Original Article

Prevalence Of Malocclusion In Kathua District Of Jammu & Kashmir: A Cross-Sectional Study

Dr. Heena Sadiq[1], Dr. Abhishek Khajuria[2], Dr. Mandeep Sharma[3], Dr. Sneh Kalgotra[4], Dr. Shahid Shaikh[5]

[1]Assistant Professor, Department of Dentistry, Government Medical College, Kathua, Jammu & Kashmir, India.
[2]Senior Resident , Department of Dentistry , Government Medical College, Kathua, Jammu & Kashmir, India.
[3]Senior Resident,Department of Dentistry , GMC, Government Medical College, Kathua, Jammu & Kashmir, India.
[4]Assistant Professor ,Department of Orthodontics and Dentofacial Orthopedics, IGGDC, Jammu, Jammu & Kashmir, India.
[5]Specialist Pediatric Dentist, Burjeel Hospital, Abu Dhabi, UAE

Corresponding author
Dr. Abhishek Khajuria, Senior Resident , Department of Dentistry , Government Medical College, Kathua, Jammu & Kashmir, India.
DOI: 10.47750/pnr.2023.14.02.54

Abstract

Background: To determine the prevalence of malocclusion.**Materials & methods:**A total of 1000 subjects were enrolled. The age of subjects was between 11- 33 years. The molar relationship was recorded according to Angle's classification as class I, II, or III. The data were analyzed with the SPSS software.**Results:**A total of 1000 subjects were enrolled. Normal occlusion was seen in 75% of the examined population whereas Angle's class I, II, III malocclusion were present in 14%, 8%, and 3%, respectively. The difference in malocclusion was statistically significant.**Conclusion:**There is a high prevalence of normal occlusion.

Keywords: overjet, malocclusion, prevalence.

Introduction

Malocclusion is a morphological variation that is considered as third most prevalent oral pathology after dental caries and periodontal disease. Mal-relationship of arches or individual teeth beyond the normal limits is termed malocclusion. It may affect an individual's social performance and wellbeing.[1]Malocclusion is affected by many factors including genetics, ethnicity, oral and dietary habits, religion, and socio-economic factors. In India, there are significant variations in profile and malocclusion due to ethnic variations of the people from North, South, and North-East. To understand the causes of malocclusion, assessment of the prevalence of malocclusion in such groups may be helpful and it also describes the range of occlusal variations within the community in which orthodontic treatment may be undertaken. [2]Furthermore, the World Dental Federation (FDI) states that "malocclusion may affect oral health by increasing the prevalence of dental caries, periodontitis, risk of trauma and difficulties in masticating, swallowing, breathing and speaking" and that "orthodontic care has evolved to become an integral part of dentistry helping to prevent oral disease and improve quality of life". [3]

The need for early detection and treatment of malocclusion is highlighted by its role in the development of periodontitis, dental caries, temporo-mandibular disorders and trauma. Moreover, malocclusion adversely affects oral functions like mastication, swallowing and speech.[4]Though reports suggest that malocclusion is the second most common dental disorder affecting schoolchildren, there is inadequate implementation of preventive oral healthcare programs.[5] Hence, this study was conducted to determine the prevalence of malocclusion.

Materials & methods

A total of 1000 subjects were enrolledamongnst the patients reporting to the Out Patient Department of Dentistry Department of Government Medical College, Kathua , Jammu and Kashmir. The sample is representative of the population, since Government Medical College is the only tertiary health care institution catering to the population of the Kathua district . The age of subjects was between 11- 33 years. The molar relationship was recorded according to Angle's classification as class I, II, or III. Overjet is measured with the help of millimeter gauze, it is the distance between the incisal edges of the upper and lower permanent central incisors. It is registered as Ideal overjet- when equal to 2 mm, increased-more than 2 mm and decreased or reverse overjet in case of less than 2 mm. The data were analyzed with the SPSS software. The Chi-square test was used for calculating the p - value and level of significance at 0.05.

Results

A total of 1000 subjects were enrolled. Normal occlusion was seen in 75% of the examined population whereas Angle's class I, II, III malocclusion were present in 14%, 8%, and 3%, respectively. The difference in malocclusion was statistically significant.

Table 1: Prevalence of malocclusion

Type of occlusion	%
Normal occlusion	75%
Class I malocclusion	14%
Class II malocclusion	8%
Class III malocclusion	3%

Normal overjet (0-2 mm) was seen in 65%, increased overjet (>2 mm) was present in 32% cases, and reduced/ reverse overjet was 3%. The data was statistically significant.

Table 2: Frequency of over-jet

Gender	Normal	Increased	Reversed	p- value
Male	46%	20%	2%	0.05
Female	19%	12%	1%	
Total	65%	32%	3%	

Discussion

Malocclusion has a multifactorial aetiology, being caused by hereditary factors, environmental factors or a combination of both.[6] Genetically determined factors exert their influence during growth and can, therefore, lead to development of a malocclusion.[7] These influences can be combined with aetiological factors such as bad habits. In cases of sucking habits the child interposes his finger, usually the thumb, between the dental arches causing the tongue to move downwards. The tongue is unable to reach its correct position on the palate, preventing it from developing transversely; moreover, the position of the thumb against the front teeth leads to their prominence. Children tend to develop an anterior open bite and posterior cross-bite due to lack of palatal development.[8] Posterior teeth may also extrude, caused by the lack of occlusal contact due to the interposition of the finger.[7] Lip or cheek sucking also causes problems with occlusion and correct skeletal-facial development. In patients with sucking of the lower lip there is contraction of the lower orbicularis and mental muscle with subsequent proinclination of the maxillary teeth, retroinclination of the mandibular teeth, increased overjet, irregularity of the lower incisors. [9]Hence, this study was conducted to determine the prevalence of malocclusion.

In the present study, a total of 1000 subjects were enrolled. Normal occlusion was seen in 75% of the examined population whereas Angle's class I, II, III malocclusion were present in 14%, 8%, and 3%, respectively. The difference in malocclusion was statistically significant. A study by Sharma A et al, studied total of 3,042 subjects were selected, age ranging from 11-33 years. Parameters studied were molar relationship, facial profile, overjet, overbite, reverse overjet, open bite, and supernumerary teeth. The prevalence of normal occlusion was seen in 77.4%, Angle's class I malocclusion was present in 13.5%, class II in 7.7%, and class III was seen in 2.8% of the study population which is statistically significant. Straight facial profile was observed in 91%, 7.9% had convex and 1.08% had a concave profile. Increased overjet was present in 33.5% of cases and reverse overjet was seen in

1.08%. The normal overbite was recorded in 70%, increased bite was seen in 29% and the open bite was present in 0.95% of the examined population, supernumerary teeth were seen in 18 children.[10]

In the present study, normal overjet (0-2 mm) was seen in 65%, increased overjet (>2 mm) was present in 32% cases, and reduced/ reverse overjet was 3%. The data was statistically significant. Another study by Gudipaneni RK et al, studied the most common malocclusions in order of prevalence were Angle's Class I (52.8%), Angle's Class II (31.8%), Angle's Class III (15.4%), crowding (47.2%), excessive overjet (> 2 mm) (22.2%), reduced overjet (< 1 mm) (11.4%), excessive overbite (> 2 mm) (23.4%), reduced overbite (< 1 mm) (12.2%), anterior crossbite (4.8%), posterior crossbite (9.4%) and open bite (4.6%). The most common facial profiles determined in the sagittal plane, were the straight facial profile (49.2%), convex (42.6%) and concave (8.2%). The prevalence of Grade 1 and 2 DHC was 49.4%, Grade 3 was 29.6%, Grade 4 and 5 was 21%. The prevalence of malocclusion and orthodontic treatment need among the north border region of KSA is comparable with that of other regional studies.[11]The persistence of malocclusion without any treatment can lead to negative problems in the quality of children's life and their parents because of physiological and social changes, caused by this disorder.[12] There may be problems with aesthetics, mastication and phonation; according to Siluvai et al. 46% of young people with malocclusion had a negative impact on lifestyle (OHRQoL). [13]Elham SJ et al. reported 24.7% increased overjet in 13–15-year-old Jordanian school children.[14]Borzabadi-Farahani A et al. reported that an over jet of at least 3.5 mm or more was present in 28.1%; an overjet of more than 6 mm in 3.6%, and 4.2% had a reverse overjet in Iranian adolescents.[15]Asiry MA conducted a study on 1825 Saudi school children and reported excessive overbite in 6.68% of the study population. [16]BorzabadiFarahaniA et al. observed normal overbite was observed in 60.4%, while 34.5% had an increased and 2.2% a very deep overbite. [15]

Conclusion

There is a high prevalence of normal occlusion. Amongst Angle's classification of malocclusion highest prevalence was since in relation to Class I malocclusion.

References

1. Aggarwal SS, Jayan B, Chopra SS. An overview of malocclusion in India. Dent Health Oral DisordTher. 2015;3(03):319–322.
2. Damle D, Dua V, Mangla R, et al. A study of occurrence of malocclusion in 12 and 15 year age group of children in rural and backward areas of Haryana, India. J Indian SocPedodPrev Dent. 2014;32:273–278
3. World Dental Federation From Strictly Aesthetics to an Integral Part of Oral Health: A Brief History of Orthodontics through the Ages. [(accessed on 2 June 2022)]
4. Sanadhya S, Chadha M, Chaturvedi MK, Chaudhary M, Lerra S, Meena MK, et al. Prevalence of malocclusion and orthodontic treatment needs among 12–15-year-old schoolchildren of fishermen of Kutch coast, Gujarat, India. IntMarit Health. 65(3):106–113.
5. Agarwal S., Jayan B., Chopra S. An overview of malocclusion in India. JDHODT. 2015;3(3):319–322.
6. Zou J., Meng M., Law C.S., Rao Y., Zhou X. Common dental diseases in children and malocclusion. Int. J. Oral Sci. 2018;10:1–7.
7. Marcomini L., Lucato A.S., dos Santos J.L.B., Tubel C.A.M. Prevalence of malocclusion and its relationship with functional changes in the breathing and in the swallowing. Braz. Dent. Sci. 2010;13:52–58.
8. Abate A., Cavagnetto D., Fama A., Maspero C., Farronato G. Relationship between Breastfeeding and Malocclusion: A Systematic Review of the Literature. Nutrients. 2020;12:3688.
9. Germeç D., Taner T.U. Lower lip sucking habit treated with a lip bumper appliance. Angle Orthod. 2005;75:1071–1076.
10. Sharma A, Bihani T. Prevalence of Malocclusion in Mewat District of Haryana: A Cross-sectional Study. Int J ClinPediatr Dent. 2022 Jan-Feb;15(1):90-93.
11. Gudipaneni RK, Aldahmeshi RF, Patil SR, Alam MK. The prevalence of malocclusion and the need for orthodontic treatment among adolescents in the northern border region of Saudi Arabia: an epidemiological study. BMC Oral Health. 2018 Feb 2;18(1):16
12. Johal A., Cheung M.Y.H., Marcenes W. The impact of two different malocclusion traits on quality of life. Br. Dent. J. 2007;202:E6.
13. Siluvai S., Kshetrimayum N., Reddy C.V., Siddanna S., Manjunath M., Rudraswamy S. Malocclusion and related quality of life among 13- to 19-year-old students in Mysore City—A cross-sectional study. Oral Health Prev. Dent. 2015;13:135–141.
14. Elham SJ, Abu Alhaija ES, Al-Khateeb SN, Al-Nimri KS. Prevalence of malocclusion in 13–15 year-old north Jordanian school children. Community Dent Health. 2005;22:266–271.
15. 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 Orthod. 2009;31(5):477–484.
16. Asiry MA. Occlusal Status Among 12-16 year-old school children in Riyadh, Saudi Arabia. J Int Oral Health. 2015;7:20–23.