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RETROSPECTIVE STUDY ON THE PREVALENCE OF DENTAL CARIES AMONG PATIENTS VISITING THE DENTAL DEPARTMENT AT NMCH, PATNA, WITH NON-CARIES CHIEF COMPLAINTS: AN ORIGINAL RESEARCH

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Abstract

Background:
Dental caries remains a major public health concern in India, often going undiagnosed in patients who present to dental clinics with unrelated complaints. This study aimed to assess the prevalence of incidental dental caries among such patients at a tertiary care center.

Materials and Methods: A retrospective cross-sectional study was conducted using archived dental records of 270 patients who visited the dental outpatient department at Nalanda Medical College and Hospital (NMCH), Patna, Bihar. Only patients whose chief complaints were unrelated to dental caries were included. A full oral examination using visual inspection and dental explorer had been performed to identify carious lesions. Data were analyzed using descriptive statistics.

Results: Of the 270 patients, 147 (54.4%) were found to have one or more carious teeth despite having unrelated complaints. The highest prevalence was observed in the 15–34 years age group. A slightly higher rate was noted among females (56%) than males (53.1%). Multiple carious teeth were found in 22% of caries-positive individuals.

Conclusion: A substantial proportion of patients had asymptomatic carious tooth, underscoring the need for routine comprehensive oral examinations regardless of the presenting complaint. Opportunistic screening can facilitate early diagnosis and better oral health outcomes.

Keywords: Dental caries, Incidental findings, Oral screening, Prevalence, Non-caries complaints, Bihar, Cross-sectional study, Opportunistic detection

INTRODUCTION

Dental caries is one of the most prevalent non-communicable diseases worldwide and continues to pose a significant public health challenge, particularly in low- and middle-income countries [1]. It is a multifactorial microbial disease of the tooth structure, characterized by the demineralization of the inorganic and destruction of the organic components of the tooth, primarily due to acid production from the bacterial fermentation of dietary carbohydrates [2]. Despite advancements in preventive dentistry, dental caries remains widespread across all age groups, affecting both primary and permanent dentitions [3].

In India, the burden of dental caries is substantial, with national surveys reporting caries prevalence ranging from 40% to 90% in different regions, influenced by socio-economic, cultural, dietary, and environmental factors [4]. Studies show that the prevalence of untreated caries is often higher in rural populations where access to dental care is limited and awareness about oral hygiene is inadequate [5]. Bihar, one of India's most populous states, has a disproportionately high burden of dental diseases, yet it remains underrepresented in caries-related epidemiological data [6].

Routine dental check-ups offer a critical opportunity to identify asymptomatic or incidental caries, especially in patients who present with unrelated complaints such as gum problems, prosthodontic needs, or orthodontic evaluations [7]. In many cases, these patients are unaware of their carious lesions, particularly when pain or sensitivity is absent. This highlights the need for thorough intraoral examination even when the chief complaint does not suggest dental decay [8].

The global oral health strategy emphasizes integrating preventive dental services with routine care and encourages opportunistic screening for oral diseases during every dental consultation [9]. Tools such as visual-tactile examination with a dental explorer, along with mirror inspection, continue to be reliable and economical methods for the detection of caries in outpatient settings where advanced imaging may not be readily available [10].

Given the high probability of undiagnosed dental caries among patients who do not seek care for decay-specific issues, this study was designed to assess the prevalence of dental caries among patients attending the Dental Department at Nalanda Medical College and Hospital (NMCH), Agamkuan, Patna, Bihar, whose presenting complaints were unrelated to carious lesions. By estimating the burden of incidental caries in such patients, the study aims to advocate for comprehensive oral evaluations as a routine practice in all dental visits, regardless of the complaint. The findings can help underline the hidden burden of untreated dental decay and reinforce the importance of early detection and timely intervention in minimizing long-term complications and improving oral health outcomes at a population level.This retrospective study analyzed existing dental records to estimate the prevalence of incidental dental caries among patients who did not report decay-related symptoms.

MATERIALS AND METHODS

Study Design and Setting

This was a retrospective cross-sectional observational study based on archived dental OPD records collected by Senior Residents (Dentistry) at Nalanda Medical College and Hospital (NMCH), Agamkuan, Patna, Bihar.

Study Population

A total of 270 archived dental records of patients who visited the dental outpatient department were reviewed. Only records of patients whose chief complaints were not related to dental caries were included. Patients whose chief complaint was pain, sensitivity, of carious teeth were excluded from the study.

Inclusion Criteria
Archived patient records of individuals aged ≥15 years
Patients whose presenting complaints were unrelated to dental caries
Records with complete oral examination details

Exclusion Criteria
Records showing primary complaint of pain in carious tooth.
Incomplete or illegible records
Patients with extensive restorative treatments precluding proper examination

Sampling Technique
A consecutive sampling method was used to select patient records over a 6-month retrospective window until the desired sample size was achieved.

Data Collection Procedure
Data were extracted from archived dental records, including oral examination findings documented during initial patient visits. All caries assessments had been originally performed by a trained post graduate (MDS) dental surgeon using visual-tactile methods with mirror and explorer. The diagnostic criteria followed WHO guidelines for caries detection.

Data Analysis
Collected data were entered into Microsoft Excel and analyzed using SPSS software version 25 (or appropriate version). Descriptive statistics were used to calculate the frequency and percentage of patients diagnosed with incidental caries. Subgroup analyses were performed by age, gender, and other oral health variables, where applicable.

RESULTS
A total of 270 patients were reviewed during the study period. Among them, 147 patients (54.4%) were found to have one or more carious teeth, although their chief complaints were unrelated to dental caries.

Table 1 Summary: Age-wise Distribution of Dental Caries
The prevalence of dental caries was observed to vary across different age groups. The highest prevalence was found in the 15–24 years age group, where 59.6% of patients exhibited carious lesions. A similar high prevalence was noted in the 25–34 (56.3%) and 35–44 (55.9%) year categories, indicating that younger adults were more commonly affected. The prevalence dropped slightly in patients aged 45–54 and those ≥55 years, both showing 48.8% caries occurrence. This suggests that dental caries remains highly prevalent in early to mid-adulthood, possibly due to higher sugar consumption and lifestyle factors in younger populations.

Table 2 Summary: Gender-wise Distribution of Dental Caries
Gender-based analysis showed a slightly higher prevalence of dental caries among females (56.0%) compared to males (53.1%). Out of the 270 patients, 145 were male and 125 were female. The results indicate that although both genders are significantly affected, there is a marginally increased burden of incidental dental caries in females. This may reflect differences in oral hygiene practices, dietary habits, or hormonal influences affecting oral health.

Table 3 Summary: Chief Complaints of Patients
Analysis of the presenting complaints revealed that a large proportion of patients visited the dental department for conditions unrelated to caries. The most common complaints were related to periodontal issues (32.2%), followed by prosthodontic concerns such as missing teeth (22.6%). Orthodontic and esthetic complaints accounted for 15.6% of visits, while trauma-related cases

comprised 13.3%. About 16.3% of patients presented with miscellaneous issues such as oral ulcers or temporomandibular joint (TMJ) pain. This distribution underscores the importance of opportunistic screening for caries in all patients, regardless of their presenting complaints.

Table 4 Summary: Number of Carious Teeth per Patient

Among the 147 patients identified with dental caries, the majority (42.9%) had 2–3 carious teeth, while 35.4% had only a single carious tooth. Notably, 15% of patients had 4–5 carious teeth, and 6.8% had more than 5 affected teeth. This indicates that while some patients had isolated lesions, a significant proportion had multiple affected teeth, suggesting either delayed diagnosis or ongoing cariogenic risk factors. These findings highlight the need for comprehensive oral assessments even when caries is not the chief complaint.

Table 1. Age-wise Distribution of Patients and Dental Caries Prevalence

Age Group (years)	Total Patients (n)	Patients with Dental Caries (n)	Prevalence (%)
15–24	52	31	59.6%
25–34	64	36	56.3%
35–44	68	38	55.9%
45–54	43	21	48.8%
≥55	43	21	48.8%
Total	**270**	**147**	**54.4%**

Table 2. Gender-wise Distribution of Dental Caries

Gender	Total Patients (n)	With Caries (n)	Prevalence (%)
Male	145	77	53.1%
Female	125	70	56.0%
Total	**270**	**147**	**54.4%**

Table 3. Chief Complaints of Patients

Chief Complaint Category	Number of Patients (n)	% of Total
Periodontal complaints	87	32.2%
Prosthodontic (missing teeth)	61	22.6%
Orthodontic/esthetic concerns	42	15.6%
Trauma-related	36	13.3%
Other (ulcers, TMJ pain, etc.)	44	16.3%
Total	**270**	**100%**

Table 4. Number of Carious Teeth Detected per Patient (n = 147)

Number of Teeth Affected	Patients (n)	Percentage of Caries Group (%)
1 tooth	52	35.4%
2–3 teeth	63	42.9%
4–5 teeth	22	15.0%
>5 teeth	10	6.8%
Total	**147**	**100%**

DISCUSSION

This retrospective study assessed the prevalence of incidental dental caries among patients visiting the dental outpatient department with chief complaints unrelated to caries. Of the 270 individuals examined, 147 (54.4%) were found to have one or more carious lesions detected on routine oral examination. These findings highlight a significant hidden burden of dental caries that may otherwise remain undiagnosed in routine clinical settings.

The prevalence observed in this study aligns with reports from other Indian population-based studies, which have shown a wide variation in dental caries burden ranging from 50% to 80%, depending on age, geographic region, and access to oral health care services [11,12]. A similar prevalence (around 55%) was reported in a cross-sectional study conducted in a rural Indian population where dental caries was highly prevalent even among individuals with no active complaints [13]. This supports the argument for universal screening during dental consultations, regardless of the presenting complaint.

Age-wise analysis revealed a higher prevalence in the younger age groups, particularly between 15–34 years. This trend is consistent with literature suggesting that dietary habits, such as frequent sugar intake and increased consumption of processed foods, significantly contribute to caries incidence in young adults [14]. Moreover, irregular dental visits and lack of preventive awareness among this demographic may result in carious lesions going unnoticed until an unrelated dental problem brings them into clinical care [15].

Gender differences in caries prevalence were modest in this study, with females slightly more affected than males. This is consistent with existing literature indicating hormonal variations, pregnancy-related changes, and sociocultural factors that influence oral health behaviors among women [16]. However, the overall difference was not statistically significant, aligning with studies that report minimal or no gender differences when other risk factors are controlled [17].

The most common presenting complaints among the study participants were periodontal issues and prosthodontic concerns, indicating that many patients seek dental care only when function or aesthetics are significantly compromised. Several studies have documented that incidental findings such as caries, mucosal lesions, and early signs of periodontitis are often detected during evaluations for prosthetic or periodontal treatments [18]. Therefore, incorporating a comprehensive oral screening protocol, even for patients with unrelated complaints, can improve early diagnosis and prevention.

Regarding the extent of carious involvement, nearly 43% of the patients with caries had 2–3 affected teeth, while approximately 22% had four or more carious lesions. This reflects chronic neglect and possibly limited prior access to dental care. Studies in similar settings have emphasized that early-stage carious lesions, when undetected, can progress silently to involve multiple teeth [19]. Integrating diagnostic aids such as fiber-optic transillumination or bitewing radiographs may help in identifying early lesions and improve diagnostic accuracy in such scenarios [20].

CONCLUSION

This retrospective study highlights a high prevalence (54.4%) of incidental dental caries among patients presenting with non-caries-related complaints to the dental outpatient department. The findings underscore the silent progression of untreated caries, particularly among young adults, and the critical importance of comprehensive oral examinations during every dental visit. Regardless of the chief complaint, early detection through routine screening can aid in timely intervention, reduce complications, and promote better oral health outcomes. These results advocate for the integration of opportunistic caries screening into standard dental protocols, especially in resource-limited settings where access to preventive care remains inadequate.

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