

## Comparison of Periodontal Diseases among Genders in Khyber Pakhtunkhwa, Pakistan

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### ABSTRACT

**Objective:** The aim of study is to assess the estimate of periodontal diseases (PD) among gender.

**Place and Duration of Study:** Dental Hospitals of Khyber Pakhtunkhwa (KPK), Pakistan from February to December 2020.

**Methodology:** One thousand and seventeen patients were included in the study through simple random sampling technique from most of the dental Hospitals of KPK. The informed consent was taken from the patients and attendants.

**Results:** Our study shows that the prevalence of gingivitis was more (76.5%) among the population of KPK than the periodontitis. The difference among the frequency of both periodontitis and gingivitis was minimum; female patients (79% Gingivitis, 21% periodontitis), male patients (74% Gingivitis, 26% Periodontitis), p-value <0.005 respectively.

**Conclusion:** Most of the people of KPK are experiencing periodontal diseases, especially the mild gingivitis. The education of the population of KPK regarding better oral hygiene that needs to be addressed.

**Keywords:** Periodontal Disease, Gingivitis, Periodontitis, Dental Plaque, Calculus, Inflammation, Gender

## Introduction

Periodontal diseases (PD) are predominant in developed and developing countries of the world, affecting 20-50% people internationally. Frequency of periodontal disease is high in all the age groups along with the risk factors that are, age, medication, poor oral hygiene, diabetes, smoking, stress and hereditary. All pathological conditions of periodontium, predominantly inflammatory diseases that are plaque induced such as gingivitis and periodontitis are termed as PD. Gingivitis is the reversible disease, aggravation is limited to the gingiva without decimation of the supporting tissues while periodontitis is the irreversible devastation of the more profound structures of the periodontium with resultant connective tissue attachments and alveolar bone loss, periodontal pocket, tooth mobility and possible tooth loss [1]. Gingivitis is controllable with good oral hygiene. However, in the absence of treatment, or if not controlled, gingivitis can progress to periodontitis [2]. Compared with developed countries, developing nations have higher prevalence of calculus and bleeding on probing among adolescents. The proportion of adolescents with calculus deposits ranged from 35% to 70% in

developing countries while it ranged from 4% to 34% in developed nations. The American Academy of Periodontology (AAP) has classified periodontitis into different categories [3]. It has a multifactorial aetiology with a dental plaque as the initiating factor [4]. The prevalence of PD varies in different regions of the world according to the definition of periodontitis and study population there are indications that they may be more prevalent in developing than in developed countries [5, 6]. The Journal of Periodontology relates that women are more proactive in keeping up their dental wellbeing than men. This study explains differences in sex-based variations in the prevalence of gingivitis based on four findings [9]: females have greater knowledge about oral health, a more positive attitude toward dental visits, and a healthier lifestyle than males, females have a higher level of oral health behaviour than males and females have lower levels of dental plaque, calculus, and gingival inflammation than males because oral hygiene status is influenced by oral health behaviour, It is possible that knowledge, attitude, and lifestyle indirectly affects sex differences in gingivitis [9]. PD has been associated with factors such as low socioeconomic status, poor access to healthcare services and other health related risk behaviours such as smoking, alcohol intake, carbohydrate rich diets and inadequate oral hygiene which are dominant in developing countries [10]. It is the most frequent oral disease, second only to dental caries and a significant cause of tooth mortality among adults qualifying it as a significant oral health issue in Nigeria [11]. Aggressive periodontitis is a severe condition affecting individuals during puberty leads to premature tooth loss and affects around 2% of youths [13]. Hormonal changes can also lead to periodontal diseases [12, 14]. Stress diminishes saliva flow which increases dental plaque accumulation. Also, emotional stress modifies the saliva pH and its chemical composition like the IgA secretion, this leads to Gingivitis. One important factor in aetiology can maintain of many inflammatory diseases, including periodontal disease [18]. One of the causes of periodontal disease are smoking, prevalent in male & among low-income adults [19, 24]. Alcohol causes dehydration of the mouth, men who drank alcohol had an 18- 27% higher risk of disease [21]. Several studies have reported on the relationship between osteoporosis, periodontal disease, and tooth loss [22, 23]. This lack of periodontal disease surveillance at the global stage calls for integrated actions from public health professionals, researchers, periodontologists, and local, national, and global health organizations [24]. The analysis of global data about the prevalence of periodontal disease is useful for policy development and the allocation of financial and human resources for preventive measures and the provision of treatment. However, the prevalence of periodontal disease in different age groups and in

low-income, middle-income, and high-income countries is not fully understood. Our study aims to provide the frequencies and comparison of periodontal diseases in KPK among both genders. The objective of our study is to assess the periodontal diseases and compare its prevalence among males and females.

## Methodology

The study was conducted in different dental hospitals of the Khyber Pakhtunkhwa, Pakistan. The duration of the study was ten months. Random sampling techniques were used for the selection of patients. A total 1017 patients (male and female) participated in the study. Informed consent was taken from the patients as well as from the caregivers. Inclusion criteria were all the patients who are diagnosed with periodontal disease and the patients who were not diagnosed with this disease were excluded. The ethical approval for this study was taken from the ethical committee of Gandhara University.

## Results

The details of the gender distribution mentioned below. From 1017 participant's 537 (52.8 %) were from male category and 480 (42.7%) from female. Table-1 shows the distributions in detail:

**Table-1: Gender distribution of study (N=1017)**

Gender	Frequency	Percentage (%)
Male	537	52.8
Female	480	47.2

Table-2 highlights the attributes respectively (Mild, Moderate, Severe and Chronic) and the results we obtained after diagnosis Gingivitis and Periodontitis.

**Table-2: Prevalence of Gingivitis (N=778) & Periodontitis (N=239)**

Diagnosis	Severity				Total	Chi-Square	P-Value
	Mild N (%)	Moderate N (%)	Severe N (%)	Chronic N (%)			
Gingivitis (N=778)	474(46.6)	261(25.7)	41(4.0)	02(0.2)	778(76.5)		0.001
Periodontitis (N=239)	112(11.0)	59(5.8)	68(6.7)	00(0.0)	239(23.5)		

In Table-3 cross tabulation of gender with diagnosis is discussed respectively for male and females.

**Table-3: Cross tabulation of Gender with diagnosis (N=1017)**

Gender	Diagnosis							Total	Chi-Square	P-Value
	Gingivitis (N=778)				Periodontitis (N=239)					
	Mild	Moderate	Severe	Chronic	Mild	Moderate	Severe			
Female	235	125	18	01	44	28	29	480	4.693	0.584
Male	239	136	23	01	68	31	39	537		
Total	474	261	41	02	112	59	68	1017		

In Table-4 cross tabulation of address with diagnosis is discussed respectively for Peshawar, Pakistan and for other places.

**Table-04: Cross tabulation of Address with diagnosis (N=1017)**

Address	Diagnosis		Total	Chi-square	P Value
	Gingivitis (N=778)	Periodontitis (N=239)			
Peshawar	762	224	986	62.336	<0.005
others	16	16	29		

In the next section we will discuss in details the results we observed and a comparative analysis of the tables mentioned above.

## Discussion

Many studies have shown that majority of the adult population have Gingivitis-periodontitis. The worldwide prevalence of periodontal disease is 90% [25]. Studies showing the prevalence of gingivitis and periodontitis based on severity are deficient on national level in Pakistan. In our study we focused to figure out the prevalence and comparison of periodontal disease among gender in KPK. The total number participants were 1017, male participants were 537 and females were 480. The national survey of Finland [35] mainly focuses on certain age groups. From 35-44 years-old reported a prevalence of 61% and 14% of moderate and severe periodontitis. World Health Organization [14] conducted

metanalysis on prevalence of periodontal diseases in many countries. The lowest prevalence of severe periodontitis was seen in Madagascar and Hungary (3%). In Asian countries the prevalence was less than 10% of severe periodontitis. Prevalence of more than 20 % was seen severe periodontitis was in the range of 19 to 32% [36]. In our study the severity of periodontist was 6.7%. A study conducted in India reported that periodontitis was significantly higher in males and increased with increasing age groups as moderate periodontitis was seen in 17.5% of 35-44 years-old and in 21.4% in 65-74 years-old respectively [28]. Furthermore, in our study Table-02, the prevalence of mild gingivitis (46.6%) and mild periodontitis (11.0%) was calculated that was more than the moderate and severe cases, severe gingivitis (4.0%) and periodontitis (6.7%) respectively. Similar results were found in American population [31] male suffered from gingivitis more as compared to female. While some previous studies showed that more females were diagnosed with gingivitis as compared to males [32]. This is opposite to a study conducted on Chinese [33] adult population which showed no difference between genders-based distributions of gingivitis. In our study the gender distribution of gingivitis to periodontitis with a chi-value of 4.693, the male participants were more affected by the disease than the female participants. It was also assessed that the geographical distribution of the patients coming to the dental hospitals with p-value (0.004), the number of patients were more from Peshawar. There is need of preventive measures to be taken in the KPK for reducing the prevalence of periodontal diseases and provide better facilities to the patients. Periodontal disease is one of the international public health crises. High prevalence attributes to poor oral hygiene, lack of government financing for oral health services, and lack of oral health promotion programs and policies aimed at the population of our region. The burden of periodontal disease is increasing from the last decades, and large evidence shows that it is significantly and strongly association with systemic diseases. Due to lack of periodontal data in this case epidemiological data should be strong for the preventing of periodontal disease which is needed for the allocation and health resources for the treatment plan and follow-up of the disease [24].

## Conclusion

Periodontal disease is a critical dental problem in Khyber Pakhtunkhwa, Pakistan and its prevalence is useful for policy development, financial, human resources distribution and the facilities for preventive measures for treatment. Experimental evaluation of datasets and our proposed suggestions, recommendations can serve better in detection of periodontal disease.

### Recommendations:

There should be awareness programs and dental camps for the dental hygiene to facilitate people regarding dental problems along with regular follow-up for better oral hygiene maintenance.

### Conflict of interest:

There is no conflict interest.

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