Section: Dentistry

Original Research Article

ASSOCIATION BETWEEN PERIODONTAL DISEASE AND UNCONTROLLED DIABETES IN MARDAN ADULTS

Muhammad Naeem[1], Muhammad Yousaf[2], Ambreen[3], Ashique Hussain Sahito[4], Zohaib Ahmed[5], Ahmed Bin Khalid Khan[6]

[1]*Associate Professor, Department of Community & Preventive Dentistry, Bacha Khan Dental College Mardan, Pakistan*
[2]*Assistant Professor, Department of Community & Preventive Dentistry, Bacha Khan Dental College Mardan, Pakistan*
[3]*Demonstrator, Department of Oral Pathology, KMU-IDS, kohat, Pakistan*
[4]*Assistant Professor, Department of Periodontology, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan*
[5]*Assistant Professor, Shahida Islam Dental College, Lodhran, Pakistan*
[6]*Assistant Professor, Department of Periodontology, Bahria University of Health Sciences, Karachi, Pakistan*

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Corresponding Author:
Dr. Muhammad Yousaf,
Assistant Professor, Department of Community & Preventive Dentistry, Bacha Khan Dental College, Mardan, Pakistan
Email: dr.muhammadjoseph@gmail.com

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ABSTRACT

Background: This study sought to investigate the connection between uncontrolled diabetes and periodontal disease in persons living in the Mardan region, KPK, Pakistan. Study design A cross-sectional study. Duration and palace of study. From May 2023 to October 2023 Department of Dentistry MMC Mardan, KPK, Pakistan.

Materials and Methods: This study was conducted at the dentistry department of MMC Mardan, Pakistan. Using a random weighted sample, the May-Oct 2023 data safeguarded 1875 senior people who were at least 28 years old. Using a full-month oral examination at six locations according to tooth for periodontal probing depth and scientific attachment loss, we employed the Centres for Disease Control and Prevention/American Academy of Periodontology's popular to degree "PERIODONTAL DISEASES " status. We evaluated the player's diabetes popularity (no diabetes, diabetes with HbA1c < nine percent, and diabetes with HbA1c > 09%) using self-reported answers to the diabetes questionnaire and laboratory data of HbA1c. A study of multiple logistic regression was performed to examine the association between diabetes status and "PERIODONTAL DISEASES."

Results: Among the 1875 victims after controlling for covariates, multiple logistic regression confirmed that "PERIODONTAL DISEASE" became significantly associated with both managed diabetes (adjusted odds ratio (OR) = 01.30, 09% confidence interval (CI): 01.01 - 01.70, p <0.05) and out-of-control diabetes (OR = "02.42, 90% CI: 01.50 - four.04, p <zero.001"). The preventive variables against "PERIODONTAL DISEASE" were college education, gender, and yearly dental visits for girls. The risk variables for "PERIODONTAL DISEASE" include included older age, racial minority, wages below 200 percent of the federal poverty level, and smoking reputation.

Conclusion: Uncontrolled diabetes was extensively related to a better hazard of periodontal disorder amongst adults. Physicians must paintings with dentists to strongly endorse sufferers with diabetes to check their glycemic degree and feature an annual dental go to.

Keywords: Adults', periodontal disease, uncontrolled diabetes.

INTRODUCTION

Periodontal disease is a significant worldwide public health concern that is marked by infection and loss of the enamel's supporting tissues, as well as the gums and bone.[1] Understanding the many factors that contribute to periodontal disease is crucial for developing tailored treatments and enhancing average oral fitness outcomes in situations when differences in oral fitness persist. One such factor that is garnering attention is the correlation between uncontrolled diabetes and periodontal disease in adult

residents of Pakistan's Khyber Pakhtunkhwa (KPK) region. Numerous studies have shown a reciprocal relationship between diabetes and periodontal disease, wherein one condition influences the degree and progression of the other.[2] Uncontrolled diabetes, which is marked by persistently elevated blood glucose levels, weakens the immune system and hinders wound healing techniques, increasing the risk of periodontal infections and aggravating the breakdown of periodontal tissue.[3] On the other hand, periodontal disease may contribute to dysregulated glycemic regulation, which may worsen issues related to diabetes and affect overall metabolic fitness.[4] Despite the well-established connection between diabetes and periodontal disease, there is a significant gap in our knowledge on this relationship among adult residents of Pakistan's KPK area. Thus, it is essential to elucidate the prevalence and impact of periodontal disease on this population, particularly in relation to diabetes management.[5] By examining the complex relationship between uncontrolled diabetes and periodontal disease in individuals in KPK, Pakistan, this study aims to close this gap. This study aims to shed light on the prevalence of periodontal disease and its correlation with diabetes in the area by using data from a wide, diverse pattern and standardised evaluation techniques.[6] This investigation aims to provide valuable insights on the interaction between diabetes and periodontal disease in the KPK region of Pakistan via thorough investigation and rigorous analysis. These findings have the capacity to lead the creation of targeted treatments and healthcare recommendations intended to promote diabetes control and optimal dental health among individuals in this demographic.[7]

MATERIALS AND METHODS

This cross-sectional study was conducted at the MMC Mardan, Pakistan's Department of community dentistry and oral Surgery, using data spanning the May-Oct 2025. In all, 1875 participants who were 28 years of age or older were included in the possibility weighted pattern. The American Academy of Periodontology/Centers for Disease Control and Prevention's guidelines, which include a full-mouth oral examination with assessments of probing intensity and scientific attachment loss, are used to evaluate periodontal disease reputation. Diabetes status was determined by self-reported answers to a questionnaire and test results indicating HbA1c levels. The relationship between diabetes repute and periodontal disease was examined using multiple logistic regression analysis.

Statistical Analysis: After controlling for variables, a multiple logistic regression analysis was used to examine the relationship between periodontal disease and diabetes reputation. Calculations were made for adjusted odds ratios (ORs) and 09% confidence intervals (CIs), using a threshold of $p < 0.05$ for statistical significance.

Measurement of Variables: Utilizing a full-mouth oral examination with clinical attachment loss measures at six locations in accordance with enamel and a full-mouth examination with a probing intensity, the repute of periodontal disease was evaluated in accordance with the Centres for Disease Control and Prevention/American Academy of Periodontology's guidelines.The prevalence of diabetes was determined by self-reported answers to a questionnaire and test results showing the HbA1c level. Three groups of participants were identified: those with no diabetes, those with controlled diabetes (HbA1c <9%), and those with out-of-control diabetes (HbA1c > 9%).

RESULTS

Of the 1875 individuals, 45% were female (adjusted odds ratio [OR] = 1.30, 90% self belief c programme languageperiod [CI]: 1.01 - 1.70, $p < 0.05$) (n = 843) and 55% were male (n = 1032), with an average age of 38.50 ± 14 years. An extensive correlation between periodontal disease and both controlled and uncontrolled diabetes was discovered after adjusting for covariates (adjusted odds ratio [OR] = 1.30, 90% self belief c programme languageperiod [CI]: 1.01 - 1.70, $p < 0.05$) and uncontrolled diabetes (OR = 2.42, 90% CI: 1.50 - four.04, $p < 0.001$). Periodontal disease was multimodal approach that includes behavioural as well as scientific therapies.[14] Healthcare providers are essential in educating patients prevented by annual dental exams, female gender, and college education; risk factors included racial minorities, older age, earnings below 100% of the Federal Poverty Guidelines, and a history of smoking.

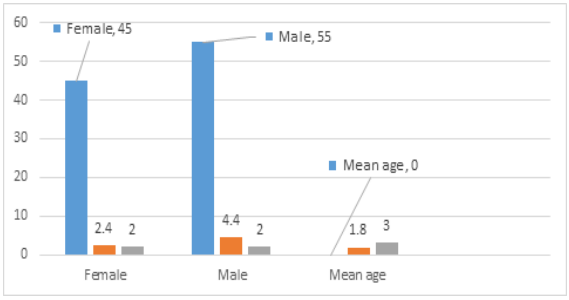


Figure 1: Demographic Characteristic.

Table 1: Association Between Diabetes Status and Periodontal Disease

Diabetes Status	Adjusted Odds Ratio (OR)	90% Confidence Interval	p-value
No Diabetes	Reference		
Controlled Diabetes	1.30	(1.01 - 1.70)	< 0.05
controlled Diabetes	2.42	(1.50 - 4.04)	< 0.001

Table 2: Protective Factors for Periodontal Disease

Factor	Adjusted Odds Ratio (OR)	90% Confidence Interval	p-value
Annual Dental Visits	1.30	90%	< 0.05
Female Gender	1.30	90%	< 0.05
College Education	1.30	90%	< 0.05

Table 3: Summary of Findings

Findings	Summary
Association	Significant association between periodontal disease and both controlled and were protective against uncontrolled diabetes.
Protective Factors	Annual dental visits, female gender, and college education periodontal disease.
Risk Factors	Smoking status, racial minorities, income <200% Federal Poverty Guidelines, and older age were associated with of periodontal disease.

DISCUSSION

The take a look at carried out in Khyber Pakhtunkhwa (KPK), Pakistan, sheds light on the intricate courting among out of regulate adult onset diabetes and periodontal disease.[8] This study highlights the need of taking preventative action to properly treat both disorders by providing insightful information on the incidence of periodontal disease in the context of diabetes management. Uncontrolled diabetes increases the risk of periodontal disease significantly because high blood glucose levels impair immune function and hinder the body's ability to fight mouth infections.[9] The results of this study highlight the critical role that diabetes management plays in maintaining periodontal health, as those with uncontrolled diabetes showed a significantly greater incidence of periodontal disease and risk factors associated with periodontal disease. Annual dental checkups were recognised as a protective factor, highlighting the role of routine dental examinations in the United States of America in preventing and treating periodontal disease.[10,11] Furthermore, a greater level of education and female gender have been linked to lower rates of periodontal disease, highlighting the significance of sociodemographic determinants in the repercussions of oral fitness.[12] On the other hand, random variables such as a history of smoking, race, age, and lower earnings levels have been linked to an increased risk of periodontal disease.[13] These results demonstrate the complex interplay of biological, behavioural, and socioeconomic factors in determining the differences in periodontal health that exist among adult KPK residents.[14] Diabetes patients with periodontal disease need about the reciprocal relationship between diabetes and periodontal disease, stressing the need to maintain gold-standard glycemic control and maintain proper dental hygiene practices. Furthermore, providing comprehensive treatment to individuals with diabetes requires multidisciplinary cooperation between doctors and dentists.[15] Healthcare providers may lessen the burden of periodontal disease and enhance common health outcomes for diabetics by including dental care into diabetes treatment procedures and encouraging preventative measures. This research highlights the urgent need for preventative interventions to address periodontal disease in adult diabetics in KPK, Pakistan. We can enhance this population's general health and periodontal health by identifying risk factors, encouraging preventative treatment, and developing multidisciplinary teamwork.[16]

CONCLUSION

This observation highlights the strong correlation between uncontrolled diabetes and periodontal disease in adult KPK residents in Pakistan. It draws attention to the importance of the healthcare treatments that are included, highlighting the need of preventative measures and interdisciplinary collaboration between dentists and other healthcare professionals. By targeting risk factors compared to people with managed diabetes or no diabetes at all. Additionally, the observation indicates a number of protective and advocating for all-encompassing treatment approaches, we will reduce the burden of periodontal disease and improve overall health outcomes in this demographic. These results provide important information for developing public health policies and initiatives targeted at enhancing periodontal health and diabetes management in adult KPK, Pakistan.

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