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Prevalence and Patterns of Malocclusion in Vidisha, Madhya Pradesh, India:
A Cross-Sectional Study

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Abstract: Malocclusion, or the misalignment of teeth and jaws, is a widespread oral health issue that can affect an individual's overall wellbeing. This survey aims to assess the prevalence of malocclusion among the residents of Vidisha City. A total of 500 individuals aged between 15 and 35 years were randomly surveyed using clinical examinations and questionnaires. Initial findings indicate that approximately 60% of the surveyed population exhibits some form of malocclusion. The study underscores the need for early diagnosis and orthodontic intervention to address this prevalent dental issue.

Keywords: Prevalence, Malocclusion, Occlusion

Introduction: The occlusal equilibrium of the dentition significantly influences oral health and functionality.[1] Malocclusion, which is broadly characterized by misalignment between the mandibular and maxillary teeth, presents in various forms with differing etiologies, including genetic, environmental, and behavioral factors. This variability often leads to intricate diagnostic and therapeutic challenges in dental practice.[2,3] Therefore, it is pertinent to conduct a comprehensive survey of the prevalence and types of malocclusion within a cross-sectional cohort in Vidisha City, Madhya Pradesh, India. This demographic study aims to elucidate the patterns of malocclusion in a specific geographical area, providing insights that could augment public health initiatives and inform targeted strategies to address occlusal anomalies.[4,5] Considering that malocclusion can impact masticatory efficacy, aesthetics, self-esteem, and speech, this investigation lays a crucial foundation for understanding the orthodontic requirements of the population under study.[6,7] Moreover, in light of the growing interest and advancements in orthodontic technologies and treatment methodologies, it is essential to align these innovations with the existing occlusal disparities within the population.[8]

Material and Method: A cross-sectional observational study was conducted in Vidisha, Madhya Pradesh. Its objective was to determine the prevalence and patterns of malocclusion among the local population. The study involved 500 individuals aged between 15 and 35 years. A stratified random sampling method was employed, ensuring representation across different age groups and genders. Participants were classified based on Angle's Classification of occlusion types.

Inclusion Criteria: Individuals with permanent dentition.

Exclusion Criteria: Individuals with a history of orthodontic treatment, orthognathic surgery, or those suffering from syndromes affecting craniofacial morphology.

Clinical dental examinations were conducted by trained and calibrated dental experts. Each participant underwent a thorough examination to assess their type of occlusion.

Occlusion Classification:

Group I Normal occlusion (NO): Bilateral Angle's Class I molar relationship with acceptable overjet and overbite, and well-aligned arches.

Group II Angle's Class I malocclusion: Bilateral Angle's Class I molar relationship with one or more of the following characteristics:

  - Crowded incisors (Dewey type 1)

- Protruded maxillary incisors (Dewey type 2)

- Anterior cross-bite (Dewey type 3)

- Unilateral or bilateral posterior cross-bite (Dewey type 4)

- Mesial drift of molars (Dewey type 5)

- Anterior or posterior open bite

- Deep anterior overbite

Group III: Angle's Class II Division 1 malocclusion

Group IV: Angle's Class II Division 2 malocclusion

Group V: Angle's Class III malocclusion

The collected data was tabulated and analyzed statistically, providing insights into the prevalence and various patterns of malocclusion in the studied population.

Result: The present study examined the prevalence of malocclusion in a sample of 500 individuals aged between 15 to 35 years, residing in Vidisha, a city in Madhya Pradesh, India. The gender distribution among the participants was approximately equal, with 52% male and 48% female. According to Table 1, normal occlusal alignment was identified in 40% of the cohort, while the remaining 60% exhibited various forms of malocclusion. Among these, Angle's Class I malocclusion (34.2%) was most prevalent, followed by Angle's Class II Division I and Division II malocclusion and Class III malocclusion being the least common.

Table 1: Distribution of Subjects According to Occlusion		
Type of Occlusion	*N*	**%**
Normal occlusion	200	40%
Angle's class I malocclusion	171	34.2%
Angle's class II Div 1 malocclusion	57	11.4%
Angle's class II Div 2 malocclusion	55	11%
Angle's class III malocclusion	17	3.4%
Total	500	100%

Discussion: Malocclusion, characterized by the improper alignment of teeth and jaws, represents a common oral health concern with potential repercussions for general well-being. This investigative endeavor seeks to determine the prevalence of malocclusion within the

demographic confines of Vidisha City. A cohort of 500 individuals, aged 15 to 35 years, was selected through random sampling to participate in clinical evaluations and complete questionnaires. [1]

The study's findings provide a comprehensive insight into the prevalence of malocclusion among the youth and young adults in Vidisha City, underscoring a significant public health issue. The high prevalence rate of 60% among the surveyed cohort is indicative of a substantial burden of malocclusion within this population. This aligns with existing literature, which suggests that malocclusion is a global concern affecting a considerable proportion of individuals, often necessitating early and effective intervention.

Result of our study showed high prevalence of malocclusion; Angle's Class I malocclusion was most prevalent, followed by Angle's Class II Division I and Division II malocclusion and Class III malocclusion being the least common. The result of our study in accordance to the previous study conducted by Kumar NS et al.5 Trehan M et al[9].

The use of clinical examinations combined with self-reported questionnaires allowed for a robust assessment of malocclusion prevalence, enhancing the reliability of the findings. However, it is pertinent to acknowledge potential limitations, such as the subjectivity inherent in self-reported data and the specific age range of the participants, which may not fully represent the broader population.

Importantly, the results underscore the exigency for heightened awareness and accessibility of orthodontic services. Early diagnosis and timely intervention are pivotal in managing malocclusion, as delayed treatment can lead to more complex dental issues, impaired mastication, speech difficulties, and psychosocial problems.[2,3]

Furthermore, this study suggests the need for public health strategies that prioritize orthodontic screening programs, particularly within younger demographics. Educational initiatives to inform the public about the importance of proper dental alignment and the available treatment options could play a crucial role in mitigating the long-term health impacts associated with malocclusion.

Overall, this research contributes valuable data to the field of orthodontics and public health, prompting a call for increased resources and policy development aimed at addressing malocclusion comprehensively. Future research could expand upon these findings by exploring

the etiological factors contributing to the high prevalence of malocclusion in this region and evaluating the long-term effectiveness of various intervention strategies.

Conclusion: In conclusion, this study underscores the significant prevalence of malocclusion among the youth and young adult population in Vidisha City, with an estimated 58% of individuals affected. This high prevalence highlights the urgent need for early diagnostic measures and timely orthodontic interventions to prevent the progression of malocclusion into more severe dental and psychosocial complications. The findings advocate for the implementation of public health initiatives aimed at increasing awareness, accessibility, and affordability of orthodontic care. Future research should aim to understand the underlying causes of malocclusion in this demographic and evaluate the long-term benefits of early intervention strategies. By addressing these needs, we can improve overall oral health outcomes and enhance the quality of life for individuals affected by malocclusion.

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