

Comparative Evaluation of the Prevalence of Dental Caries, Apical Periodontitis and Periapical Abscess in a Population of North Lucknow, Uttar Pradesh, India

Ayush Razdan Singh¹, Ashok Kumar Srivastava², Bikram Brahmachary³

¹Professor, Department of Conservative Dentistry and Endodontics, Saraswati Dental College, Tiwariganj, Lucknow, U.P., ²Professor and Head, Department of Anatomy, Saraswati Dental College, Tiwariganj, Lucknow, U.P., ³P.G.Student, Department of Conservative Dentistry and Endodontics, Saraswati Dental College, Lucknow, U.P.

Abstract

Background: Dental caries and periodontal diseases are considered as a major public health problem globally and can be seen across all age groups and in all populations. Several socio-behavioral factors like stress-strain of changing lifestyles as well as consumption of high-sugar diet leads to the alteration in the balance of hormones like progesterone, estrogen and GSH and can affect prevalence of dental diseases.

Aims: To evaluate and compare the prevalence of dental caries, apical periodontitis and periapical abscess in a population of North Lucknow, Uttar Pradesh, India. **Materials and Methods:** 60 patients from north Lucknow population were observed in a free dental camp. Out of these 60 patients, nothing was seen in 30 patients (control group) and in other 30 patients dental caries, apical periodontitis and periapical abscess were detected. Diagnosis was done with the help of diagnostic instruments and intraoral periapical radiographs. Out of the 30 patients in which dental diseases were detected, 6 people had dental caries, 17 had apical periodontitis and the remaining 7 had periapical abscess. **Conclusions:** In this study, dental caries were found to be more prevalent in females than in males. However, both apical periodontitis and periapical abscess were more prevalent in males.

Key words: Caries, periodontitis, periapical abscess, prevalence

Introduction

Oral health is considered as an integral part of general health and a good oro-dental health status can lead to promotion of overall health and well-being of an individual. Contrasting to this fact, it doesn't receive the same extent of seriousness as that of the general health. Epidemiological studies have affirmed that dental caries and periodontal diseases continue to be the major health burdens for global populations and mirror as a costly health care service for both individuals and society.

Untreated carious lesions can cause pain, discomfort, loss of chewing ability, speech alteration and eventually hamper the quality of life of the affected individuals. Despite the fact that the prevalence of caries has shown a downfall in developed countries, factors such as the variations related to socio-economic status, lifestyle changes, access to proper treatment facility, paucity of preventive strategies or dietary counseling; it still continues to remain a major problem in most developing and industrialized countries.^[2] The stress and strain of everyday life as well as the craving for sugary food leads to the change in the balance of hormones like progesterone, estrogen and GSH causing various dental diseases.

However, enough scientific reports relating to community-based evaluation of the prevalence of dental caries and its sequelae in the Lucknow population of

Corresponding author:

Dr. Ayush Razdan Singh,

Professor, Department of Conservative Dentistry and Endodontics, Saraswati Dental College, 233, Faizabad Rd, Tiwari Ganj, Chinhat, Lucknow-227105, Uttar Pradesh, India. Email ID: drayushsingh@gmail.com.

Uttar Pradesh, are not available in the literature. Thus, the collected data of this study may be beneficial to frame a more accurate profile of the oral-dental health status of the Lucknow population and will complement the caries trends findings in India. Therefore, this study aimed to evaluate and compare the prevalence of dental caries, apical periodontitis and periapical abscess in a population of North Lucknow, Uttar Pradesh, India.

Materials and Methods

This was an epidemiological study involving individuals who participated in the free oral health screening camp organized by the authors from Saraswati Dental College, Lucknow in the department of Conservative Dentistry. The data records of individuals who were screened in that outreach program were employed for the study. The records were coded to ensure anonymity. Informed consent obtained from the participants.

Oral examination was carried out by trained dental surgeons and diagnosis were made based on WHO

guidelines [3] with help of intraoral radiographs. The participants were asked questions related to their oral hygiene practices such as frequency of brushing per day, whether toothbrush is used or not, type of dentifrice (fluoridated or not) used and on daily habits also (use of tobacco- smokeless or smoked form, alcohol, tea, coffee and snacking habits). The study also collected information on age, gender, socioeconomic background of individuals. Proper oral hygiene practices were demonstrated after the screening and their need to seek dental treatment were also emphasized.

Results

Total 60 patients from north Lucknow population were observed. Out of these 60 patients, no dental disease was detected in 30 patients (control group). Whereas, in other 30 patients 6 people had dental caries, 17 had apical periodontitis and the remaining 7 had periapical abscess. Out of these results, the male-female distribution are as follows:



Figure 1A. Patient having intraoral swelling irt 25, 26.



Figure 1B. Patient deep caries involving pulp irt 46

RESULTS

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A. Dental caries:

Male-2 Female-4

B. Apical periodontitis:

Male-9 Female-7

C. Periapical abscess:

Male-4 Female-3

Descriptive Statistics

Table 1. Disease distribution amongst participants

	N	Mean	Std. Deviation	Minimum	Maximum
Control	30	1.50	.509	1	2
Dental Caries	6	1.33	.516	1	2
Apical Periodontitis	17	1.59	.507	1	2
Periapical Abscess	7	1.57	.535	1	2

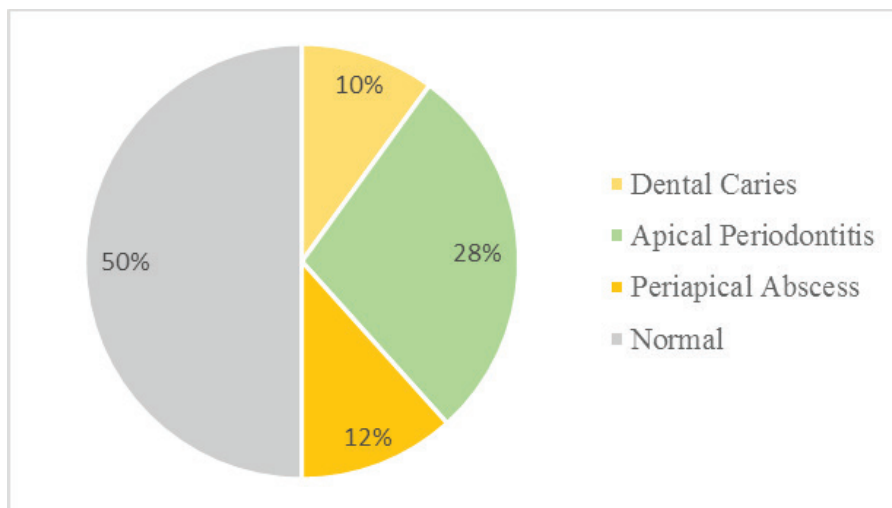


Figure 2. Disease distribution percentages amongst participants

Frequency				
Table 2. Frequency distribution irt sex of participants				
	Periapical Abscess	Apical Periodontitis	Dental Caries	Control
Female	3	7	4	15
Male	4	10	2	15
Total	7	17	6	30

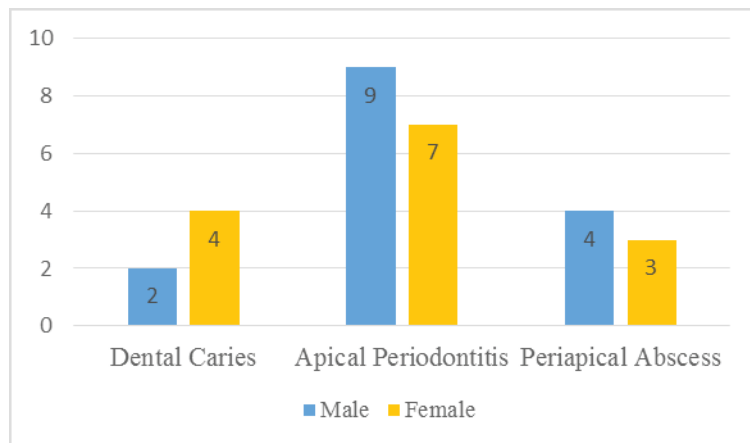


Figure 3. Frequency distribution chart irt sex of participants

Chi-Square Test:

Table 3. Test Statistics

	Control	Dental Caries	Apical Periodontitis	Periapical Abscess
Chi-Square	.000a	.667b	.529c	.143d
df	1	1	1	1
Asymptomatic Significance	1.000	.414	.467	.705

Discussion

Dental caries is a latin word meaning ‘dry rot’. It is the name given to the process of slow disintegration that may affect any of the biological hard tissues as a

result of bacterial action. According to Shafer^[4] dental caries is the microbial disease of the calcified tissues of the teeth, characterized by the demineralization of the inorganic portion and the destruction of the organic

structure of the tooth. According to WHO, caries is a localized, post eruptive, pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity. It is the irreversible, slow progressing decay of the hard tissues of the teeth. It is primarily a local disease that involves destruction of the hard tissues of the teeth by metabolites produced by oral microorganisms.

There is a vast history of dental caries. The rate of caries remained low through the bronze and iron ages. The increase of caries during the Neolithic period may be attributed to the increase of plant foods containing carbohydrates. The beginning of rice cultivation in south Asia is also believed to have caused an increase in caries. Sumerians (5000 B.C.) describe a 'tooth worm' as the cause of caries.

Apical periodontitis is an inflammatory disorder of the periradicular tissues caused by irritants of endodontic origin mostly of persistent microbes living in the root canal system of the affected tooth.^[5] It is primarily a disease of infection. But unlike classical infectious diseases of single specific etiologic agents, apical periodontitis was caused by a consortium of microbial species living in the root canal in an ecologically balanced community form of living organisms referred to as biofilms.^[6]

Periapical abscess is characterized by rapid onset, spontaneous pain, tenderness of the tooth to pressure, pus formation and eventual swelling of the associated tissues. At the initial stages of its formation, the process may be extremely painful as pressure builds up in the restricted periapical space. The establishment of drainage through the root canal may be in some cases end the agonizing process.^[7] In the natural state, an acute periapical abscess may sometimes subside. In most cases the overlying cortical plate eventually perforates and purulence accumulates under the periosteum producing a painful condition. Only with the perforation of the periosteum is the pus to be able to drain into the overlying tissues and allow the major pain to subside. At this stage a local swelling appears and an incision is made in the overlying tissues to allow final drainage. In some cases, natural drainage was done in a few days by perforation of the covering tissue. In others the swelling remains for some time before it gradually subsides.

There is lack of gender wise study of these dental diseases. The result of the study shows that dental caries is more prevalent in females than in males. Reproduction pressures and rising fertility explained why women suffered a more rapid decline in dental health as humans transitioned from hunter and gatherers to farmers and more sedentary pursuits.

Female sex hormones and associated physiological factors was significantly impact cavity formation. Female hormone oestrogen was correlated to cavity rates. A cumulative effect of oestrogen includes fluctuating levels at puberty and high levels during pregnancy that promote cavity and dietary changes. Another cause is biological composition and flow rate of saliva. Women produce less saliva than men, reducing removal of food residue from teeth.^[8] During pregnancy the chemical composition changes, reducing saliva's antimicrobial capacity. Food cravings, immune response and aversions during pregnancy also may cause changes. Women crave high energy sweet foods during the 3rd trimester as well as aversion to meat in first trimester.

Periapical abscess and apical periodontitis cases were found more to be in men as they did not consider it important to visit a dental clinic. They had worse indications of periodontal health as compared to women including higher incidence of dental plaque, tartar and bleeding on probing. However periodontal health of men is important as it may impact a variety of other health factors. Other factors depend on the area of North population of Lucknow that the particular individual is from, like water, intake of food, dietary habits etc.

Conclusion

This study compared gender wise distribution of certain common dental problems due to physiological process of the body.

Under the limitations of that study it can be concluded that dental caries was more prevalent in females than in males due to hyposalivation of female sex hormone and hyposalivation of saliva as compared to men and certain climatic factors. Periapical abscess and apical periodontitis were more prevalent in males due to change in lifestyle and callous attitude of average male regarding their dental health compared to females.

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