

Prevalence of tumors, mandibular prognathism, irreversible pulpitis and complete edentulism in a known population

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ABSTRACT

Background: This study was conducted to assess the prevalence of tumors, mandibular prognathism, irreversible pulpitis and complete edentulism in a known population.

Material and methods: This study was conducted to assess the prevalence of tumors, mandibular prognathism, irreversible pulpitis and complete edentulism in a known population. The study comprised of 100 subjects. All the subjects had been explained about the procedure and were asked to give consent. All the subjects agreed to give consent and hence all the subjects had been included in the trial. The subjects had been clinically examined. The findings had been noted down and data were analysed using SPSS software.

Results: In this study, there were 16 subjects who had tumors. 9 of them had odontogenic tumors and 7 of them had non-odontogenic tumors. Mandibular prognathism was seen in 23 subjects. Irreversible pulpitis was seen in 29 subjects and edentulism was seen in 32 subjects. Hence, the prevalence of tumors, mandibular prognathism, irreversible pulpitis and edentulism in this study was 16%, 23%, 29% and 32%. There were 56 males and 44 females in the study.

Conclusion: Based on the results of this study, it can be concluded that the prevalence of tumors, mandibular prognathism, irreversible pulpitis and edentulism was 16%, 23%, 29% and 32%, respectively.

Keywords: Tumors, Mandibular prognathism, Irreversible pulpitis, Edentulism

1. INTRODUCTION

Odontogenic tumors of the jaw represent a category of lesions that arise from the remnants of epithelium or ectomesenchyme linked to the development of teeth. This category encompasses a spectrum from hamartomas to genuine tumors. The fourth edition of the WHO histological classification of odontogenic tumors categorizes them into benign and malignant types. Subsequently, they are further divided based on their cell of origin into epithelial, ectomesenchymal, or mixed types.¹

The pioneer of contemporary orthodontics, Edward Hartley Angle, in 1899, categorized malocclusions into Class I, Class II, and Class III, based on the relationship and alignment (or misalignment) of the permanent first maxillary and mandibular molars in relation to the occlusal plane. Over time, Angle's classification underwent modifications, incorporating additional factors such as jaw relationships and growth patterns. Consequently, a Class III jaw relationship indicates that the mandible has assumed a more mesial position relative to the maxilla and/or cranial base. In some instances, due to dental compensation, a Class I dental relationship may be observed on a Class III skeletal foundation.²⁻⁴ The pulp tissue reacts against different irritants, predominantly bacteria, through an inflammatory process. Depending on the intensity and duration of the irritant and the resistance of the host, the pathology of the pulp tissue can range from reversible inflammation to severe irreversible inflammation that will lead to necrosis.⁵ The inflammatory reaction that occurs in the periapical tissues to physical, chemical, and/or bacterial pulp irritants can be acute to chronic, depending on the relationship between the host and aggressor agent, which is due to the presence of bacterial toxins and bacteria that reach the periapical tissues through the apical foramen.⁶ This can also occur in other areas of the periodontium due to a lateral canal or in the area of root division through

communication between the floor of the pulp chamber and the periodontal tissue

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2. MATERIAL AND METHODS

This study was conducted to assess the prevalence of tumors, mandibular prognathism, irreversible pulpitis and complete edentulism in a known population. The study comprised of 100 subjects. All the subjects had been explained about the procedure and were asked to give consent. All the subjects agreed to give consent and hence all the subjects had been included in the trial. The subjects had been clinically examined. The findings had been noted down and data were analysed using SPSS software.

3. RESULTS

Table 1: Prevalence of tumors, mandibular prognathism, irreversible pulpitis and edentulism.

Condition	Number of cases	Prevalence
Tumors	16	16%
Odontogenic	9	
Non-odontogenic	7	
Mandibular prognathism	23	23%
Irreversible pulpitis	29	29%
Edentulism	32	32%
Total	100	100%

In this study, there were 16 subjects who had tumors. 9 of them had odontogenic tumors and 7 of them had non-odontogenic tumors. Mandibular prognathism was seen in 23 subjects. Irreversible pulpitis was seen in 29 subjects and edentulism was seen in 32 subjects. Hence, the prevalence of tumors, mandibular prognathism, irreversible pulpitis and edentulism in this study was 16%, 23%, 29% and 32%.

Table 2: Gender-wise distribution of subjects

Gender	Number of subjects	Percentage
Males	56	56
Females	44	44
Total	100	100

There were 56 males and 44 females in the study.

4. DISCUSSION

Studies of human inheritance have provided sufficient evidence to establish the fact that mandibular growth is mainly affected by heredity.⁷ Familiar genetic inheritance has a strong influence on skeletal craniofacial dimensions contributing to Class III malocclusion and a significantly higher incidence of this malocclusion has been found to have a familial occurrence between members of many generations.⁸ The best known example of familial inheritance is Habsburg Jaw, in which mandibular prognathism recurred over multiple generations in the European royalty.⁹ The pattern of transmission of Class III malocclusion still remains an issue of controversy. According to some authors, the transmission is autosomal recessive, and according to others, it is autosomal dominant with complete or incomplete penetrance; yet, some others support the polygenic transmission mode.

Edentulism is the state of being edentulous, or without natural teeth. Complete edentulism is an oral cavity without any teeth. Adequate dentition is quite essential for well-being and life quality. Edentulism is one of the public health burdens for elderly people and effects clearly the practice of primary care. Edentulism is a devastating and irreversible condition and is described as the “final marker of disease burden for oral health.” Patients who are suffering from edentulism exhibit a wide range of physical variations and health conditions. Teeth loss affects mastication, speech, and may result in poor esthetics which in turn affect the quality of life.¹⁰⁻¹³

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Açikgöz A et al¹⁴ determined the relative frequency and distribution of odontogenic and nonodontogenic cysts in a large Turkish population. A retrospective survey of jaw cysts was undertaken at the Oral Diagnosis and Radiology and Oral and Maxillofacial Surgery Department, Ondokuz Mayıs University Dental School, Samsun, Turkey. Data were retrieved from clinical files, imaging, and histopathology reports from 2000 to 2008; a total of 12,350 patients were included. In each case, we analyzed age, gender, type and number of cysts, and cyst location. Imaging patterns and pathologies associated with cystic lesions were also determined. The prevalence of odontogenic and nonodontogenic cysts was 3.51%; males were affected more frequently than females. There were 452 odontogenic cysts (98.5%) and seven nonodontogenic cysts (1.5%). The most frequent odontogenic cyst was radicular (54.7%), followed by dentigerous (26.6%), residual (13.7%), odontogenic keratocyst (3.3%), and lateral periodontal cyst (0.2%). Nasopalatine duct cyst (1.5%) was the only nonodontogenic cyst. By age, cysts peaked in the third decade (24.2%). Concerning location, no statistically significant difference was found between the maxilla and mandible ($p>0.05$). The most frequent radiological feature of these lesions was unilocular cyst (93.7%). Pathologies associated with cystic lesions occurred in 14.7%. The prevalence of both odontogenic and nonodontogenic cysts were lower than that reported in many other studies. In this study population, cysts were mainly inflammatory in origin.

The aim of the study conducted by Perez AS et al¹⁵ was to estimate the prevalence of pulp and periapical pathologies and their distribution according to sex, age, affected teeth, and etiological factors found in patients the DEPeI, FO, UNAM Endodontic Postgraduate Program during the period 2014–2019. The data collected were from the records of the Single Clinical File of patients treated at the Endodontic Specialization Clinic, DEPeI, FO, UNAM, period 2014–2019. The following variables were recorded for each endodontic file: diagnosed pulp and periapical pathology, sex, age, affected tooth, and etiological factor. Descriptive statistical analysis was performed with 95% CI (Confidence intervals). Of all the registers reviewed, irreversible pulpitis (34.58%) and chronic apical periodontitis (34.89%) proved to be the most prevalent pulp and periapical pathologies, respectively. The female sex predominated (65.36%). The age group that requested the most endodontic treatment, according to the records reviewed, was 60 or older (36.99%). The most treated teeth were the upper first molars (24.15%) and lower (36.71%), and the most prevalent etiological factor was dental caries (84.07%). Irreversible pulpitis and chronic apical periodontitis were the most prevalent pathologies. The predominant sex was female, and the age group was 60 years or older. The first upper and lower molars were the most endodontically treated teeth. The most prevalent etiological factor was dental caries.

In the study by Vemulapalli A et al¹⁶, total of 771,513 participants were included in the study. There was a significant downward trend in the prevalence of edentulism from 2012 (16.36%) through 2020 (13.54%). Having less than a high school education, being a smoker, being non-Hispanic Black, having an annual household income less than \$75,000, and having chronic conditions, including diabetes, myocardial infarction, arthritis, depression, and stroke, were significantly associated with complete edentulism. Despite a decrease in prevalence of edentulism, disparities based on race, income, and education still exist. Edentulism is associated with chronic diseases in older adults.

5. CONCLUSION

Based on the results of this study, it can be concluded that the prevalence of tumors, mandibular prognathism, irreversible pulpitis and edentulism was 16%, 23%, 29% and 32%, respectively.

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