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Prevalence of Dental Caries, Edentulism, Class 2 Malocclusion, Pulp Stones and Cysts in a Known Population.

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KEYWORDS

prevalence,
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ABSTRACT:

Background: This study was conducted to assess the prevalence of dental caries, edentulism, class 2 malocclusion, pulp stones and cysts in a known population.

Material and methods: This study comprised of 100 participants in which oral clinical examination had been conducted. The prevalence of dental caries, edentulism, class II malocclusion, pulp stones and cysts had been assessed in these subjects. The participants had been explained about the procedure and were asked to give consent. the subjects who were willing to give consent had been included in the study, while others had been excluded from the study. Statistical analysis had been conducted using SPSS software.

Results: In this study, there were 100 subjects of which, 64 were female and 36 were male. Dental caries was present in 30 subjects out of 100. Hence the prevalence of dental caries was 30%. The prevalence of edentulism was 45%. Among 10 cases, complete edentulism was observed and in 35 cases, partial edentulism was observed. The prevalence of class 2 malocclusion was 11%. The prevalence of pulp stones was 9%. The prevalence of cysts was 5%. There were 3 true pulp stones, 2 false pulp stones, 2 free pulp stones, 1 attached and 1 embedded pulp stone.

Conclusion: The prevalence of edentulism was the highest in this study, followed by dental caries, pulp stones and cysts.

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Introduction

Dental caries is a prevalent chronic disease. If left untreated, caries may progress to tooth destruction and exodontia. Dental caries is a complex multifactorial disease of individual, biological, behavioral, and environmental factors.[1] The clinical sign of dental carious is a lesion of varying severity, ranging from opacity in the enamel to frank cavitation exposing dentin. Accurately diagnosing dental caries promotes effective treatment planning, prevents disease progression, and supports optimal patient outcomes.

Management of dental caries has changed significantly in recent years.[2] The most contemporary practical approaches are based on early caries detection and prevention. They are also built on making a diagnosis based on risk indicators and risk factor assessment.[3,4] The new management approaches aim to preserve healthy tissue, as proposed in minimally invasive dentistry.[5]

This aims to achieve several goals, such as the implementation of a preventive philosophy, individualised risk assessments for patients, early detection of carious lesions, and remineralization of the noncavitated lesion.[6]

Edentulism is the state of being edentulous, or without natural teeth.[7] 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."[8] 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.[9]

Skeletal class II malocclusions (SCIIMO) account for over one-third of all malocclusions observed globally and are more common in Caucasians than in other races. Accordingly, in general dentistry practice, class II malocclusion patients make up about one-third of patients needing orthodontic treatment.[10,11]

This study was conducted to assess the prevalence of dental caries, edentulism, class 2 malocclusion, pulp stones and cysts in a known population.

Material and methods

This study comprised of 100 participants in which oral clinical examination had been conducted. The prevalence of dental caries, edentulism, class II malocclusion, pulp stones and cysts had been assessed in these subjects. The participants had been explained about the procedure and were asked to give consent. the subjects who were willing to give consent had been included in the study, while others had been excluded from the study. Statistical analysis had been conducted using SPSS software.

Results

Table 1: Gender-wise distribution of subjects

Gender	Number of subjects	Percentage
Male	36	36
Female	64	64
Total	100	100

In this study, there were 100 subjects of which, 64 were female and 36 were male.

Table 2: Prevalence of dental caries.

Prevalence	Number of subjects	Percentage
Present	30	30
Absent	70	70
Total	100	100

Dental caries was present in 30 subjects out of 100. Hence the prevalence of dental caries was 30%.

Table 3: Prevalence of edentulism

Prevalence	Number of subjects	Percentage
Present	45	45
Absent	55	55
Total	100	100

The prevalence of edentulism was 45%. Among 10 cases, complete edentulism was observed and in 35 cases, partial edentulism was observed.

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Table 4: Prevalence of class 2 malocclusion

Prevalence	Number of subjects	Percentage
Present	11	11
Absent	89	89
Total	100	100

The prevalence of class 2 malocclusion was 11%.

Table 5: Prevalence of pulp stones

Prevalence	Number of subjects	Percentage
Present	09	09
Absent	81	81
Total	100	100

The prevalence of pulp stones was 9%.

Table 6: Prevalence of cysts in oral cavity.

Prevalence	Number of subjects	Percentage
Present	05	05
Absent	95	95
Total	100	100

The prevalence of cysts was 5%.

Table 7: Histopathology of pulp stones

Type of pulp stones	Number of cases	Percentage
True	03	33.3
False	02	22.2
Free	02	22.2
Attached	01	11.1
Embedded	01	11.1
Total	09	100

There were 3 true pulp stones, 2 false pulp stones, 2 free pulp stones, 1 attached and 1 embedded pulp stone.

Discussion

Pulp stones are calcified masses seen in the dental pulp tissue of healthy and damaged teeth. These pulp stones are more common in the coronal section of the pulp canal space than in the radicular segment.[12] These pulp stones can either exist freely inside the pulp tissue or be adherent (connected to the wall of the pulp space but not totally encompassed by dentine) or embedded in the dentin, posing a challenge during endodontic treatment.

The size of the pulp stones ranges from minute particles to enormous masses that can totally obliterate the pulp area on a radiograph. The number of pulp stones discovered varies widely, from 0 to 12 or more in certain teeth.[13,14] They may occur in any type of tooth, although they are most common in permanent molars.

Dental caries is a chronic disease displaying drastic variations in its prevalence across multiple factors and the obscurity of data on the same hinders the attainment of dental caries prevalence reduction goals set by WHO.[15] Considering the evolving dietary patterns in last few decades, globalization has been linked to increased consumption of sugar and growing obesity in middle and low income countries.[16] Some studies in developing countries such as India report a prevalence rate of 36.7% among 13–19 year olds while others like Saudi Arabia state prevalence to be as high as 83% among 6–8 year olds.[17]

This study was conducted to assess the prevalence of dental caries, edentulism, class 2 malocclusion, pulp stones and cysts in a known population.

In this study, there were 100 subjects of which, 64 were female and 36 were male. Dental caries was present in 30 subjects out of 100. Hence the prevalence of dental caries was 30%. The prevalence of edentulism was 45%. Among 10 cases, complete edentulism was observed and in 35 cases, partial edentulism was observed. The prevalence of class 2 malocclusion was 11%. The prevalence of pulp stones was 9%. The prevalence of cysts was 5%. There were 3 true pulp stones, 2 false pulp stones, 2 free pulp stones, 1 attached and 1 embedded pulp stone.

Almusallam SM et al (2020)[18] investigated the prevalence of complete edentulism and partial edentulism among adults and above population in Riyadh city, in relation to gender, age, and education level. Baseline information related to edentulism will help us take action to promote oral health. A cross-sectional stratified cluster study was carried out in 2018–2019 in

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several dental care centers across Riyadh city. A total of 618 subjects aged 35–74 years were selected through convenient sampling and information related to edentulism was gathered followed by clinical examination. Of the total sample, 349 (56.5%) were males and 261 (43.5%) were females. In the overall assessment of edentulism, it was found that the majority of the subjects 426 (69%) had one or more teeth missing. Among these subjects, there was (2.6%) who were completely edentulous, which represented (1.8%) of the total sample. A high percentage of adult patients have missing teeth and complete edentulism was found mostly in elderly people. Frequenting a dental center had an inverse relation with edentulism.

Pandey P et al (2021)[19] evaluated the pooled prevalence of dental caries among Indian population through systematic review and meta-analysis. A keyword search was conducted in PubMed, Science Direct, Google Scholar, Cochrane, and Scopus databases using relevant key words to extract the data pertaining to dental caries in Indian population. The search criteria included manuscripts published in English language from March 2009 to March 2019 and employed standard Boolean operators. The studies which met the inclusion criteria were independently reviewed by two researchers and their quality was assessed by the Newcastle–Ottawa Scale. The overall prevalence was deduced using the random effects model with prime focus given to the site of anatomical origin. R software version 3.5.2. was used for statistical analysis. Post screening, out of the 253 articles identified, 70 met the inclusion criteria and were used to generate the meta-analysis. Among them, only few studies investigated the prevalence of root caries (n = 1). Overall prevalence of dental caries was 54.16% (CI: 0.4966–0.5866), whereas age-specific prevalence was 62% in patients above 18 years and 52% among 3–18 years of age ($P < 0.0001$). Maximum overall prevalence was noted in mixed dentition (58%). Region wise prevalence was more in western India (72%). Use of decayed, missed, and filled teeth as diagnostic criteria for early childhood caries was only 29%. Besides an overall prevalence of 54.16%, there exists a remarkable variation in dental caries prevalence rates as per age, diagnostic criteria, dentition, and geographical region. Furthermore, research should be focused on the prevalence of anatomical site specific caries as well.

Kumar P et al (2024)[20] determined the prevalence of pulp stones in the population of Rajasthan and evaluated the relationship between pulp stones and tooth status, type, age, and gender. The radiograph data record files collected from the Department of Dentistry, All India Institute of Medical Sciences, Jodhpur, Rajasthan, from September 2018 to October 2019, had a total of 9918 diagnostic quality intraoral periapical radiographs. One examiner examined all the radiographs to identify pulp stones and associated factors. Pearson chi-square test of significance was used for statistical analysis. On screening, a total of 889 intraoral periapical radiographs were found to have pulp stones. The presence of pulp stones was significantly higher in mandibular molars (68%) and was more common in the age group of 31-45 years (37%), followed by 13-29 years (35%). Maximum of pulp stones were of attached type (64%) than free pulp stones. The prevalence of pulp stones in the population of Rajasthan studied is 8.9%, which is much lower than the reported prevalence in the literature. Pulp stones are predominantly attached and found significantly more often in mandibular molars in the age group of 31-44 years.

Conclusion

The prevalence of edentulism was the highest in this study, followed by dental caries, pulp stones and cysts.

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