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Original Research Article

# Prevalence of dental malocclusion and its gender distribution among dental students at Kabul university of medical science

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ABSTRACT

**Aim:** The current study aims to provide quantitative and qualitative information about the prevalence of dental malocclusions among dental students of Kabul University of Medical Sciences (KUMS) in the orthodontics department of Ali Abad Teaching Dental Clinic that evaluates the relationship of malocclusion between gender and the major causes of malocclusion in society among genders and the tendency of the community toward the treatment of dentoalveolar anomalies.

**Materials and Methods:** This study was a cross-sectional survey that was done randomly among 133 students, 68 male (51.12%) and 65 female (48.87%), in an age range of 18–25 years old at Kabul University of Medical Sciences, Ali Abad teaching dental clinic faculty of dentistry.

**Results:** show the dental malocclusion classes due to "angle" classification in females in Class I (53.48%), Class II (21.4%), and Class III (23.07%), while in males in Class I (48.33%), Class II (6.66%), and Class III (43.33%). The prevalence rate of crowding was 33% in males and 43% in females. It has been studied and analyzed separately that the most common oral problems in females were dental caries (53.84%). According to our survey (65 female participants), no one had periodontitis, while in males, plaque was at a rate of 28.97%, and the least common was gingivitis (6%), respectively.

**Conclusions:** The occurrence of dental trauma in boys and heredity in girls may be the most important factors for dental malocclusion. Girls were more interested in orthodontic treatments, which may be because they pay more attention to beauty than boys. Moreover, crowding had the highest rate among participants, followed by deep, open bites and edge-to-edge bites.



## 1. Introduction

Occlusion can be defined as the contact between upper and lower teeth in all mandibular positions and movements. Different classifications have been presented previously, by Angle, of which classification based on the first permanent molars relationship is now used. Based on this classification, occlusion is divided into three categories: Class I is the normal relationship between the upper and lower first permanent molars. In this class, the lower first permanent molar is about 1/4 tooth width anterior to the same upper tooth. In class II, the lower first permanent molar and other lower teeth have a more posterior position and, in class III, the lower first permanent molar and other lower teeth have a more anterior position. Malocclusion in itself is not a life-threatening condition; however, it may unfavorably affect the social interactions and psychological well-being of patients.

The high prevalence of malocclusion has made it a public health problem in the world; it is now considered the third-highest oral health priority.[1,2] "A malocclusion is defined as an irregularity of the teeth or a mal relationship between the dental arches beyond the range of what is accepted as normal."[3] Malocclusion is one of the most common

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dental problems as well as dental caries, periodontal disease, and dental fluorosis.[4] The etiology of malocclusion is multifactorial and can be a combination of hereditary factors including some stimulus during the formation and development of orofacial structures and environmental factors such as oral habits, social characteristics, and diet.[5–7]

The prevalence of malocclusion has been reported in a range from 20% to 80% in the majority of studies. This wide range is because of the differences in ethnic groups, age groups, and registration procedures.[8,9] In the study conducted by Proffit et al., in the USA, almost 30% of people have normal occlusion, and the prevalence of Class I malocclusion was between 50–55%. The prevalence of Class II and Class III malocclusion is about 15% and <1%, respectively.[10] Another study in Denmark has reported the prevalence of normal malocclusion as 14%, Class I malocclusion at 58%, Class II malocclusion at 24%, and Class III malocclusion at 4%.[11] Among the Chinese living in Australia, the prevalence of normal malocclusion was reported to be 7.1%, Class I malocclusion 58.8%, Class II malocclusion 21.5%, and Class III malocclusion 12.6%.[12]

At present, malocclusion is the third most common dental disease after dental caries and periodontal diseases in the world. So, malocclusion is a multifactorial problem that concludes several factors like; Caries and premature loss of primary teeth are considered predisposing factors for occlusal and space anomalies in mixed and permanent dentitions.[13]

Relevant studies were carried out in different countries to investigate the prevalence of dental malocclusion and its common features of it in terms of gender which showed different results: A study in India showed that the prevalence of crowding is 50.4% in boys and 51.4% in girls. Cross-bite was reported at 17.8% and 18.3% in boys and girls, respectively. Angles class I malocclusion was reported in 78.4% of boys and 80.2% of girls. Angles class II malocclusion was reported in 21.5% of boys and 19.8% of girls and class III malocclusion was observed in 0.1% of boys. Crowding was found to be the most common feature, followed by increased overjet, deep bite, and anterior open bite in that order. But in another study in Pakistan Agha Khan University, increased overjet was found to be the most common feature. In this study, females were observed to have more class 1 than males. The study showed that oral health-related quality of life improves with the treatment of malocclusion.

Besides, in Afghanistan, the nonexistence of enough investigations or research about oral health especially dental malocclusion considering gender is a big challenge, because Afghanistan has been suffering from poverty, conflicts, and social inequality in terms of living standards, and such conditions are known to severely impact oral health.

## 2. Research Objectives

1. To find out the prevalence of dental malocclusion in both gender males and females.
2. To identify the major causes and problems of dental irregularities.
3. To demonstrate the tendency of both genders for treatment of dental malocclusion.

## 3. Materials and Methods

The ethical committee of Kabul University of Medical Sciences approved the study, and permission to survey dental students. Permission was also obtained from the University Hospital authorities, and themselves.

This study is a cross-sectional study that has been done randomly among 133 students, 68 male (51.12%) and 65 female (48.87%) in a range age of (18-25) years at Kabul University of Medical Sciences, faculty of dentistry, 2020.

The type of research approach was a survey based on qualitative and quantitative questions. Data collection was started from 20 September to 20 November by the distribution of 140 questionnaires among dental students at Kabul University of Medical Sciences. Each questionnaire consisted of 12 multiple choice and two-point scale questions. After the expression of consent, the questionnaires were asked of the participants.

The students were examined by a single examiner to avoid inter-examiner variations. Before the survey, both the examiner and record assistant underwent clinical calibration training in the Orthodontics department of Ali-Abad Teaching University. Moreover, their mouths and teeth were examined with a sterile mouth mirror, explorer, and tweezer under the supervision of orthodontics specialists for the presence of dental malocclusion class I, class II, and class III classification based on angle's definition in students.

The observation was recorded in the assessment form and later transferred to the computer. Dental bites and other oral information related to participants were extracted based on the information contained in the files.

Before analysis, the dataset was preprocessed for missing values and outliers. All the charts and analysis are taken place using the excel program.

### *3.1. Inclusion criteria*

1. Age group between 18-25 years.
2. Students who have enough teeth in their jaws.
3. Students who are willing to participate in the research and are satisfied.
4. Students of dentistry faculty. This criterion was related to the research objective because conducting the survey was easier on dental students than on other faculties' students.

### 3.2. Exclusion criteria

1. Age group out of 18- 25 years.
2. Students who have lost their teeth for various reasons.
3. Students who are not satisfied with the research.
4. Students of other faculties except for dentistry faculty.

## 4. Result

Among the 133 participants who had the characteristics of sample entry and were accepted to participate in this research "68" of them were males, "and 65" of them were females with an age range of 18-25.

**Table 1:** Gender distribution

| | Total no. of subjects (N) | N (%) |
|---|---|---|
| Male | 68 | 51.12 |
| Female | 65 | 48.87 |
| Total | 133 | 100 |

Angle's class I, II, and III malocclusions were present in 51.1%, 14.3%, and 33.9%, respectively. The difference in malocclusion was statistically significant. (Table 2)

It has been shown that the dental malocclusion classes due to "angle" classification in females' class I (53.48%) class II (21.4%) class III (23.07%) while in males' class I (48.33%) class II (6.66%) class III (43.33%) therefore the statistics shows that the prevalence rate of class I in both genders is high.

**Table 2:** Distribution of angles' classes due to gender

| | Angle's Classes | | |
|---|---|---|---|
| **Gender** | **Class 1** | **Class 2** | **Class 3** |
| Male | 48.33% | 6.66% | 43.33% |
| Female | 53.84% | 21.53% | 23.07% |
| Total | 51.1% | 14.3% | 33.9% |

Following is the evaluation of the results in terms of "causal factors (inheritance, trauma), gender, blood groups, the psychological and aesthetic effect of malocclusion and interest to treatment.

According to this study, several causal factors were reported and found which are: crowding, trauma, inheritance, gender, blood groups, oral bad habits (mouth breathing, bruxism, nail chewing, thumb sucking, and tongue thrust), and oral problems. It has shown that each of these factors has its own direct and indirect relationship with malocclusion. All these leading factors are described in separate figures and tables below. For example, One of the most important human genetic characteristics is the relationship between the ABO blood group system and malocclusions which will be discussed in detail in the blood groups factor.

It has been studied and analyzed for Oral problems separately. In females, the most oral problem was dental

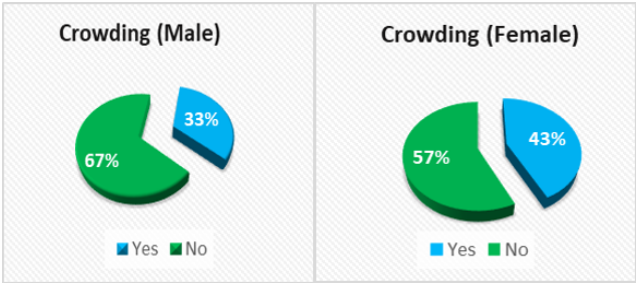


**Fig. 1: a,b:** Show the rate of crowding in males (33%) and females (43%).

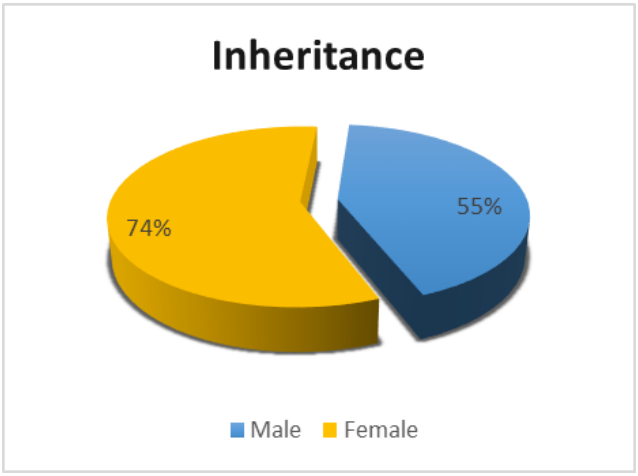


**Fig. 2:** Shows the existence of dental malocclusion among their family members and relatives, which describes the role of inheritance (74%) in girls and (55%) boys, the 23% difference indicates that inheritance in females is one of the significant factors in causing dental malocclusion because more than one member of the family has the same condition.

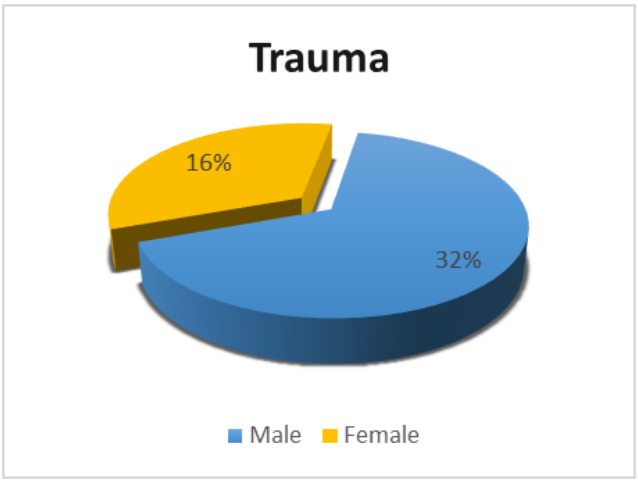


**Fig. 3:** Explains trauma during childhood in primary teeth of both genders. It describes the incidence of trauma in deciduous teeth during their childhood (16%) in females and (32%) in males.

caries (53.84%). In males, the most common problem was dental plaque (28.97%) and the least were Gingivitis (6%) in females, and (4.67%) in males, respectively. Table 3

**Table 3:** Oral problems

| Oral Problems | Male | Female |
|---|---|---|
| Caries | 28.04% | 53.84% |
| Dental plaque | 28.97% | 20% |
| Gingivitis | 4.67% | 6% |
| Periodontitis | 8.41% | 0% |
| Non-Existing Oral Problems | 9.34% | 24.61% |

The prevalence of these oral bad habits in each gender has been studied and analyzed separately. In females, the most common type of bad habit was bruxism (18.46%). While in males, the most common type of unhealthy habit was mouth breathing (14.06%). Table 4

**Table 4:** Oral bad habits

| Oral Bad Habits | Male | Female |
|---|---|---|
| Bruxism | 7.81% | 18.46% |
| Nail chewing | 3.125% | 1.53% |
| Thumb sucking | 1.56% | 3.07% |
| Tongue thrust | 0% | 1.53% |
| Nothing | 73.437% | 73.84% |

Normal bite (2-4 mm) was seen in 63.9% examined population (63.33% in males and 64.61% in females). Similarly, Deep bite/ increased bite was seen in 15.3% and the open bite was present in 10.5% of cases. The data was statistically significant. Table 5

**Table 5:** Dental bites

| Dental Bites | Male | Female |
|---|---|---|
| Deep bite | 11.66% | 18.46% |
| Open bite | 10% | 7.69% |
| Crossbite | 0% | 1.53% |
| Edge to Edge Bite | 15% | 0% |

Moreover, based on the findings of this study, it is concluded that blood group types of O and B in both genders are prominent leading factors to malocclusion in other words there is a relationship between them based on this study. Actually, according to the table (6), there is only the prevalence of blood groups among participating students, and more details regarding the relationship between them and malocclusion are discussed in the discussion section. Table 6

**Table 6:** Blood groups

| Blood Groups | Male | Female |
|---|---|---|
| B | 34.8% | 30.7% |
| O | 36.3% | 36.9% |
| AB | 6% | 10.7% |

Another issue that should be found in the influence of malocclusion on both genders. In females; very high impact (26%), medium impact (40%), very low impact (34%) and in males; very high impact (33.3%), medium impact (33.3%), very low impact (33.3%). Figure 4

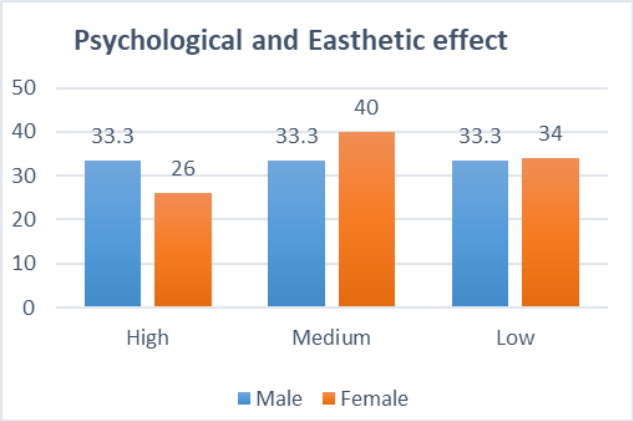


**Fig. 4:** Describes the percentage of psychological and aesthetic Effects of dental malocclusion on both genders.

Based on our study, it has shown that each gender has its inclination for treatment of this teeth irregularity. 64.4% out of 65 females, wanted to be treated immediately without any financial consideration – a valuable issue for them, (7.6%) were not interested to seek treatment, and (4.6%) don't want to treat this irregularity means that it is not important for themselves. While in males, 45.4% out of 68 wanted to treat this teeth irregularity as soon as possible – a valuable issue for them, (9%) were not very interested in treatment. It has cleared based on this finding that a high percentage of girls are willing to seek treatment without any financial problems or anything else rather than boys. Figure 5

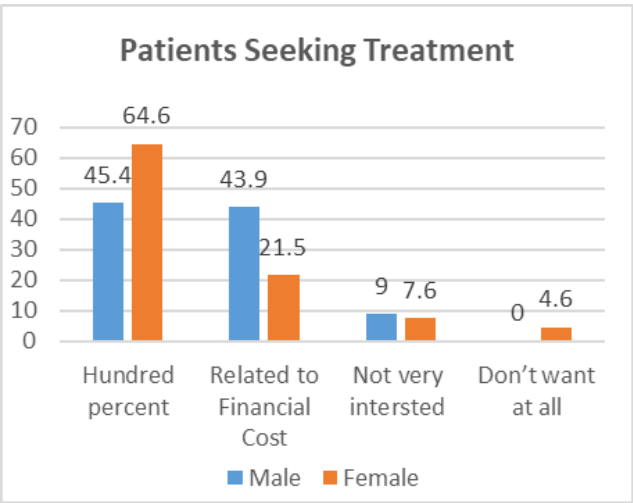


**Fig. 5:** Shows the interest of participants in treatment in a percentage.

## 5. Discussion

In each country, the prevalence of malocclusion is different. For example; in Saudi Arabia, its prevalence is 62.4%, in Colombia 88.1%, and in the United States, the prevalence is 20-43%.[14] While the range of this prevalence in India is 20 – 43%.[15] So, these variations will help us to find the leading factors of malocclusion.

The prevalence of each Angle's class is also different. In Europe and Africa, the prevalence of Angle's class 1 was in a wide range between 10.3-84.3%.[16–25] In our study, the percentage of class 1 malocclusion among Afghan students was 51.1%, which is a similar finding to studies in Pakistan and Iran with approximately 54.7%.[16–25]

The prevalence rate of Angle's class 2 in Afghanistan is closer to the prevalence rate of it in Pakistan, Iran, and India. Meanwhile, the prevalence of class 3 malocclusion in Afghanistan is not at a high rate, and this finding of our study is also similar to findings found in Iran, Pakistan, and India.[16–25] In return for these similarities and findings, we can tell that racial, cultural, Climate, nutritional, ethnic, and genetic similarities bring about be same findings.

Several factors were examined for the relationship between dental malocclusion and them. Regarding trauma, this study has shown that the prevalence of trauma in males is more high (32%) than in females (16%) which is similar to the finding of Rohini Dua and Sunila Sharma's study; 63.2% in males and 36.4% in females.[26] Inheritance is another factor that can cause it and based on this study, it cleared that for those students who had malocclusion, some or most of their family members had the same condition which alludes to genetics. In this allusion, blood groups have their roles; A study in India has determined the relationship between the malocclusion and blood grouping system.[27] Moreover, based on the findings of this study, it is concluded that blood group types of O and B in both genders, as well as the occurrence of dental trauma in males and heredity in females, maybe the most important factors for dental malocclusion among the participants.

To compare, a study in India showed that the prevalence of crowding was 50.4% in boys and 51.4% in girls, crossbite was reported at 17.8% and 18.3% in boys and girls, respectively. While in this study the prevalence of crowding in boys was 67% and 57% in girls, the crossbite was 1.53% in girls and wasn't reported in boys. Angle's class I malocclusion was reported at 78.4% in boys and 80.2% in girls. Angles class II malocclusion was reported in 21.5% of boys and 19.8% of girls and class III malocclusion was observed in 0.1% of boys. While in this survey angles class 1 malocclusion is 48.3% in boys and 53.8% in girls. Angles class II is 6.6% in boys and 21.5% in girls and class III is 43.3% in boys. In another research, crowding was found to be the most common feature, followed by increased overjet, deep bite, and anterior open bite in that order. In this research, crowding has also the highest rate among participants following the deep bite, open bite, and edge-to-edge bite. In research in Pakistan, females were observed to have more class 1 than males. In this study, females were observed to have more class 1 than males as well.

The prevalence of dental caries in both genders is more common than other oral problems, while the rate of bruxism in females is more common than in other oral habits. However, several other factors can lead to malocclusion such as dental plaque, which causes gingivitis, so, maybe there is a direct relationship between dental plaque and gingivitis. According to our research, probably there is a direct relationship between mouth breathing and oral problems such as caries and gingivitis, and also a relationship between open bite, class I, and class II malocclusion.

In the presence of teeth irregularity, it becomes difficult to clean the teeth. Therefore, remaining food in the teeth for a long time is one of the main factors for the formation of dental caries, dental plaque, and calculus which are observed in both genders. Therefore, irregularity of teeth may cause dental carries directly.

It shows the probable relation between causal factors and their effect on oral health.

**Table 7:** Causal factors and their effects

| Causes | Effects |
|---|---|
| Bruxism | Periodontitis |
| Dental Plaque | Gingivitis |
| Mouth Breathing | Caries, Gingivitis |
| Class 2, Class3 | Open bite |
| Edge to Edge Bite | Class 1 |
| Open bite, Class 2, Class 3 | Mouth breathing |

This study showed that among participants females are more interested in treatment and have fewer psychological effects of dental irregularities than males. According to the findings of this research girls with a difference of 20% less than boys, they seek treatment, which may be because girls pay more attention to beauty than boys.

According to the current study and Table 8, there were many differences between the prevalence of dental irregularities in girls and boys based on the causes and existing of an unequal number of participants in terms of gender, certainly, we can't judge in which gender the teeth irregularities were more or less.

**Table 8:** Prevalence ofdental malocclusion in both sexes according to its mean

| | Male | Female |
|---|---|---|
| Oral Problems | 17.38% | 20.27% |
| Dental Bites | 20% | 8.46% |
| Oral Bad Habits | 5.31% | 6.46% |
| Dental Crowding | 33% | 43% |
| Overall Average of Observation | 21.7% | 22.88% |

Note: This study had a limited number of samples and students were randomly selected. Therefore, the results of the study indicate the prevalence of dental malocclusion among dental students at Kabul University of Medical Science, which can't be attributed to all members of society or all students in Afghanistan.

## 6. Conclusion

The following conclusions were drawn from the present survey:

1. Angle's class I malocclusion was 48.3% in males and 53.8% in females. Angles class II was 6.6% in males and 21.5% in females and class III was 43.3% in males and 23% in females.
2. Class I of malocclusion was more common in females than males, while class III of malocclusion was more common in males than females.
3. Crowding had the highest rate among participants followed by a deep bite, open bite, and edge-to-edge bite.
4. The occurrence of dental trauma in boys and heredity in girls may be the most important factors for dental malocclusion.
5. Girls were more interested in orthodontic treatments which may be because they pay more attention to beauty than boys.

## 7. Recommendations

1. According to our survey conducted among the students of dentistry faculty at Kabul University of Medical Science, because all those students were Dental students who had sufficient knowledge and information about the problems of dental abnormalities and irregularities, this caused all of them to pay serious attention to their oral health especially dental irregularities. So, we can understand that having knowledge and information about an issue is necessary to solve or reduce the problem. Thus, we ask and highly recommend Afghanistan government reduce dental irregularities in society by spreading sufficient information about it and raising awareness in the communities. They should inform the public through press and academic conferences in schools and universities, as well as through the media so that the general public pays attention to oral health especially dental malocclusion.
2. According to our research, girls were more interested in treating dental malocclusion than boys, and it is also clear that dental treatments and special orthodontics treatments are often expensive so the majority of people can't afford the treatment. Therefore, we urge and recommend the government to provide more facilities for women, both financially in terms of easy access to treatment, especially orthodontists, to offer more discounts for the treatment of women. In this way, we can increase the interest of people in the treatment of dental disorders and also can reduce the rate of dental disorders in society.
3. There is very little research about dental malocclusion in Afghanistan, and we cannot further and deeply evaluate the underlying problems of people with insufficient data. Thus, we need more research on more people in all provinces to have access to more information and big data to be able to propose and build effective solutions and programs to solve or reduce malocclusion problems. Therefore, we recommend our government provide more opportunities for researchers regarding such investigations.

## 8. Author Contributions

H. Ehsan. Contributed to the idea of research, questionnaire distribution, and collection, interpretation of the results, preparation of master table results, and writing and data analysis of the paper; M. Azami. Contributed to the idea of the research, preparation of master table for results, interpretation of the results, and writing and revising the paper; S. Azimi. Contributed to the idea of the research, interpretation of the results, and revised the paper. All authors gave final approval and agree to be accountable for all aspects of the work.

## 9. Conflict of Interest

None.

## 10. Source of Funding

None.

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## References

1. Marques LS, Porteus IA, Ramos-Jorge ML, Filogônio CA, Filogônio CB, Pereira LJ, et al. Factors associated with the desire for orthodontic treatment among Brazilian adolescents and their parents. *BMC Oral Health*. 2009;9:34. doi:10.1186/1472-6831-9-34.
2. Tak M, Nagarajappa R, Sharda AJ, Asawa K, Tak A, Jalihal S, et al. Prevalence of malocclusion and orthodontic treatment needs among 12-15 years old school children of Udaipur, India. *Eur J Dent*. 2013;7(Suppl 1):45–53. doi:10.4103/1305-7456.119071.
3. Gupta DK, Singh SP, Utreja A, Verma S. Prevalence of malocclusion and assessment of treatment needs in β-thalassemia major children. *Prog Orthod*. 2016;17(1):7. doi:10.1186/s40510-016-0120-6.

4. Ahangar-Atashi MH, Dabaghi-Tabriz F, and SMR. Prevalence of Dental Malocclusions in Patients admitted to the Department of Orthodontics, School of Dentistry, Tabriz, in 2016. *J Contemp Dent Pract*. 2016;18(11):1034–9. doi:10.5005/jp-journals-10024-2171.
5. 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(5):728–34. doi:10.2319/080414-542.1.
6. Peres KG, Barros AJ, Peres MA, Victora CG. Effects of breastfeeding and sucking habits on malocclusion in a birth cohort study. *Rev Saude Publica*. 2007;41(3):343–50. doi:10.1590/s0034-89102007000300004.
7. Heimer MV, Katz CT, and AR. Non-nutritive sucking habits, dental malocclusions, and facial morphology in Brazilian children: A longitudinal study. *Eur J Orthod*. 2008;30(6):580–5. doi:10.1093/ejo/cjn035.
8. Grewe JM, Cervenka J, Shapiro BL, Witkop CJ. Jr Prevalence of malocclusion in Chippewa Indian children. *J Dent Res*. 1968;47(2):302–5. doi:10.1177/00220345680470021701.
9. Mills LF. Epidemiologic studies of occlusion. IV. The prevalence of malocclusion in a population of 1,455 school children. *J Dent Res*. 1966;45(2):332–6. doi:10.1177/00220345660450022001.
10. Proffit WR, Jr HF, Moray LJ. Prevalence of malocclusion and orthodontic treatment need in the United States: Estimates from the NHANES III survey. *Int J Adult Orthodon Orthognath Surg*. 1998;13(2):97–106.
11. Helm S. Malocclusion in Danish children with adolescent dentition: An epidemiologic study. *Am J Orthod*. 1968;54(2):352–66. doi:10.1016/0002-9416(68)90304-7.
12. Lew KK, Foong WC, Loh E. Malocclusion prevalence in an ethnic Chinese population. *Aust Dent J*. 1993;38(6):442–9. doi:10.1111/j.1834-7819.1993.tb04759.x.
13. Alexander S, Hegde S, Sudha P. Prevalence of malocclusion and periodontal status in Tibetan school children of Kushalnagar, Mysore district. *J Indian Soc Pedod Prev Dent*. 1997;15:114–117.
14. Siddegowda R, Satish R. The prevalence of malocclusion and its gender distribution among Indian school children: an epidemiological survey. *SRM J Res Dent Sci*. 2014;5(4):224–9. doi:10.4103/0976-433X.145118.
15. National Oral Health Survey and Fluoride Mapping [India], 2002-03 Dental Council of India New Delhi; 2004.
16. Aikins EA, Onyeaso CO. Prevalence of malocclusion and occlusal traits among adolescents and young adults in Rivers State, Nigeria. *Odontostomatol Trop*. 2014;37(145):5–12.
17. Ahmed G. [Thesis] Medical and Health Studies Board, Graduate College, University Khartoum. Prevalence of Malocclusion in University of Khartoum Students; 2015. Available from: https://scholar.google.com/scholar_lookup?journal=%5bThesis%5d+Medical+and+Health+Studies+Board,+Graduate+College,+University+Khartoum;&title=Prevalence+of+Malocclusion+in+University+of+Khartoum+Students&author=G+Ahmed&publication_year=2015&.
18. Bugaighis I, Karanth D. The prevalence of malocclusion in urban Libyan schoolchildren. *J Orthod Sci*. 2013;2(1):1–6. doi:10.4103/2278-0203.110325.
19. Laganà 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. doi:10.1186/2196-1042-14-12.
20. Kasparaviciene K, Sidlauskas A, Zasciurinskiene E, Vasiliauskas A, Juodzbalys G, Sidlauskas M, et al. The prevalence of malocclusion and oral habits among 5-7-year-old children. *Med Sci Monit*. 2014;20:2036–42. doi:10.12659/MSM.890885.
21. Singh VP, Sharma A. Epidemiology of malocclusion and assessment of orthodontic treatment need for Nepalese children. *Int Sch Res Notices*. 2014;p. 768357. doi:10.1155/2014/768357.
22. Siddegowda R, Satish R. The prevalence of malocclusion and its gender distribution among Indian school children: An epidemiological survey. *SRM J Res Dent Sci*. 2014;5(4):224–9. doi:10.4103/0976-433X.145118.
23. Alatrach AB, Saleh FK, Osman E. The prevalence of malocclusion and orthodontic treatment need in a sample of Syrian children. *Eur J Orthod*. 2001;23(2):153–67. doi:10.1093/ejo/23.2.153.
24. Nazir R, Hussain A, Kaleem M. Oral health status and malocclusion in flood-affected and internally displaced children in Pakistan. *Pak Oral Dent J*. 2012;32(1):110–4.
25. Celikoglu M, Akpinar S, Yavuz I. The pattern of malocclusion in a sample of orthodontic patients from Turkey. *Med Oral Patol Oral Cir Bucal*. 2010;15(5):791–6. doi:10.4317/medoral.15.e791.
26. Dua R, Sharma S. Prevalence, causes, and correlates of traumatic dental injuries among seven-to-twelve-year-old school children in Dera Bassi. *Contemp Clin Dent*. 2012;3(1):38–41. doi:10.4103/0976-237X.94544.
27. Sharma R. Association of ABO blood groups with malocclusion in a population of Jaipur, India: A prospective study. *Int J Sci Stud*. 2015;2(11):45–51. doi:10.17354/ijss/2015/51.


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