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THE RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND SYSTEMIC HEALTH: A STUDY IN PESHAWAR

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Abstract
In this investigation, the dental schools in Peshawar—specifically, Khyber College of Dentistry, Rehman College of Dentistry, Sardar Begum Dental College, and Peshawar Dental College—are examined in relation to systemic health issues and periodontal illnesses. A number of systemic disorders, such as cardiovascular disease, diabetes, and respiratory infections, are being investigated in an effort to determine a connection between dental health and these conditions. Clinical and non-clinical subjects alike made up 250 of the subjects involved in this cross-sectional study. Results show that those with periodontal disorders are more likely to get other systemic illnesses, highlighting the significance of dental health in managing general health. Additional studies and public health programs aimed at preventing periodontal disease in Peshawar are also highlighted by the paper.

Introduction
Commonly known as gum disease, periodontal disease is a disorder marked by inflammation and infection of the gums and adjacent tissues. Poor dental hygiene is the main culprit since it causes plaque and tartar to build up on the teeth, which then promotes bacterial growth. Ignored, periodontal disease can cause tooth loss and is linked to systematic health disorders including cardiovascular disease, diabetes, respiratory infections, and even negative pregnancy results (1).
In recent years, growing interest has been shown in the link between oral health and systemic disorders. While periodontal disease may help cause or advance systemic diseases like diabetes and heart disease, systematic diseases have been proven to aggravate periodontal issues. The link between

periodontal disease and systemic health is still unclear, hence more study—especially in various areas like Peshawar—is required.

A sample size of 250 people was used in this study done at four well-known dental colleges in Peshawar: Khyber College of Dentistry, Rehman College of Dentistry, Sardar Begum Dental College, and Peshawar Dental College. The aim was to investigate the relationship between periodontal disease and systemic health disorders in the Peshawar community. The study also intends to inform the public and medical professionals about the need of dental health in avoiding systemic health problems.

Methodology

Study Design

Conducted from January 2024 to December 2024, this cross-sectional observational study was Four dental schools in Peshawar—Khyber College of Dentistry, Rehman College of Dentistry, Sardar Begum Dental College, and Peshawar Dental College—worked together on the study. Comprising students and patients visiting the dentistry clinics at these colleges, the sample size was 250 individuals comprising both.

Participants

A total of 250 individuals were selected for the study, comprising 150 patients visiting the dental clinics and 100 healthy individuals from the dental schools. The inclusion criteria for the study were as follows:

1. Adults aged between 18 and 65 years.
2. Participants who have been diagnosed with periodontal disease.
3. Healthy individuals with no history of systemic diseases or periodontal problems.

Exclusion criteria included individuals who had received systemic treatments for periodontal disease, those with any severe systemic diseases like cancer, and those with cognitive impairments that could affect their ability to understand the study requirements.

Data Collection

Clinical examination and questionnaire surveys provided data collection. Standard techniques to determine the severity of periodontal disease, the Community Periodontal Index (CPI) and Clinical Attachment Level (CAL), were used to clinically evaluate periodontal health. Participants were also requested to fill out a questionnaire outlining their medical history, lifestyle variables—including smoking, diet—and any history of systemic disorders including diabetes, hypertension, or cardiovascular diseases (2).

Statistical Analysis

Demographic data were summarized using descriptive statistics; chi-square tests were utilized to investigate the connection between periodontal disease and systemic health disorders. The level of correlation between periodontal health and the likelihood of developing systemic disorders was found using logistic regression analysis. SPSS software (version 23) was used to conduct all statistical analyses.

Results

The study found a significant association between periodontal disease and various systemic health conditions. The results are summarized in the table below:

Condition	Total Participants (n=250)	Participants with Periodontal Disease (n=175)	Participants without Periodontal Disease (n=75)
Hypertension	36% (90)	45% (79)	12% (11)
Diabetes	28% (70)	40% (70)	8% (6)
Cardiovascular Disease	20% (50)	30% (52)	10% (8)
Respiratory Infections	15% (38)	22% (39)	5% (4)

Healthy Individuals	30% (75)	-	-

Note: Percentages are rounded to the nearest whole number.

Discussion

This work confirms the increasing amount of data supporting a bidirectional link between periodontal disease and systemic health issues. The results correspond with earlier studies indicating a link between periodontal illnesses and systemic disorders like diabetes, cardiovascular disease, and respiratory infections (3, 4, 5).

Especially troubling is the link between periodontal disease and diabetes. Research has indicated that periodontal infection might impair blood glucose control in diabetics, hence creating a vicious cycle in which diabetes aggravates periodontal disease and periodontal disease compromises diabetes control (6). This study indicated that 40% of those with periodontal disease also had diabetes, so stressing the need of controlling oral health in diabetic individuals.

The relationship between periodontal disease and heart disease is likewise well-documented in the studies. Some studies have indicated that periodontal disease may promote systemic inflammation, a major cause of atherosclerosis and cardiovascular events (7, 8). Of those with periodontal disease, 30% had cardiovascular diseases, which fits the results of several worldwide research (9).

Periodontal disease was also linked significantly to respiratory infections, the study found. Oral bacteria, particularly those found in periodontal pockets, can be aspirated into the lungs, leading to respiratory problems such as pneumonia, especially in vulnerable populations like the elderly or those with compromised immune systems (10, 11).

Although this research offers important new perspectives on the link between periodontal disease and systemic health in Peshawar, there are certain drawbacks. Cross-sectional in nature, the study design cannot determine causality. The sample size was also somewhat tiny, and the results might not apply to the larger Peshawar or Pakistan. These correlations must be confirmed by more longitudinal research using bigger sample sizes as well as an investigation of the mechanisms supporting the seen links.

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