	57%(136)	51%(241)
Excessive	34%(81)	30%(71)	32%(152)
Reduced	22%(52)	13%(31)	17%(83)
Overbite			
Normal	50%(119)	55%(131)	53%(250)
Excessive	34%(81)	33%(79)	34%(160)
Reduced	16%(38)	12%(28)	14%(66)
Crowding			
Present	62%(148)	59%(140)	61%(66)
Absent	38%(90)	41%(98)	39%(188)
Midline Diastema			
Present	14%(33)	10%(24)	12%(57)
Absent	86%(205)	90%(214)	88%(419)
Anterior Crossbite			
Present	10%(24)	7%(17)	9%(41)
Absent	90%(214)	93%(221)	91%(435)
Posterior Crossbite			
Present	13%(31)	14%(33)	13%(64)
Absent	87%(207)	86%(205)	87%(412)

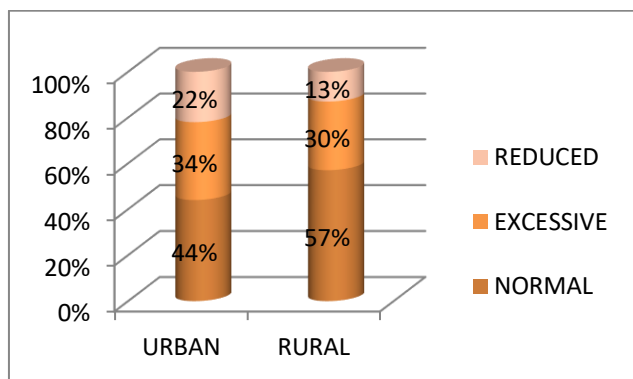


Fig 3: Overjet in population

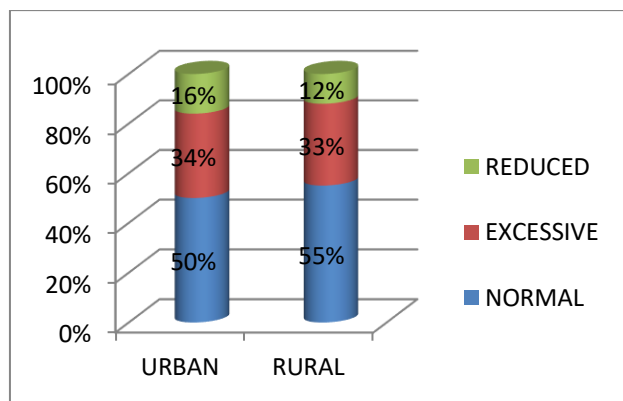


Fig 4: Overbite in population

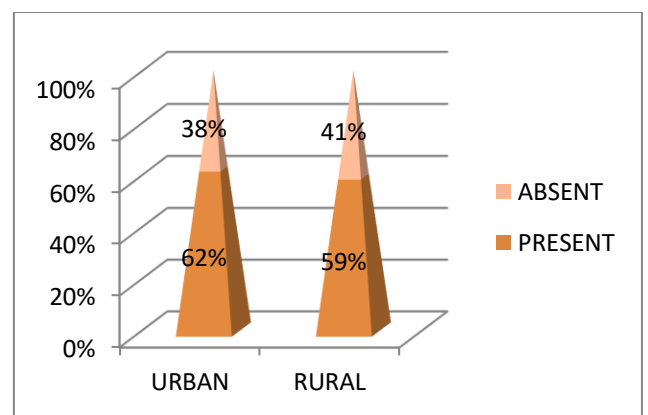


Fig 5: Crowding in population

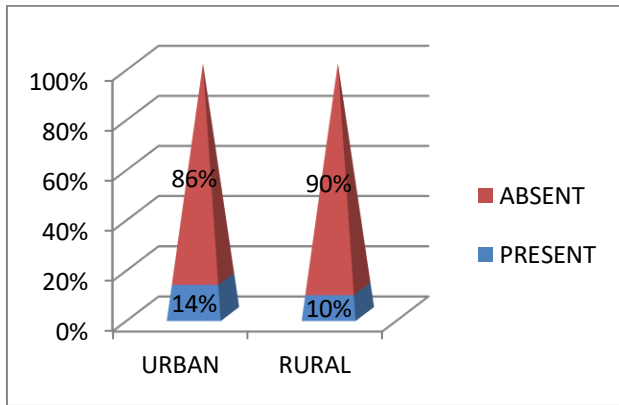


Fig 6: Midline Diastema in population

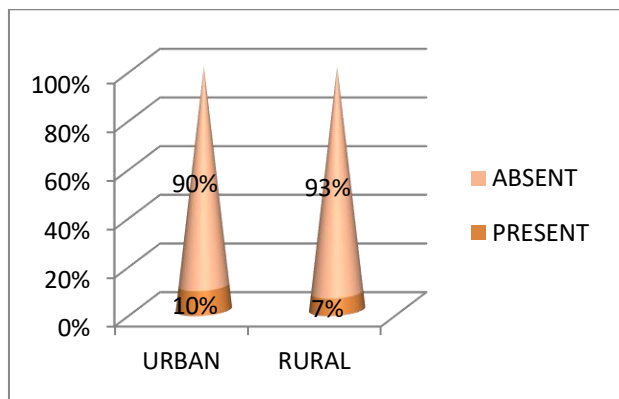


Fig 7: Anterior Crossbite in population

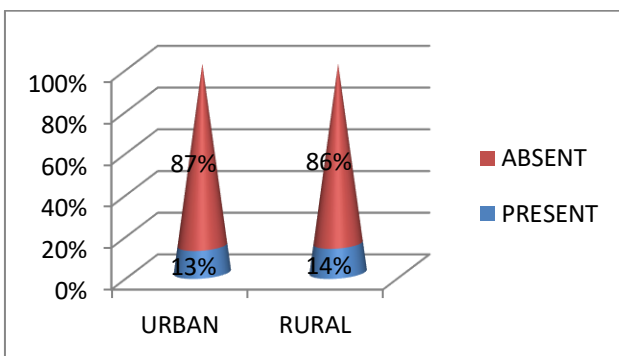


Fig 8: Posterior Crossbite in population