



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2020; 6(1): 94-98
© 2020 IJADS
www.oraljournal.com
Received: 16-11-2019
Accepted: 18-12-2019

Syed Zameer Khurshaid
Associate Professor, Department
of Orthodontics, Govt. Dental
College Srinagar, Jammu and
Kashmiri, India

Rameez Hassan
Postgraduate Student,
Department of Orthodontics,
Govt. Dental College Srinagar,
Jammu and Kashmiri, India

Mudasir Yaqoob
Postgraduate Student,
Department of Orthodontics,
Govt. Dental College Srinagar,
Jammu and Kashmiri, India

Gurdev Singh Bali
Postgraduate Student,
Department of Orthodontics,
Govt. Dental College Srinagar,
Jammu and Kashmiri, India

Corresponding Author:
Syed Zameer Khurshaid
Associate Professor, Department
of Orthodontics, Govt. Dental
College Srinagar, Jammu and
Kashmiri, India

Malocclusion and occlusal traits among adolescents in Kashmiri population: An epidemiological study

Syed Zameer Khurshaid, Rameez Hassan, Mudasir Yaqoob and Gurdev Singh Bali

Abstract

Introduction: Malocclusion is an occlusion in which there is malrelation between the arches in any three planes of space or in which there are anomalies in tooth position beyond the limits of acceptable norms. Although dental malocclusion is not a life threatening condition, the psychosocial distress, impaired mastication and poor periodontal conditions associated with it, need to explore the prevalence of malocclusion in different ethnic groups. Regarding the fact that till date no data has been recorded, on the prevalence of malocclusion in the valley of Kashmiri.

Material and Methods: This was a cross-sectional epidemiological study conducted on 1800 children aged between 12-18 years. The classification used to record the malocclusion was Ackermann-Proffit.

Results: A sample of 1800 subjects was examined out of which 1012(56.22%) were males and 788(43.77%) were females. (81.85%) subjects had class I molar relationship, 290(16.05%) subjects had class II molar relationship and 38(2.1%) subjects had class III molar relationship.

Conclusion: 81.85% subjects had class I molar relationship, 16.05% subjects had class II molar relationship and 2.1% subjects had class III molar relationship.

Keywords: Malocclusion, Kashmiri, alignment, transverse deviation, vertical deviation, anteroposterior deviation

Introduction

Malocclusion is an occlusion in which there is malrelation between the arches in any three planes of space or in which there are anomalies in tooth position beyond the limits of acceptable norms [1]. Malocclusion has a large social and psychological impact on the individual and society [2, 3] the appearance of the mouth and the smile [lays a significant role in judgements regarding facial attractiveness [4].

The valley of Kashmiri, is an active agriculture place with people from a similar spectrum of cultural and socioeconomic background. To date there is no available data on status of prevalence of malocclusion in the valley in particular. Significance of any disease in a particular area can be gazed by its prevalence. This becomes even more important for developing country like India in general, where oral health program and preventive measures are far from satisfying. There are several epidemiological study in literature [5-14] that give an insight on the prevalence of different traits of dental malocclusion in different ethnic groups. The prevalence of malocclusion among Indian children has been reported as high as 90% in Delhi and as low as 19.6% in Madras [7].

An understanding of epidemiological status of various traits of malocclusion among particular population is important for planning the need and provision for orthodontic service to enhance quality of life. Since maloccluded dentition can cause disturbances in oral function and cause psychological problems due to impaired dentofacial esthetics [15]. Dental malocclusions exhibit the third highest prevalence among oral pathologies, second only to tooth decay and periodontal disease and therefore rank third among worldwide dental public health priorities. Although dental malocclusion is not a life threatening condition, the psychosocial distress, impaired mastication and poor periodontal conditions associated with it, need to explore the prevalence of malocclusion in different ethnic groups. Regarding the fact that till date no data has been recorded, on the prevalence of malocclusion in the valley of Kashmiri.

Aim and Objectives

The aim of the study is to estimate the prevalence of malocclusion and its objectives is to

1. Determine the priority and need of orthodontic treatment modalities according to the severity of malocclusion and resources available.
2. Estimate the need of treatment in particular population and gain a view for training adequate manpower to meet the demands.¹⁶
3. Adopt a more detailed and accurate plan for the prevention and treatment of this problem.

Material and Methods

This was a cross-sectional epidemiological study conducted on 1800 children aged between 12-18 years. Informed consent was obtained from the subjects, their parents and from the appropriate school authority. The subjects were divided into 2 groups: group I (males) and group II (females).

Inclusion criteria

1. All permanent teeth must be present irrespective of third molars.
2. No systemic disease.

Exclusion criteria

1. No previous orthodontic treatment,
2. Rampant caries, multiple missing teeth, mutilated malocclusion.
3. Craniofacial anomalies.

Ethical clearance was obtained from the Ethical committee (Govt. Dental College and Hospital Srinagar, J & K). The examination of students was done at their respective schools, using sterile mouth mirror and probe under natural light. The classification used to record the malocclusion was according to Ackermann-Proffit^[17].

A. Alignment**i. Midline**

- 0- Midlines coinciding,
1- <half the lower incisor width,
2- >half the lower incisor width.

ii. Spacing

- 0- Absent,
1- Midline diastema.
2- Anterior spacing.
3- Generalized spacing.

iii. Crowding

- 0- Absent.
1- Anterior crowding.
2- Posterior crowding.

B. Transverse deviation**Crossbite**

- 0-No crossbite,
1-Single tooth crossbite,
2- Two or more teeth crossbite,
3- Anterior teeth crossbite,
4- Posterior Unilateral crossbite,
5- Posterior Bilateral crossbite.

C. Anteroposterior deviation**i. Molar relation**

- 1- Class I,
2- Class II [a] div1 [b] div2 [c]subdivision,
3- Class III [a]sub division.

ii. Overjet

- 1-Normal overjet [1-3mm]
2-Moderate overjet [3-5mm]
3- Increased overjet [>6mm]
4- Reduced overjet [<1mm]
5- Reverse overjet

D. Vertical deviation**i. Overbite**

- 1- 1/3rd of lower incisor overlap
2- 2/3rd of lower incisor overlap
3- Completely locked lower incisors
4- Edge to edge bite

ii. Open bite

- 0-Openbite absent
1- Open bite <2mm
2- Open bite >4mm

The measurements were done for both the groups.

Statistical Methods

The recorded data was compiled and entered in a spread sheet (Microsoft excel) and then exported to data editor of SPSS version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean \pm SD and categorical variables were expressed as frequencies and percentages.

Results

A sample of 1800 subjects was examined out of which 1012(56.22%) were males and 788(43.77%) were females (Table 1). In case of male subjects 691(68.3%) had no midline discrepancy whereas 254(25.1%) had midline discrepancy of less than half the width of lower incisor and 67(6.6%) had midline discrepancy of greater than half the width of lower incisor. In overall sample 1240(69%) had no midline discrepancy whereas 469(26.2%) had midline discrepancy of less than half the width of lower incisor and 91(4.8%) had midline discrepancy of greater than half the width of lower incisor (Table 2), 1442 (80.1%)subjects had no spacing whereas 138(7.65%) subjects showed midline diastema, 170(9.4%)subjects showed anterior spacing and 50(2.85%) subjects showed posterior spacing (Table 3), 865 (48.05%)subjects had no crowding 806(44.85%)subjects showed anterior crowding and 129(7.1%) subjects showed posterior crowding (Table 4), 1476(81.85%) had no crossbite, 191(10.6%)subjects showed single tooth cross bite, 51(2.9%) showed cross bite of two or more teeth, 47(2.65%) showed anterior cross bite, 24(1.35%)subjects showed posterior unilateral cross bite and 11(0.65%) subjects showed posterior bilateral cross bite (Table 5), 1472(81.85%)subjects had class I molar relationship, 290(16.05%) subjects had class II molar relationship and 38(2.1%) subjects had class III molar relationship (Table 6). In overall sample 1057(58.75%) exhibited normal overjet of 1-3mm 411(22.8%) exhibited overjet of 3-5mm, 118(6.55%) exhibited overjet greater than 6mm, 171(9.5%) exhibited overjet of less than 1mm and 43(2.4%) exhibited reverse overjet (Table 7), 713 (39.65%)

subjects were found to have one third of lower incisor overlap, whereas 696(38.65%) subjects were found to have two third of lower incisor overlap, 247(13.75%) had Completely locked lower incisors and 144(8.0%) showed edge to edge overbite (Table 8).

Table 1: Sample distribution

Sample	Number (N)	Percentage (%)
Male	1012	56.22
Female	788	43.77
Total	1800	100.00

Tables 2: (Midline)

Midline Scoring	Male		Female		Overall	
	N	%	N	%	N	%
0	691	68.3	549	69.7	1240	69
1	254	25.1	215	27.3	469	26.2
2	67	6.6	24	3.0	91	4.8
Total	1012	100	788	100	1800	100

Tables 3: (SPACING)

Spacing Scoring	Male		Female		Overall	
	N	%	N	%	N	%
0	812	80.3	630	79.9	1442	80.1
1	79	7.8	59	7.5	138	7.65
2	98	9.7	72	9.1	170	9.4
3	23	2.2	27	3.5	50	2.85
Total	1012	100	788	100	1800	100

Tables 4: (CROWDING)

Crowding Scoring	Male		Female		Overall	
	N	%	N	%	N	%
0	488	48.2	377	47.9	865	48.05
1	451	44.6	355	45.1	806	44.85
2	73	7.2	56	7.0	129	7.1
Total	1012	100	788	100	1800	100

Tables 5: Cross Bite

Crossbite Scoring	Male		Female		Overall	
	N	%	N	%	N	%
0	841	83.1	635	80.6	1476	81.85
1	106	10.4	85	10.8	191	10.6
2	23	2.3	28	3.5	51	2.9
3	26	2.6	21	2.7	47	2.65
4	11	1.1	13	1.6	24	1.35
5	5	0.5	6	0.8	11	0.65
Total	1012	100	788	100	1800	100

Tables 6: (Classification)

Classification Scoring	Male		Female		Combined	
	N	%	N	%	N	%
1	823	81.3	649	82.4	1472	81.85
2	166	16.4	124	15.7	290	16.05
3	23	2.3	15	1.9	38	2.1
Total	1012	100	788	100	1800	100

Tables 7: (Overjet)

Overjet Scoring	Male		Female		Overall	
	N	%	N	%	N	%
1	591	58.4	466	59.1	1057	58.75
2	235	23.2	176	22.4	411	22.8
3	66	6.5	52	6.6	118	6.55
4	98	9.7	73	9.3	171	9.5
5	22	2.2	21	2.6	43	2.4
Total	1012	100	788	100	1800	100

Tables 8: (Overbite)

Overbite Scoring	Male		Female		Overall	
	N	%	N	%	N	%
1	396	39.1	317	40.2	713	39.65
2	391	38.6	305	38.7	696	38.65
3	142	14.1	105	13.4	247	13.75
4	83	8.3	61	7.7	144	8.00
Total	1012	100	788	100	1800	100

Discussion

Although lot of studies have been done on prevalence of malocclusion and its different types. But it is difficult to compare these findings because of the great variation in the methods used. [18, 19] So this study was done using Ackermann-Proffit [17] system of classification of malocclusions. This system records malocclusion in all the three planes (i.e., sagittal, transverse and vertical planes). The present study included 1800 subjects in the age group between 12-18 years. The subjects were divided into two groups: group I [males, N=1012(56.22%)] and group II [females, N=788(43.77%)]. In overall sample 69% had no midline discrepancy whereas 26.2% had midline discrepancy of less than half the width of lower incisor and 4.8% had midline discrepancy of greater than half the width of lower incisor and there was no significant difference in between males and females in midline discrepancy. These results were similar to results of previous study [20].

There was no spacing in 80.1% subjects whereas 7.65% subjects presented with midline diastema, 9.4% subjects showed anterior spacing and 2.85% subjects showed posterior spacing. There was no difference in males and females with respect to spacing scores. The present findings suggests that anterior spacing is more common than posterior spacing. The above results were similar to previous studies [20, 16].

There was no crowding in 48.05% sample although 44.85% sample size showed anterior crowding and 7.1% sample showed posterior crowding with no significant difference between males and female subjects. It shows that anterior crowding is much more common in Kashmirii population than posterior crowding. Thilander *et al.* [8] had reported 52.1% prevalence of crowding which is almost similar to our study. Similar results were also found by *tek et al* [6] and *singh et al.* [16]. In the present study it was found that there is no cross bite in 81.85% subjects whereas 10.6% subjects showed single tooth cross bite, 2.9% showed cross bite of two or more teeth, 2.65% showed anterior cross bite, 1.35% subjects showed posterior unilateral cross bite and 0.65% subjects showed posterior bilateral cross bite with no significant difference between male and female subjects. The present findings show that single tooth cross bite is more common than multiple teeth cross bite and posterior unilateral cross bite is more frequent than posterior bilateral cross bite. Borzabadi-Farahani *et al.* (2009) had reported prevalence of anterior cross bite of 8.4% which is concordance to our study whereas few studies have found more prevalence of posterior cross bite than ours [14, 21, 22].

81.85% subjects had class I molar relationship, 16.05% subjects had class II molar relationship and 2.1% subjects had class III molar relationship. The distribution of Class II malocclusion in this study was 16.05%, comparable with study conducted by *Lew et al.* [23], *Lagana G et al.* [9] and *Jacob and Mathew* [10] whereas few studies have found higher frequency of class 2 malocclusion than our study [13, 14]. 2.1% subjects showed class III malocclusion which is in accordance with various studies [9, 14], although few studies showed lower

values for class III malocclusion than our study [12, 21]. Present study showed that about 59% of total sample showed normal overjet (1-3mm) which were similar to previous studies [16, 20] whereas 22.8% showed an overjet of 3-5mm similar to above studies [14, 20], Corruccini *et al.* [24] found that 8% had more than 5 mm of overjet and we found that 6.5% subjects showed overjet of greater than 6mm, 9.5% showed overjet of less than 1mm and 2.4% showed reverse overjet. Prevalence of normal overbite (1/3rd of lower incisor overlap) was found in 39.6% subjects which was higher than found by Singh *et al.* [16], around 39% subjects showed overlap of about 2/3rd of lower incisor which is similar to previous studies [16, 20]. Complete overbite was seen in about 14% subjects and 8% subjects showed edge to edge bite.

Conclusion

The following conclusions were drawn from the present survey.

1. There was no spacing in 80.1% subjects whereas 7.65% subjects presented with midline diastema, 9.4% subjects showed anterior spacing and 2.85% subjects showed posterior spacing.
2. There was no crowding in 48.05% sample although 44.85% sample size showed anterior crowding and 7.1% sample showed posterior crowding.
3. that there is no cross bite in 81.85% subjects whereas 10.6% subjects showed single tooth cross bite, 2.9% showed cross bite of two or more teeth, 2.65% showed anterior cross bite, 1.35% subjects showed posterior unilateral cross bite and 0.65% subjects showed posterior bilateral cross bite.
4. 81.85% subjects had class I molar relationship, 16.05% subjects had class II molar relationship and 2.1% subjects had class III molar relationship.
5. 59% of total sample showed normal overjet (1-3mm), 22.8% showed an overjet of 3-5mm, 8% had more than 5 mm of overjet and we found that 6.5% subjects showed overjet of greater than 6mm, 9.5% showed overjet of less than 1mm and 2.4% showed reverse overjet.
6. Normal overbite (1/3rd of lower incisor overlap) was found in 39.6% subjects, around 39% subjects showed overlap of about 2/3rd of lower incisor. Complete overbite was seen in about 14% subjects and 8% subjects showed edge to edge bite.

References

1. Mtaya M, Brudvik P, A storm AN. Prevalence of malocclusion and its relationship to socio-demographic factors, dental caries and oral hygiene in 12 to 14 year old Tanzanian school children. *Eur. J Orthod.* 2009; 31:467-76.
2. Liu Z, McGrath C, Hagg U. The impact of malocclusion/orthodontic treatment need on the quality of life. A systemic review. *Angle orthod.* 2009; 79(58):5-91.
3. Van Wyk PJ, Drummond RJ. Orthodontic status and treatment need of 12 year old children in South Africa using the dental Aesthetic Index. *SADJ* 2005; 60:334-338.
4. Mohin B, Al-Saadi E, Andrup L, Ekblom K. Orthodontics in 12 year old children. Demand, treatment motivating factors and treatment decisions. *Swed Dent J* 2002; 26:89-98.
5. Brito DI, Dias PF, Gleiser R. Prevalence of malocclusion in children aged 9 to 12 years old in the city of Nova

- Friburgo, Rio de Janeiro, Brazil. *R. Dent. Pres. Orthod Ortop Facial.* 2009; 14:118-124.
6. Tak M, Nagarajappa R, Sharda AJ, Asawa K, Tak A *et al.* Prevalence of malocclusion and orthodontic treatment needs among 12-15 years old school children of Udaipur, India. *Eur J Dent.* 2013; 7:S45-53.
7. Kumar P, Londhe SM, Kotwal A, Mitra R. Prevalence of malocclusion and orthodontic treatment need in schoolchildren-An epidemiological study. *Med J Armed Forces India.* 2013; 69:369-374.
8. Thilander B, Pena L, Infante C, Parada SS, De Mayorga C. Prevalence of malocclusion and orthodontic treatment need in children and adolescents in Bogota, Colombia. An epidemiological study related to different stages of dental development. *Eur J Orthod.* 2001; 23:153-167.
9. Laganã G, Masucci C, Fabi F, Bollero P, Cozza P. Prevalence of malocclusions, oral habits and orthodontic treatment need in a 7-to 15-year-old schoolchildren population in Tirana. *Prog Orthod.* 2013; 14:12.
10. Jacob PP, Mathew CT. Occlusal pattern study of school children (12-15 years) of Trivandrum City. *J Indian Dent Assoc.* 1969; 41:271-274.
11. Nagraja Rao G, Bhat KS, Venkateshwarlu M, Subrahmanyam MV. Oral health status of 500 school children of Udupi. *J Ind Dent Ass.* 1980; 52:67-370.
12. Shaikh HS, Desai DH. Varieties of malocclusion amongst orthodontic patients. *J Indian Dent Assoc.* 1966; 38:201-203.
13. Tewari A. Relationship of the incidence of malocclusion with the socio-economic status of people. (An epidemiological study). *J Indian Dent Assoc.* 1966; 38:192-200 passim.
14. Singh SP, Utreja A, Chawla HS. A study of distribution of malocclusion among North Indians seeking orthodontic treatment. *J Ind Orthod Soc.* 1993; 24:47-53.
15. Prevalence of malocclusion among Iranian children. *Dent Res J* 2016; 13(5):387-395.
16. Singh SP, Kumar V1, Narboo P. Prevalence of Malocclusion among Children and Adolescents in Various School of Leh Region. *Journal of Orthodontics & Endodontics.* 2015; 1:2.
17. Ackerman JL, Proffit WR. The characteristics of malocclusion: A modern approach to classification and diagnosis. *Am J Orthod.* 1969; 56:443-54.
18. Grainger RM. Orthodontic treatment priority index. Washington: US Public Health Service, 1968. Publication No 1000-Series 2, No 25. Washington, DC: National Center for Health Statistics, 1967.
19. Salzman JA. Handicapping malocclusion assessment to establish treatment priority. *Am J Orthod.* 1968; 54:749-65.
20. Siddegowda R, Satish RM. The prevalence of malocclusion and its gender distribution among Indian school children: An epidemiological survey. *SRM J Res Dent Sci.* 2014; 5:224-9.
21. Dimberg L, Lennartsson B, Arnrup K, Bondemark L. Prevalence and change of malocclusions from primary to early permanent dentition: A longitudinal study. *Angle Orthod.* 2015; 85:728-734.
22. Corruccini RS, Flander LB, Kaul SS. Mouth breathing, occlusion, and modernization in a north Indian population. An epidemiologic study. *Angle Orthod.* 1985; 55:190-196.

23. Lew KK, Foong WC, Loh E. Malocclusion prevalence in an ethnic Chinese population. *Aust Dent J.* 1993; 38:442-449.
24. Corruccini RS, Kaul SS, Chopra SR, Karosas J, Larsen MD *et al.* Epidemiological survey of occlusion in North India. *Br J Orthod.* 1983; 10:44-47.