

PREVALENCE AND MANAGEMENT OF PERIODONTAL DISEASE IN LAHORE

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ABSTRACT:

Background: Periodontal disease is one of the most common oral diseases worldwide that can eventually lead to tooth loss and other health consequences if left untreated.

Objectives: The current study aims to assess the prevalence, risk factors/indicators, management, various therapeutic options and level of awareness among patients of periodontal disease.

Materials and Methods: An observational study using convenient sampling technique was used in three teaching hospitals and four private dental clinics of Lahore during the period July 2017- August 2017. A predesigned detailed questionnaire was filled during face to face interviews with patients. The data collected from a sample of 150 patients was analyzed and presented graphically.

Results: Majority of the observed population suffering from periodontal disease were males. Most of them were uneducated, labors and in the age ranges of 35-50 years. Periodontal disease was more dominant in smokers, patients who had poor oral hygiene and those with chronic stress or systemic illness. Scaling and root planning was the most used therapeutic option for periodontal disease. 23% patients were given only adjunctive therapy including antibiotics and oral hygiene products instead of scaling and root planing.

Conclusion: It was concluded that the major cause of periodontal disease is poor oral hygiene and avoidance of patients to visit dentist for regular dental checkup. Low literacy rate is also a barrier in maintenance of good oral health. This could be improved by educating the patients about risk factors associated with the periodontal disease and preventive measures that should be taken to avoid periodontal disease.

Keywords: Periodontal disease, Prevalence, Risk factors, Management



INTRODUCTION:

Periodontal disease is a chronic inflammatory disease of soft tissues surrounding the teeth which leads to continuous and periodic loss of the periodontal attachment apparatus, eventually resulting in tooth loss. It can affect a single tooth, a number of teeth or whole jaw. It is one of the most common chronic infectious diseases.^[1] Recent global epidemiological data suggests periodontal disease to be one of a major burden on oral diseases.^[2] Prevalence of periodontal disease worldwide varies according to

regions, while higher prevalence is reported in developing countries.^[3] According to a report by World Health Organization severe periodontal disease, which may result in tooth loss, is found in 15–20% of middle-aged adults.^[4] One of its forms, severe periodontitis was the sixth-most prevalent disease condition, affecting 10.8% or 743 million people worldwide. National oral health surveys have assessed 82% of adults suffering from gingivitis in United States.^[5] National research on periodontal disease is limited in Pakistan; however, few studies suggest status of periodontal

disease and report prevalence up to 98%.^[6,7]

Periodontal disease can be divided into two major categories; gingivitis and periodontitis. Periodontal disease in its early stage is nondestructive and reversible gingival inflammation called gingivitis. Periodontitis is more serious form of periodontal disease resulting in destructive inflammation of teeth supporting tissues eventually leading to tooth loss.^[8] Many risk factors and risk indicators have been identified that are associated with increased risk of periodontal disease. The intrinsic risk factors include socioeconomic status, race, gender, age, education level, hormonal changes, genetics, autoimmune disease, diabetes mellitus, cardiovascular disease, arthritis, kidney disease and other systemic conditions. External acquired factors include smoking, alcohol abuse, drug abuse, medication use and stress. Local factors include poor oral hygiene, increased levels of calculus, overhanging/defective restorations, carious lesions or margins and areas subject to food impaction.^[9]

The overall purpose of treatment of periodontal disease is the removal of pathogenic bacteria, correction of reversible risk factors and prevention of recolonization of bacteria to prevent disease reappearance.^[10] The non-surgical treatment of periodontal disease includes scaling and root planning with adjunctive therapy (host modulation, systemic antibiotics and local delivery antimicrobials). Non-steroidal anti-

inflammatory drugs and antibiotics have been used as host modulation agents. Systemic antibiotics used are metronidazole, ciprofloxacin, tetracycline, erythromycin and clindamycin.^[11] Locally applied antimicrobial agents include doxycycline hyclate, minocycline hydrochloride and chlorhexidine gluconate.^[12,13] Surgery is needed when the tissue around the teeth is unhealthy and cannot be repaired with nonsurgical options. These include flap surgery/pocket reduction surgery, bone grafts, guided tissue regeneration, soft tissue graft and bone surgery. This study was designed to evaluate prevalence, demographic and other risk factors/indicators associated with periodontal disease, management, various therapeutic options and level of awareness among patients of periodontal disease.

MATERIALS AND METHODS:

A prospective observational study using convenient sampling technique was conducted in three teaching hospitals and four private dental clinics of Lahore during the period July 2017- August 2017. The study sample size was 150 including both male and female of age ranging from 16 years and above. Patients suffering from diabetes and cardiovascular disease were also included. While pregnant women, patients under age 16 and patients suffering from renal disease and epilepsy were excluded. A structurally designed data collection tool was used. The questionnaire consisted of information

regarding patient's demographics (his/her name, gender, age, weight, education, occupation), description of past medical history, past drug history and family history, eating habits and stress level, gum color, swelling, tooth movability, medications and care plan provided for treatment of patient. Data was collected by interviewing patients in Government and private sector hospitals of Lahore. Collected data was analyzed using basic statistical methods and represented in the form of frequency tables and graphs.

Ethical Consideration:

Approval of the research was granted by the Institute of Pharmacy Lahore College for Women University. Verbal informed consent was obtained from each participant before participation. Privacy and confidentiality of participants was ensured by the researchers.

RESULTS:

Demographic characteristics of respondents are given in Table 1. Males (53%) were more than females (47%). Most patients (41%) were aged between 35-50 years, 28% between 18-34 years and 31% were 50-60 years. Majority was uneducated (59%) and from labor class (38%). Table 2 predicts comorbidities were found in 54 patients including Diabetes mellitus (61%) and cardiovascular disease (39%). Table 3 predicts the risk factors associated with periodontal disease. 29% were cigarette smokers while 7% were consuming paan. 24% had a family history of periodontal

disease, 63% were suffering from chronic stress and 38% were having unbalanced diet. 70% patients were not maintaining proper oral hygiene, 87% avoided regular dental checkup and follow up after treatment. Management strategies for periodontal disease in government and private sector hospitals of Lahore were scaling root planning and adjunctive therapy. Scaling was recommended to 43% of patients, adjunctive therapy (Antibiotics and oral hygiene maintenance) to 23% patients while combination of both was recommended to 34% patients as shown in Fig.1. Antibiotics mostly prescribed were Doxycycline (68%), Metronidazole (87%), Amoxicillin (60%) and Ciprofloxacin (84%). Combination of antibiotics was also prescribed to 42% of patients with severe periodontal disease while chlorhexidine mouthwash was prescribed to 46% of patients as represented in Fig.2. Non-steroidal anti-inflammatory drugs and medicated toothpastes were also prescribed.

DISCUSSION:

Periodontal disease is often silent with symptoms not appearing until an advanced stage of disease which ultimately results in tooth loss and other health consequences if left untreated. The study highlighted the prevalence and risk factors associated with periodontal disease in an urban population of Lahore. The prevalence of disease is based on the disease definition and varies in different regions of world. In the present study, the prevalence of

periodontal disease was found to be more in males as compared to females that is in accordance with the reported studies.^[14,15] The reason for this may be that males tend to have poor attitude towards maintenance of oral health. Habits like smoking and paan also results in increased prevalence of periodontal disease in males. Periodontal disease was more prevalent in age group 36-50 years which is comparable with the national survey that reports 93% prevalence in the same age group.^[16] Chaudhry et al. have reported prevalence of 98% within army juniors aged 18–52 years that is concordant with the current study.^[17] Increased severity and prevalence with increasing age is due to cumulative effect of the untreated disease process over a period of time instead of ageing process.

Study found a reciprocal relationship between education and periodontal disease. Uneducated and labor class was most affected by periodontal disease which is either due to lack of awareness about oral hygiene or due to lack of accessibility and affordability to oral health care. This result was similar to the studies done by Albert L. Russell.^[18] and Bertoldi C.^[19] which have shown a positive correlation between the education, occupation and periodontal status of an individual but contrary to the study done by Opeodu OI.^[20] Which shows that no significant relationship exists between the periodontal health status and socio-economic group of the individual.

The risk factors which contribute to periodontal disease were observed during study which were similar to the risk factors reported by another study done in Pakistan.^[21] 29% patients were smokers while 7 % were consuming paan. Smoking is a clearly defined risk factor associated with periodontitis, and these findings were similar to the findings of Parmar and Akhtar.^[21,22] Tobacco has been shown to affect periodontal diseases by increased levels of periodontal pathogens in deep periodontal pockets. Smoking may alter neutrophil chemotaxis, phagocytosis and oxidative burst. It can also increase the secretion of tumor necrosis factor alpha, prostaglandin E2, neutrophil collagenase and elastase in gingival crevicular fluid.^[23] According to study majority of the patients suffering from periodontal disease were those who were not maintaining oral hygiene. Greene's study also showed a positive correlation between periodontal disease and poor oral hygiene.^[24]

The association of periodontal disease with other systemic diseases like diabetes mellitus and cardiovascular disease was also observed during the study. Another study reported that Periodontal disease is the most important sign of diabetes mellitus. Patients with poorly controlled diabetes are on higher risk of periodontal disease.^[25]

The study also revealed the importance of scaling and root planning in management of periodontal disease

which was recommended in most of the patients. This finding was same as reported by Cobb that regarded scaling and root planing as gold standard in treatment regimen of periodontitis.^[26] Scaling removes the plaque containing bacteria which causes inflammation of gums. While root planning smoothes the tooth root and helps the gums reattach to tooth. It was observed during study that initiation of antibiotic therapy was done 24 h before starting scaling and root planning. Another study found that for patients with chronic periodontitis (gum disease that has advanced past gingivitis) scaling and root planning is beneficial.^[27] Adjunctive therapy including antibiotics mainly Metronidazole, Doxycycline and Amoxicillin was recommended to patients in both government and public sector hospitals. Periodontal infections contain a wide variety of bacteria hence; no single antibiotic can be effective against all pathogens. This “mixed infection” can include a variety of both gram negative and gram positive aerobic, microaerophilic, and anaerobic bacteria. In government sector hospitals only in one hospital combination antibiotics were prescribed. The combination of antibiotics prescribed were Amoxicillin-metronidazole and metronidazole-amoxicillin-clavulanate potassium which cause excellent elimination of pathogens in localized aggressive periodontitis that was not treated with tetracycline and mechanical debridement.^[28] Metronidazole-ciprofloxacin combination was also prescribed in

private dental hospitals, which is effective against *A. actinomycetemcomitans*; metronidazole targets obligate anaerobes, and ciprofloxacin targets facultative anaerobes. This combination provides a therapeutic benefit by eliminating pathogenic microorganisms and also acts as prophylaxis by giving rise to predominantly streptococcal micro flora.^[29] Antibiotics that are bacteriostatic (e.g. tetracycline) generally require rapidly dividing microorganisms to be effective. They do not function well if given concurrently with bactericidal agents. Non-steroidal anti-inflammatory drugs were also prescribed to reduce the inflammation

All patients in private as well as in public sector hospitals were advised to maintain oral hygiene and a regular follow up after scaling and root planing. It was observed that patients who were maintaining oral hygiene after treatment and having regular dental visits the condition of their gingiva and shallow pockets were improving as compared to those who maintained oral hygiene nor had regular dental visits. These findings were similar to the study done by Axelsson and Lindhe.^[30]

Medicated toothpastes and chlorhexidine mouthwash was also recommended in patients with gum sensitivity and poor oral hygiene. The treatment recommended was according to the guidelines set by American dental association.

It was observed during study that burden of patients in government sector was high as compared to public clinics. The dentist in government sector was not able to properly guide and aware the patients due to increased burden. The presence of pharmacist in the dental hospital not only will help to decrease the burden of dentist but also awareness and proper counseling can be provided to patients regarding management of their periodontal disease.

CONCLUSION:

It is evident from the study that periodontal disease is a common public health problem in Pakistan, and is still on the rise. The prevalence and risk indicators of periodontal disease

warrant, urgent attention on a national level. Steps need to be taken to improve diagnosis, treatment and management of periodontal disease along with modifiable risk factors such as oral hygiene maintenance, balanced diet and regular dental visits.

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TABLES:

Table 1: Demographic Characteristics of Respondents

Parameters	Variables	Frequency n=150	Percentage
Sex	Male	79	53%
	Female	71	47%
Age	18-34	43	28 %
	35-50	61	41 %
	51-60	46	31%
Education	Under Matric	88	59 %
	Matric- inter	46	31%
	Graduation and above	16	10%
Occupation	Student	35	23%
	Housewife	27	18%
	Labor	56	38%
	Professional	10	7%
	Business	5	3%
	Retired/No Work	17	11%

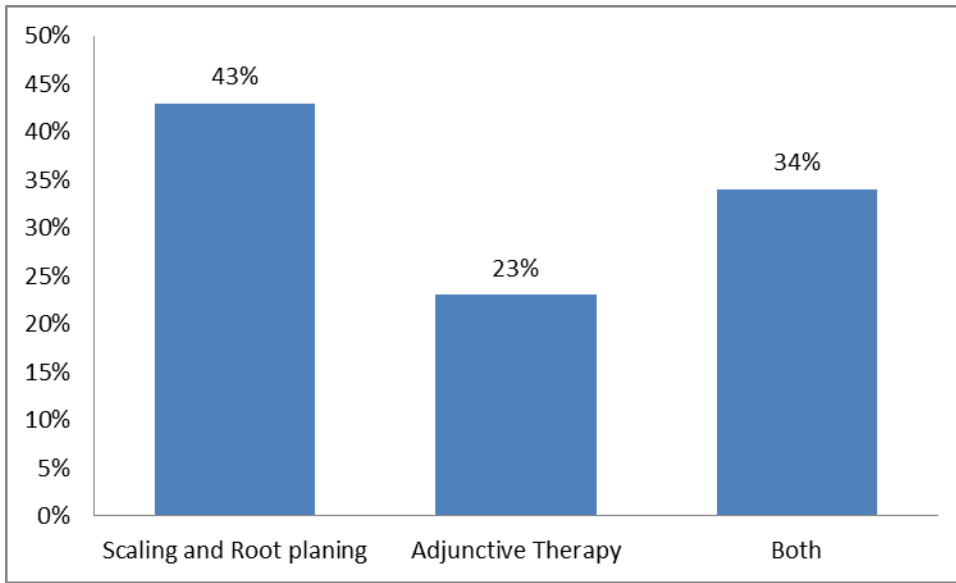
Table 2: Comorbidities in Periodontal disease patients

Comorbidities	Frequency	Percentage
Diabetes Mellitus	33	61%
Cardiovascular disease	21	39%

Table 3: Risk Factors associated with periodontal disease

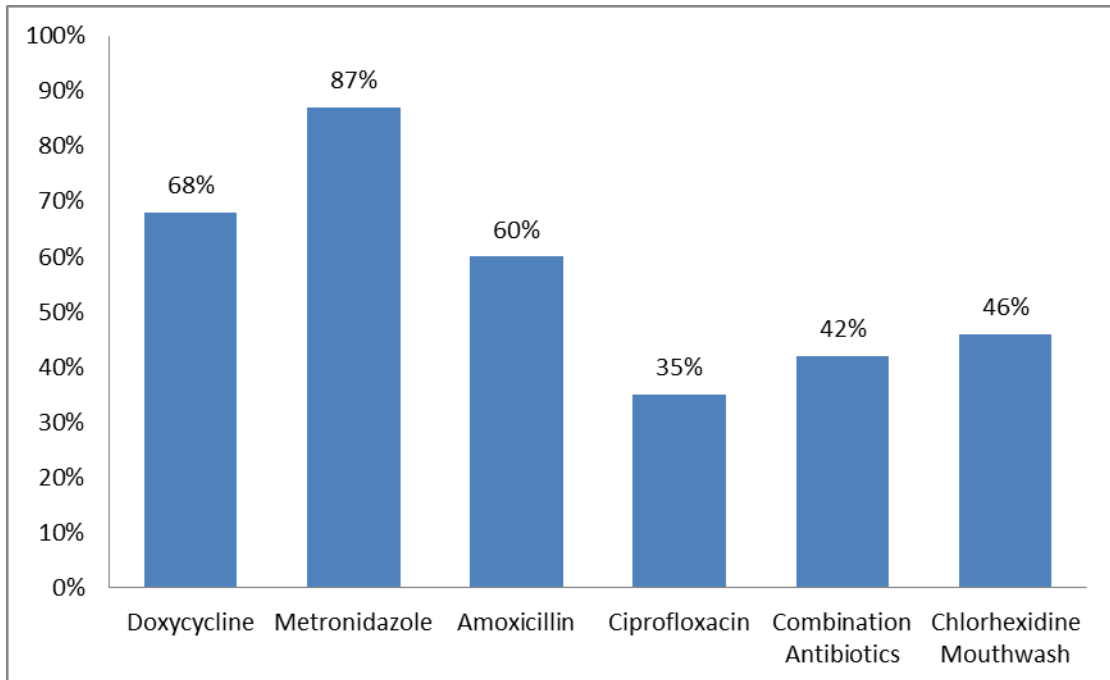
Factors	Frequency (n=150)	Percentage
Smoking	43	29%
Paan	10	7%
Unbalanced diet	57	38%
Family History	36	24%
Chronic Stress	94	63%
Systemic illness	64	43%
Improper Oral hygiene	105	70%
Avoid dental visits	130	87%

GRAPHS:



Management Therapies

Fig.1 Management of Periodontal Disease



Drugs Prescribed

Fig.2 Drugs prescribed as a Therapy of Periodontal disease