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Study of Common Dental Diseases in Patients of Dental OPD in Hospital

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1. ABSTRACT

Dental diseases are a major public health concern, affecting millions globally, with rural areas often bearing a disproportionate burden. This study aims to assess the prevalence and distribution of common dental diseases among patients visiting the dental outpatient department (OPD) of a private hospital on the outskirts of Lucknow, India. Over a period of three months, 350 patients were examined for dental conditions such as dental caries, gingivitis, periodontitis, halitosis, and others. The patients' demographic data, including age and gender, were recorded, along with their willingness to undergo treatment. The results revealed that dental caries and gingivitis were the most prevalent conditions, accounting for over 60% of cases. Younger adults (ages 30-44) had the highest incidence of dental issues, and both genders were affected equally. A significant gap was observed between the number of procedures suggested and those actually performed, indicating possible barriers such as cost and lack of awareness. The study concludes that more focused public health interventions, preventive care programs, and accessible treatment options are necessary to reduce the burden of dental diseases in rural areas.

Keywords: Dental diseases, dental caries, gingivitis, rural healthcare, dental OPD, Lucknow, oral health, periodontitis, treatment barriers.

2. INTRODUCTION

An essential element of general health and wellbeing is oral health. Nonetheless, dental disorders continue to rank among the most prevalent long-term illnesses affecting people worldwide, causing a great deal of morbidity, suffering, and financial loss. In both industrialised and developing nations, dental disorders—in particular, dental caries, periodontal diseases, and oral cancer—are quite common (WHO, 2020). Their impact on populations varies based on factors such as socioeconomic status, access to healthcare, and public awareness. Despite advancements in dental care, a large proportion of the global population still suffers from preventable dental diseases, highlighting the need for better preventive strategies and more accessible treatment options.

According to the 2019 Global Burden of Disease (GBD) research, untreated dental caries in permanent teeth is the most frequent ailment worldwide, affecting almost 3.5 billion persons with oral disorders (GBD, 2019). About 2.3 billion individuals are affected by dental caries alone, which affects adults at

a 90% prevalence rate and children at a 40% prevalence rate (Kassebaum et al., 2017). Approximately 796 million individuals worldwide suffer from other frequent disorders such periodontal diseases, and oral malignancies are among the top 15 most prevalent cancers worldwide. The burden of poor oral health globally is also greatly increased by diseases including halitosis, gingivitis, and temporomandibular joint problems (Komlós G et al, 2021).

Oral illnesses are recognised by the World Health Organisation (WHO) as a serious public health concern, with variations in their frequency across different geographic areas and socioeconomic classes. Because they have less access to dental care and preventative measures, low- and middle-income nations are disproportionately affected. According to WHO estimates, dental caries affect up to 90% of school-age children and almost all adults. If left untreated, dental caries may result in tooth deterioration, discomfort, and eventually tooth loss (WHO, 2020). The worldwide incidence of dental caries persists despite the availability of preventative measures like fluoride toothpaste and community-based oral health initiatives, especially in poorer nations where healthcare infrastructure is often insufficient.

With a population of more than 1.4 billion, India presents formidable obstacles when it comes to oral health care. According to the Ministry of Health and Family Welfare's National Oral Health Survey (NOHS) of 2004, dental caries and periodontal diseases are the most prevalent oral health issues in the country, affecting over 70% of the population. More recent studies, such as the 2019 survey by the Indian Dental Association (IDA), reveal similar findings, indicating that nearly 85% of adults suffer from dental caries, and around 50% of the adult population has some form of periodontal disease. These figures reflect the urgent need for improved dental care services and increased public awareness regarding oral hygiene.

The NOHS further highlights a disparity in oral health between urban and rural areas, with rural populations bearing a disproportionately higher burden of dental diseases. In rural India, factors such as inadequate access to dental services, lack of awareness about oral hygiene, and socio-economic constraints exacerbate the prevalence of dental diseases. Children in rural areas are more likely to have dental caries (55% vs. 45%) and adults in rural areas are more likely to have periodontal disease (65% vs. 42%). (Chandrasekhar and associates, 2017). This discrepancy underscores the importance of focusing public health efforts on rural populations where oral health needs are more pronounced and access to care is limited.

Socioeconomic status (SES) plays a significant role in determining oral health outcomes (Oberai S et al, 2016). Research from many geographical areas has shown that those with lower socioeconomic status have a higher likelihood of developing dental illnesses. including in many other developing nations, India's access to preventive services and dental care is heavily influenced by factors including employment, money, and education. For example, fluoride toothpaste and dental exams are essential for preventing dental diseases, but they are often out of reach for those in lower-income categories (Mathur et al., 2019). The problem is further made worse by a lack of knowledge about the need of maintaining good oral hygiene and the repercussions of untreated dental illnesses.

These results are consistent with research from other nations, including Brazil and South Africa. According to a Brazilian research, children from lower-class families were far more likely to have dental caries (56%) than children from higher-class families (32%). Similar findings were made in South Africa, where socioeconomic differences caused the prevalence of untreated dental caries in rural groups to be almost twice as high as in urban ones (Singh et al., 2011). These global comparisons suggest that improving oral health outcomes requires addressing the broader determinants of health, including education, income, and access to healthcare services.

Access to dental care is a critical factor in managing and preventing oral diseases. In many parts of India, especially rural areas, dental services are scarce. The dentist-to-population ratio in India is estimated to be around 1:10,000 in urban areas, while in rural areas, the ratio is a staggering 1:250,000 (National Health Profile, 2020). This stark difference highlights the significant gap in healthcare infrastructure between rural and urban regions. Additionally, the majority of dental professionals in India are concentrated in urban centers, further limiting access for rural populations.

Globally, access to dental care remains a challenge, especially in low- and middle-income countries. In sub-Saharan Africa, for example, the dentist-to-population ratio is approximately 1:150,000, which is insufficient to meet the oral health needs of the population (Peterson et al., 2017). Similarly, in parts of Southeast Asia and Latin America, limited access to dental care, combined with socioeconomic disparities, contributes to high levels of untreated dental diseases.

Dental diseases have a profound impact on an individual's quality of life, affecting physical, emotional, and social well-being. Untreated dental caries can lead to pain, infection, and tooth loss, which in turn can affect nutrition, speech, and self-esteem. Periodontal diseases, which involve inflammation and infection of the gums, can result in tooth loss and have been linked to systemic health issues such as cardiovascular disease and diabetes (Tonetti et al., 2017). Halitosis, though less severe in nature, can cause social embarrassment and affect interpersonal relationships.

In rural India, where access to healthcare is limited, dental diseases can significantly affect daily functioning. Individuals suffering from severe dental pain may be unable to work, attend school, or perform routine activities, leading to economic losses and reduced productivity. A study conducted by the Indian Public Health Association (IPHA) found that dental pain was one of the leading causes of absenteeism from work and school in rural areas, further emphasizing the need for improved dental care services (IPHA, 2018).

Reducing the worldwide burden of oral diseases requires prevention. The frequency of dental illnesses has been successfully decreased in industrialised nations by public health measures including water fluoridation, school-based dental programs, and public awareness campaigns. For instance, fluoridating the water supply in the US has been linked to a 25% decrease in dental cavities in both adults and children (Centres for Disease Control and Prevention, 2020). Similarly, school-based dental examinations and sealant programs have assisted in lowering the prevalence of dental caries in children in Australia and several regions of Europe (Do et al., 2019).

Preventive dental treatment is still relatively new in India. Although fluoride toothpaste is easily

accessible, there are few water fluoridation programs and few school-based dental programs. Through programs like the National Oral Health Program (NOHP), which seeks to raise oral health awareness, offer preventative treatments, and enhance access to dental care in rural regions, the Indian government has taken action to address these issues. Still, there is a need for more funding for preventative care and infrastructure development, since these initiatives are not always implemented consistently.

3. AIM AND OBJECTIVES

The aim of this study is to analyze the prevalence of common dental diseases among patients visiting the OPD of a private hospital in the rural outskirts of Lucknow. The specific objectives are:

1. To identify the most common dental diseases among the patients.
2. To assess the willingness of patients to undergo treatment for these conditions.
3. To collect demographic data, including gender and age, to evaluate any trends in disease occurrence.
4. To provide insights that can help improve dental care services in rural areas.

4. MATERIAL AND METHODS

This observational cross-sectional study was conducted over a period of three months at the dental OPD of a private hospital on the outskirts of Lucknow. The hospital is situated in a semi-urban area, serving both rural and peri-urban populations. All patients visiting the dental OPD during the three-month period were included in the study, irrespective of their reason for the visit. Patients were screened for common dental diseases, and their demographic details (age, gender) were recorded. The willingness of patients to receive treatment for their diagnosed conditions was also noted.

A total of 350 patients were examined, and their clinical diagnoses were documented. The most common dental conditions observed included:

- **Dental caries (reversible and irreversible pulpitis)**: A condition characterized by tooth decay, leading to the inflammation of the dental pulp.
- **Halitosis**: Persistent bad breath, often resulting from poor oral hygiene or dental infections.
- **Gingivitis**: A mild form of gum disease causing redness and swelling of the gums.
- **Periodontitis**: A more severe form of gum disease that can result in tooth loss if left untreated.
- **Pericoronitis**: Inflammation of the soft tissues surrounding a partially erupted tooth, often associated with wisdom teeth.
- **Jaw fractures**: Occurring primarily due to trauma.
- **Oral premalignant lesions**: Conditions that may develop into cancer if not properly monitored.

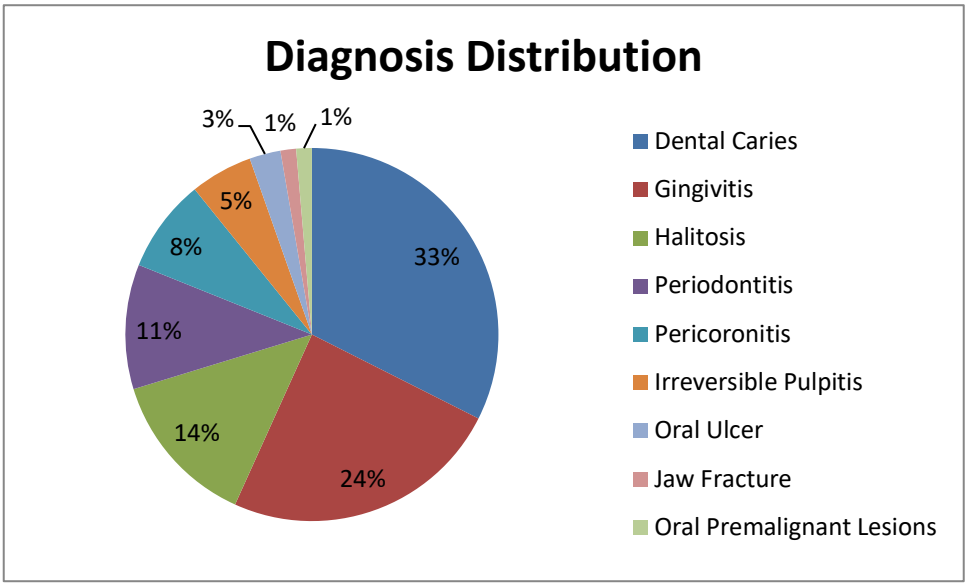
Data were analyzed to determine the frequency of each condition among the patients and their willingness to undergo treatment. Simple descriptive statistics were used to summarize the findings.

5. RESULT

Table 1. Diagnosis Distribution

Diagnosis	Number of Cases

Dental Caries	120
Gingivitis	90
Halitosis	50
Periodontitis	40
Pericoronitis	30
Irreversible Pulpitis	20
Oral Ulcer	10
Jaw Fracture	5
Oral Premalignant Lesions	5



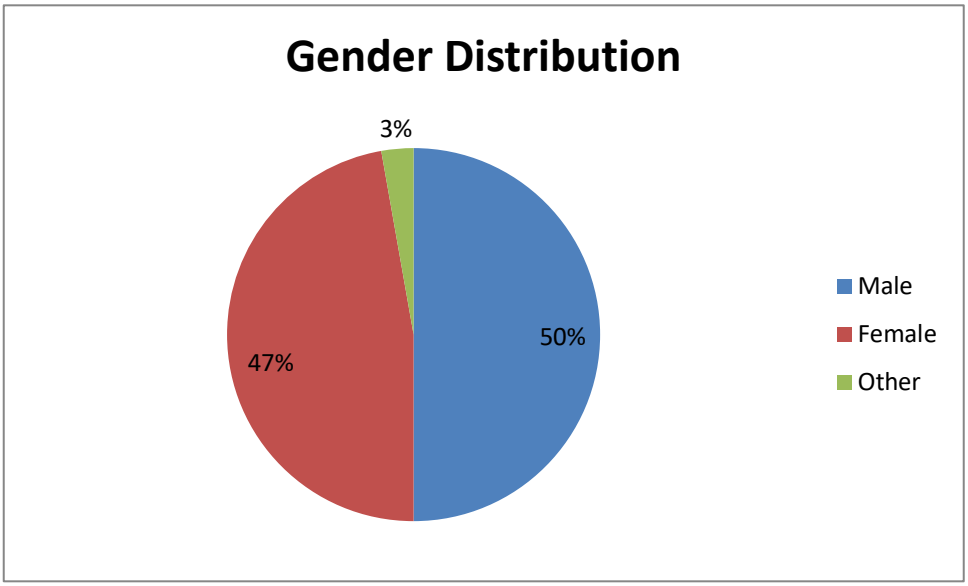
Interpretation:

- **Dental Caries (120 cases)**: The most prevalent condition observed, representing a significant issue in the patient population. This indicates poor oral hygiene and a high intake of sugary foods, which contribute to tooth decay.
- **Gingivitis (90 cases)**: The second most common diagnosis, suggesting a widespread issue with gum health, likely due to inadequate oral hygiene practices.
- **Halitosis (50 cases)**: Although not a severe dental issue, halitosis points to chronic poor oral hygiene and dietary habits.
- **Periodontitis and Pericoronitis**: These conditions reflect more advanced gum diseases and infection, indicating a progression from untreated gingivitis and a need for immediate intervention to prevent further complications.

Table 2. Gender Distribution

Gender	Number of Patients

Male	180
Female	170
Other	10

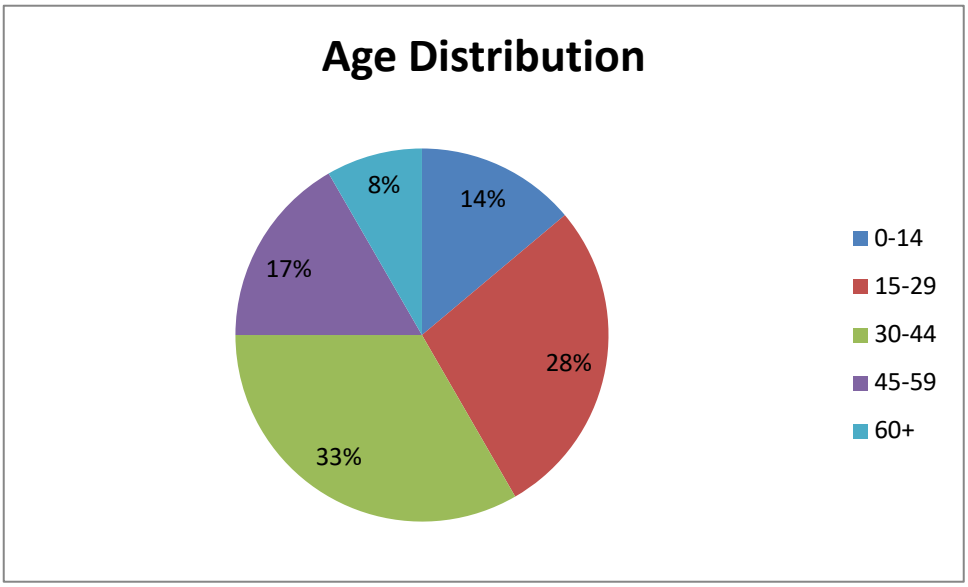


Interpretation:

- The gender distribution is nearly equal between males and females, indicating that dental diseases affect both genders similarly in this rural population.
- The small number of patients recorded as "Other" may reflect a minimal representation or possible misclassification, but the overall trend shows an equal likelihood of dental issues among men and women.

Table 3. Age Distribution

Age Group (Years)	Number of Patients
0-14	50
15-29	100
30-44	120
45-59	60
60+	30

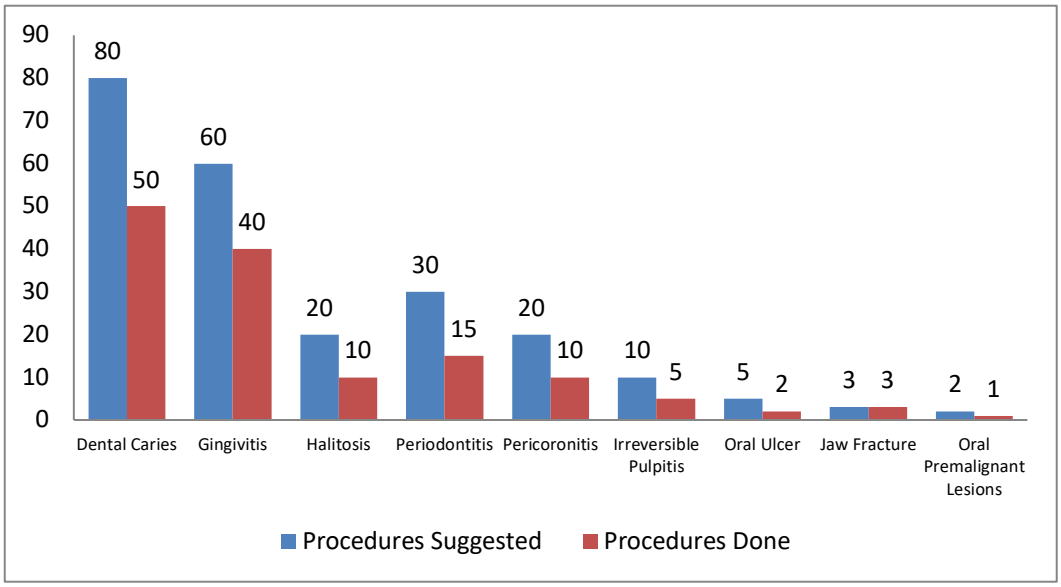


Interpretation:

- **Age Group 30-44** has the highest number of patients, suggesting that middle-aged adults are more likely to experience dental problems, perhaps due to cumulative damage from lifestyle factors, lack of regular dental care, and dietary habits.
- The younger age group (15-29) also shows significant cases, indicating that dental issues start relatively early in life, likely from poor oral hygiene practices.
- Fewer cases in the elderly (60+) might reflect a lack of dental care-seeking behavior in older adults or potentially fewer natural teeth remaining to develop issues.

Table 4. Procedure Summary

Diagnosis	Procedures Suggested	Procedures Done
Dental Caries	80	50
Gingivitis	60	40
Halitosis	20	10
Periodontitis	30	15
Pericoronitis	20	10
Irreversible Pulpitis	10	5
Oral Ulcer	5	2
Jaw Fracture	3	3
Oral Premalignant Lesions	2	1



Interpretation:

- There is a noticeable gap between the number of **procedures suggested** and **procedures completed**, particularly for conditions like **dental caries** and **gingivitis**. While many patients receive recommendations for treatment, fewer are following through with procedures, possibly due to financial constraints, fear of dental procedures, or lack of urgency in addressing their dental problems.
- **Jaw fractures** and **premalignant lesions** have a higher rate of completed procedures, likely due to their more severe nature, which requires immediate attention.

6. DISCUSSION

This study provides important insights into the prevalence and distribution of common dental diseases among patients visiting a dental outpatient department (OPD) in a rural setting near Lucknow. The findings reveal patterns that are consistent with global trends in dental health but also highlight specific challenges faced by rural populations in India. In this discussion, we will examine the implications of the data collected, compare it with national and international studies, and suggest ways to address the observed gaps in dental healthcare.

The data shows that dental caries and gingivitis are the two most prevalent conditions, together accounting for a substantial proportion of the cases (over 50%). This high prevalence of dental caries is not unique to this rural population; it is a global issue, particularly in low- and middle-income countries where preventive care is often lacking. According to the World Health Organization (WHO), untreated dental caries affects nearly 2.3 billion people globally, making it the most common chronic condition worldwide. In India, various studies have reported similarly high rates of dental caries, particularly in children and young adults, with a prevalence as high as 85% in some regions (Mathur et al., 2019).

The high incidence of gingivitis (90 cases) observed in this study reflects poor oral hygiene practices

and limited access to preventive dental care. Gingivitis is often the precursor to more serious conditions such as periodontitis, which was also noted in 40 cases. Left untreated, gingivitis can progress to periodontitis, leading to tooth loss and systemic health issues. This emphasizes the need for early diagnosis and intervention, particularly in rural settings where patients may not prioritize dental visits. The study found that both males and females are equally affected by dental diseases, with no significant gender disparity observed. This is in line with earlier studies that demonstrate oral illnesses impact people of both genders equally, especially in underserved and rural regions (Bagramian et al., 2009). However, the age distribution data shows a significant trend: the 30-44 age group had the greatest frequency of dental problems, closely followed by the 15-29 age group. This implies that dental problems start young and become worse as people mature.

Dietary behaviours like consuming more sweets and not getting regular dental treatment may make younger persons more susceptible to dental caries. The results of many national studies, such as the Indian National Oral Health Survey, which revealed a high incidence of dental caries in those aged 15 to 30, are consistent with the comparatively large number of cases among younger people (aged 15 to 29) (NOHS, 2004). This emphasises how critical it is for this age group to get preventative treatment and education, with a particular focus on frequent dental checkups and good eating habits.

The information shows a large discrepancy between the number of recommended procedures and those that are carried out. For problems like dental caries, only 50 out of 80 advised operations were accomplished. Similarly, only 40 of the 60 recommended therapies for gingivitis were actually implemented. This reluctance to undergo treatment could be attributed to several factors, including:

- Financial constraints: Patients in rural areas may find it difficult to afford dental care, even if treatment is suggested.
- Lack of awareness: Many patients may not perceive the urgency of treating conditions like dental caries or gingivitis, especially if they are asymptomatic in the early stages.
- Fear or anxiety: Dental procedures are often associated with discomfort or fear, leading patients to delay or avoid treatment.

This result is consistent with studies carried out in other rural Indian regions, where comparable obstacles to dental care seeking have been noted. Research indicates that although while dental problems are quite common, people in rural areas are often unwilling to get treatment for social and economical reasons (Sharma et al., 2016). This emphasises the need for more accessible and reasonably priced dental care services, together with patient education to assist them recognise the value of early intervention.

The high incidence of avoidable dental disorders found in this research is probably influenced by the hospital's remote location. With a dentist to population ratio in rural regions of up to 1:250,000, compared to 1:10,000 in metropolitan centres, India's rural inhabitants often face barriers to accessing dental treatment (National Health Profile, 2020). The high prevalence of dental illnesses already present in rural communities is made worse by this gap in access. Furthermore, rural patients find it challenging to prioritise dental treatment due to socioeconomic issues such lower income levels and a

lack of knowledge about oral health.

One of the main causes of the high rates of dental disorders that are seen is a lack of preventative treatment. Routine dental exams are rare in many rural areas, and people often only see the dentist when they are in excruciating pain or suffering. Conditions like periodontitis and dental cavities may have advanced to the point where more involved and costly treatments are needed by this time. In rural regions, where preventative interventions like fluoride treatments and professional cleanings are less accessible, this reactive approach to dental care is typical.

7. RECOMMENDATIONS

To address the high prevalence of dental diseases in rural populations, several strategies should be implemented:

1. Public Health Education: Increasing awareness about the importance of oral hygiene, regular dental check-ups, and early intervention is crucial. Public health campaigns targeting rural populations should focus on educating individuals about the consequences of untreated dental diseases and the benefits of preventive care.
2. Mobile Dental Clinics: Given the limited access to dental care in rural areas, mobile dental clinics could provide essential services to underserved populations. These clinics can offer routine check-ups, preventive treatments (such as fluoride varnishes and sealants), and early diagnosis of dental conditions.
3. Subsidized Dental Care: Financial barriers often prevent patients from seeking treatment. Government or community-based programs offering subsidized or free dental care could encourage more individuals to undergo treatment, especially for common conditions like dental caries and gingivitis.
4. Training Local Health Workers: Training local health workers to recognize early signs of dental diseases and provide basic preventive care could help reduce the burden of advanced dental conditions in rural areas. Health workers could also play a role in educating the community about oral health.
5. Integrating Dental Care into Primary Healthcare: Incorporating dental care into primary healthcare services in rural hospitals and clinics could make it easier for patients to access preventive and curative dental services. This approach has been successful in some countries, where dental health is treated as part of overall healthcare.

8. CONCLUSION

This study highlights the significant burden of dental diseases in a rural population near Lucknow, with **dental caries** and **gingivitis** being the most prevalent conditions. The data also reveals important patterns in age distribution and patient reluctance to undergo treatment, particularly for conditions that are preventable with early intervention. Addressing these challenges requires a multifaceted approach, including public health education, improved access to affordable dental care, and a focus on preventive services. By implementing these strategies, it is possible to reduce the prevalence of dental diseases in

rural populations and improve overall oral health outcomes.

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