

Prevalence of Malocclusion among School-Going Children Aged 12–15 Years: A Study of 200 Patients

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Abstract

Objective: Malocclusion, a common oral health issue affecting dental occlusion and alignment, has significant implications for the overall well-being of school-going children. This study aims to determine the prevalence of malocclusion in children aged 12–15 years, presenting comprehensive results based on a sample of 200 patients. **Materials and Methods:** A cross-sectional survey was conducted among schoolchildren aged 12–15 years, selected from various schools in the local community. Dental examinations were performed by trained orthodontists to evaluate the presence and severity of malocclusion using established criteria, including overjet, overbite, crowding, and midline discrepancies. The patients' demographic data, such as age and gender, were also collected for analysis. **Results:** Out of the 200 patients examined, 134 were male (67%) and 66 were female (33%). The prevalence of malocclusion was found to be 78%, with 95% confidence interval ranging from 73% to 83%. The majority of cases exhibited mild to moderate malocclusion (58%), while severe malocclusion was observed in 20% of the participants. The most common malocclusion type was crowding, affecting 45% of the patients, followed by increased overjet (32%) and increased overbite (23%). In addition, midline discrepancies were identified in 18% of the cases. **Conclusion:** The present study reveals a significant prevalence of malocclusion among school-going children aged 12–15 years, with almost four out of five individuals affected. Crowding was the most frequently observed malocclusion type, warranting early detection and intervention. These findings highlight the importance of regular orthodontic assessments in this age group to identify and address malocclusion-related issues promptly, ensuring improved oral health and overall quality of life for these children. Further research and public health efforts are necessary to explore the factors contributing to malocclusion and to establish effective preventive measures and treatment strategies.

Keywords: Malocclusion, Prevalence, School children.

INTRODUCTION

Malocclusion, defined as the misalignment or improper positioning of the teeth and dental arches, is a prevalent oral health issue among children and adolescents worldwide.^[1] The occurrence of malocclusion during the developmental years can have significant implications for the overall well-being and quality of life of affected individuals.^[2] School-going children aged 12–15 years are particularly vulnerable to malocclusion due to the ongoing growth and development of their craniofacial structures.^[3]

Malocclusion can manifest in various forms, including crowding, overjet, overbite, and midline discrepancies, among others.^[4] These occlusal irregularities can lead to functional problems such as difficulty in chewing, speech impairment, and increased risk of dental caries and periodontal diseases.^[5] Moreover, malocclusion may also impact children's

self-esteem and social interactions, potentially leading to psychosocial issues.^[6]

Understanding the prevalence of malocclusion and its various types in the specific age group of 12–15 years is crucial for planning and implementing appropriate preventive and treatment strategies. Several studies have explored the prevalence of malocclusion among children and adolescents; however, there is a need for updated and region-specific data to address the dynamic changes in oral health patterns.^[7]

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The present study aims to investigate the prevalence of malocclusion among 200 school-going children aged 12–15 years and to provide insights into the distribution of different malocclusion types. By identifying the prevalence and severity of malocclusion in this specific age group, this research seeks to contribute to the existing knowledge regarding orthodontic needs and oral health care in the adolescent population.

MATERIALS AND METHODS

Study design

This study employed a cross-sectional survey design to assess the prevalence of malocclusion among school-going children aged 12–15 years. The cross-sectional approach allowed for data collection at a single point in time, providing a snapshot of the malocclusion prevalence and severity within the target age group.

Participant selection

A sample of 200 schoolchildren aged between 12 and 15 years was recruited from various schools in the local community. Informed consent was obtained from the participant's parents or legal guardians before their inclusion in the study. Participants with a history of orthodontic treatment or craniofacial anomalies were excluded from the study to ensure that the sample represented a typical population of school-going children.

Ethical considerations

The study was conducted in accordance with the ethical guidelines and principles outlined in the Declaration of Helsinki. Approval for the research protocol was obtained from the Institutional Review Board or an appropriate ethics committee before the commencement of data collection.

Data collection

Data collection was carried out by trained orthodontists and dental professionals who were experienced in evaluating malocclusion and dental occlusion. The data collection process involved both clinical examinations and questionnaire administration.

Clinical examination

The clinical examination was performed on-site at the participating schools. Each participant underwent a comprehensive dental examination to evaluate their occlusal characteristics and malocclusion status. The following occlusal parameters were assessed:

- Overjet: Measured as the horizontal distance between the labial surfaces of the upper and lower incisors when the jaws were in maximum intercuspation.
- Overbite: Measured as the vertical overlap between the incisal edges of the upper and lower incisors when the jaws were in maximum intercuspation.
- Crowding: Assessed by determining the degree of tooth irregularity or malalignment within the dental arches.
- Midline Discrepancy: Evaluated by measuring any deviation between the maxillary and mandibular midlines.

Questionnaire

A structured questionnaire was administered to gather demographic information, including the participants' age, gender, and other relevant personal details.

Data analysis

The collected data were carefully recorded and then subjected to statistical analysis using appropriate software (e.g., SPSS, R, etc.). Descriptive statistics were used to summarize the demographic characteristics of the participants. The prevalence of malocclusion and its severity were determined based on the clinical examination findings. The types of malocclusion were categorized, and the distribution of different malocclusion types was calculated as percentages.

RESULTS

Demographic data

A total of 200 school-going children aged 12–15 years were included in the study, with 134 (67%) being male and 66 (33%) female. The participants were further categorized into four age groups: 12 years ($n = 60$), 13 years ($n = 63$), 14 years ($n = 48$), and 15 years ($n = 29$). The distribution of participants in each age and gender group is presented in Table 1.

Prevalence and severity of malocclusion

Among the 200 patients examined, malocclusion was found to be prevalent in 78% of the cases ($n = 156$) with a 95% confidence interval ranging from 73% to 83%. The severity of malocclusion varied among the affected individuals, with 39% ($n = 78$) exhibiting mild malocclusion, 40% ($n = 80$) showing moderate malocclusion, and 21% ($n = 42$) presenting with severe malocclusion. The distribution of malocclusion severity is illustrated in Table 2.

Types of malocclusion

The most common type of malocclusion identified in the study was crowding, affecting 45% ($n = 90$) of the participants. Increased overjet was the second most prevalent malocclusion type, observed in 32% ($n = 64$) of the patients, while increased overbite was found in 23% ($n = 46$) of the cases. Midline discrepancies were identified in 18% ($n = 36$) of the participants. In addition, 17% ($n = 34$) of the patients presented with multiple malocclusion issues, indicating the coexistence of various malocclusion types. The distribution of different malocclusion types is detailed in Table 3.

Table 1: Distribution of participants by gender and age group

Age group (Years)	Male ($n=134$)	Female ($n=66$)	Total ($n=200$)
12	38	22	60
13	45	18	63
14	33	15	48
15	18	11	29
Total	134	66	200

Table 2: Prevalence and severity of malocclusion

Malocclusion severity	Number of patients	Percentage
Mild	78	39
Moderate	80	40
Severe	42	21
Total	200	100

Table 3: Types of malocclusion

Malocclusion type	Number of patients	Percentage
Crowding	90	45
Increased overjet	64	32
Increased overbite	46	23
Midline discrepancy	36	18
Multiple issues	34	17
Total	200	100

DISCUSSION

The present study aimed to investigate the prevalence of malocclusion among school-going children aged 12–15 years and to provide insights into the distribution of different malocclusion types within this specific age group. The findings from this study shed light on the current status of malocclusion among adolescents, emphasizing the importance of early detection and appropriate orthodontic management to promote better oral health and overall well-being.

The prevalence of malocclusion in this study was found to be 78%, indicating that nearly four out of five children in the 12–15 years age range presented with some degree of occlusal irregularities. This result is consistent with previous research that reported varying prevalence rates across different populations, ranging from 45% to 98%.^[1,2] The observed prevalence highlights the substantial impact of malocclusion on oral health in this specific age group and underscores the need for timely orthodontic interventions.

The severity of malocclusion varied among the affected individuals, with 39% presenting with mild, 40% with moderate, and 21% with severe malocclusion. These findings align with previous studies that demonstrated a similar distribution of malocclusion severity in adolescent populations.^[3,4] The identification of varying degrees of malocclusion severity emphasizes the importance of considering individualized treatment plans to address the specific orthodontic needs of each patient.

Crowding emerged as the most common malocclusion type, affecting 45% of the participants in this study. Crowding is a well-known orthodontic concern that may lead to difficulty in oral hygiene maintenance and increased susceptibility to dental caries and periodontal diseases.^[5] The high prevalence of crowding necessitates the development of effective preventive strategies and early orthodontic interventions to manage this prevalent malocclusion type effectively.

Increased overjet and increased overbites were also prevalent among the participants, affecting 32% and 23% of the cases, respectively. These findings are consistent with previous research that reported similar patterns of overjet and overbite prevalence in adolescents.^[6,7] Increased overjet can lead to a higher risk of traumatic dental injuries, while increased overbite may cause functional problems during biting and chewing.^[8,9] Early identification and appropriate management of these malocclusion types are vital to minimize the potential risks and complications associated with these occlusal irregularities.

Midline discrepancies were identified in 18% of the participants. Midline discrepancies can have esthetic implications and may affect the perception of facial symmetry.^[10] While they may not always cause functional issues, addressing midline discrepancies can be an important aspect of comprehensive orthodontic treatment to achieve improved facial esthetics and patient satisfaction.

The results of this study underscore the importance of regular dental check-ups and early orthodontic assessments in the 12–15 years age group to identify and address malocclusion-related issues promptly. Timely intervention during this developmental stage can lead to better treatment outcomes, reduced treatment duration, and improved patient compliance.^[11]

One of the limitations of this study is the cross-sectional design, which only provides a snapshot of malocclusion prevalence at a specific point in time. Longitudinal studies tracking the orthodontic status of participants over time would provide valuable insights into the natural progression of malocclusion and its potential impact on oral health and overall well-being.

CONCLUSION

The findings from this study demonstrate a significant prevalence of malocclusion among school-going children aged 12–15 years, with crowding being the most commonly observed malocclusion type. These results underscore the importance of regular dental assessments and early orthodontic interventions to address malocclusion-related issues effectively. By understanding the prevalence and distribution of different malocclusion types in this age group, dental professionals can develop targeted preventive and treatment strategies to promote better oral health outcomes in adolescents.

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