



ASSOCIATION BETWEEN OBESITY AND PERIODONTAL DISEASE AMONG YOUNG AND MIDDLE AGED ADULT GROUPS.

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ABSTRACT... Objectives: Developed and developing countries are facing an obesity epidemic with various health consequences. Few studies have addressed the relationship between obesity and periodontal health. The present study assessed the association of ideal weight, overweight and obese patients in two age groups. To compare frequency of periodontal disease among ideal weight, overweight and obese patients presenting in a tertiary care hospital. **Study Design:** Cross-Sectional Study. **Setting:** Medical outdoor at tertiary care hospital in Pakistan. **Period:** 15th January to 14th July 2017. **Materials & Methods:** A total 100 patients came to the medical outpatients department between 25 to 45 years of age were included. Patients fulfilling the inclusion criteria, subjects BMI score was determined by classifying him/her obese, overweight or normal weight. Periodontal pocket depth was determined by WHO probe of at least one tooth from each sextant under supervision of my supervisor and three senior trainees. Frequency of periodontal disease was seen in ideal weight, overweight and obese subjects in both age groups. **Results:** Age range in his study was from 25 to 45 years with mean age of 36.9 ±7.51 years. Out of 100 patients 66 (66%) were females & 34 (34%) were males and with male to female ratio 1.9:1. Periodontal disease was present in 47 female patients (71%) and in 24 male patients (70%). Periodontal disease was present in over weight and obese patients more than normal weight. **Conclusion:** This study concluded that there is positive correlation of periodontal disease in overweight and obese patients. The frequency of periodontal disease was highest in old obese patients.

Key words: BMI, Overweight, Obese, Periodontal Disease.

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INTRODUCTION

Overweight and obesity affect a huge proportion of the people in developed and developing countries and its incidence has increased worldwide in last few years.¹ Obesity has been known as a key public health problem, and facts exists of its role as a most important risk concern for a number of diseases, such as heart diseases, diabetes mellitus, cancer, osteoarthritis, and gallbladder disease.² Obesity is frequently concerned with raised lipid and glucose blood levels, which may have harmful outcomes for the host response leading to changes in T cells and monocytes/macrophages, as well as an raised cytokine production.^{1,3} This discrepancy in the host immune system may increase the risk for infection, and this may enlighten the relationship of obesity

with some infectious diseases, together with respiratory infections and secondary infections similar to peptic ulcers and vascular infections.⁴ A relationship with periodontal disease and obesity has been proved in latest reports.⁵

Most modern cross-sectional studies and a meta-analysis of obesity and periodontal disease have established considerable positive relations among obesity status and periodontal disease.⁶ In numerous articles, measures of abdominal obesity such as increase waist circumference (WC) and waist-to-hip ratio showed to be further strongly linked than overall obesity (body mass index or BMI) to higher periodontal disease frequency.⁷

The growing incidence of overweight and obesity among US adults and children has raised in using obesity-related indices to calculate risks of various chronic health conditions, involving periodontal disease.⁷ Although overweight and obesity in youngsters and adults are generally described by BMI, this indicator is not able of describing body fat distribution.⁸

One more indicator used to predict obesity-related disease risk, WC, is a potentially helpful interpreter as it is to estimate of abdominal fat substance and is connected with visceral fat deposition.⁹ WC was accounted to be a self-determining analyzer of all-cause mortality, diabetes mellitus (DM), and Coronary Artery Disease (CAD) in men and women in a protective cardiology people.¹⁰

WC is restricted in that it does not account for differences in body height, and the ratio of WC to height (waist-height ratio, or WHtR) has been projected as a enhanced screening tool for cardiovascular risk, mortality, and intra-abdominal fat evaluated to BMI, WC and waist-hip ratio.¹¹ Furthermore, the amount of abdominal fat accumulation can differ considerably in a small choice of BMI so that WHtR can be recognize patients who are at elevated risk of metabolic diseases still in the regular weight category of BMI.¹² It is not obvious whether measures of fat division are enhanced seers of periodontal disease than BMI status. Moreover, there is a shortage of proposed research assessing obesity level and periodontal disease extent. The primary aim of current research was to investigate the connection of multiple obesity-related characteristics of male subjects in the Department of Veterans Affairs Dental Longitudinal Study (DLS) with periodontal disease development, regulating for numerous risk elements.^{12,13}

Fat dissemination, higher so than entire body fat, has been hypothesized as a principal predictor of disease risk. While overweight and obesity in individuals are usually explained by BMI, this indicator is not able of providing detail of body fat assigning.¹⁴ The amount of belly fat accumulation can differ significantly in a narrow spectrum of BMI so that overweight can be used

to determined persons who are at greater risk of metabolic disorders alike within the standard weight category of BMI.¹⁵ It is not apparent in case of fat distribution are enhanced prognosticator of periodontal disease than BMI status. To evaluate occurrence of periodontal disease among ideal weight, overweight and corpulent patients coming in a tertiary care hospital. The aim of the present study was to investigate the association between overweight/obesity and periodontal status in a representative population of adults in North Pakistan.¹⁶

MATERIAL AND METHODS

Subjects were picked from the dental outpatients department at Fatima Memorial College of dentistry, Lahore. Demographic information of the patient was documented. Sample size was chosen according to the inclusion criteria of the patient which has greater than 12 permanent teeth in their oral cavity with age between 25 to 45 years presenting in medical OPD for management of medical problems but not seeking dental treatment and Informed consent was made. After completion of history and examination from the patients accomplishing the inclusion criteria, subjects BMI score was determined by classifying him/her obese, overweight or normal weight. Periodontal pocket depth was determined by WHO probe of at least one tooth from each sextant in the guidance of my supervisor and three senior trainees. Incidence of periodontal disease was noticed in ideal weight, overweight and obese cases.

Data was checked by using SPSS version 23, a computer dependent software program. Qualitative variables (i.e. Gender, ideal weight, overweight and obese) were accessible as incidence fraction. Data was stratified for gender. Chi-square test was used. Post-stratification with $p\text{-value} \leq 0.05$ considered as significant.

RESULTS

Age range in his study was from 25 to 45 years with mean age of 36.9 ± 7.51 years. Majority of patients 57 (57%) were between 36 to 45 years of age (Table-I). Out of 100 patients 27 were ideal weight, 37 were overweight and 36 were

obese (Table-II). Out of 100 patients periodontal disease was present in 71 patients (71%) and in 29 patients (29%) Periodontal Disease was not present (Table-III). Distribution of periodontal

disease (Figure-1). Age wise periodontal disease distribution (Figure-2). Periodontal disease distribution according to BMI (Figure-3).

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	25.00	45.00	36.9000	7.51766
BMI	100	18.46	40.80	28.2614	5.28693

Table-I. Age and BMI distribution

		Frequency	Percent	Valid Percent	P-Value(chi-square)
Valid	Not Present	29	29.0	29.0	0.948
	Present	71	71.0	71.0	

Table-II. Presence of periodontal disease

		Frequency	Percent	Valid Percent	P-Value(chi-square)
Valid	25-35	43	43.0	43.0	0.948
	36-45	57	57.0	57.0	

Table-III. Age distribution for both groups (N= 100)

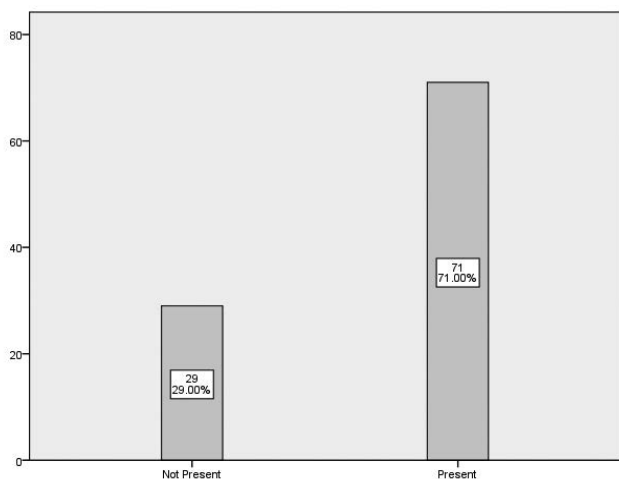


Figure-1. Distribution of PD

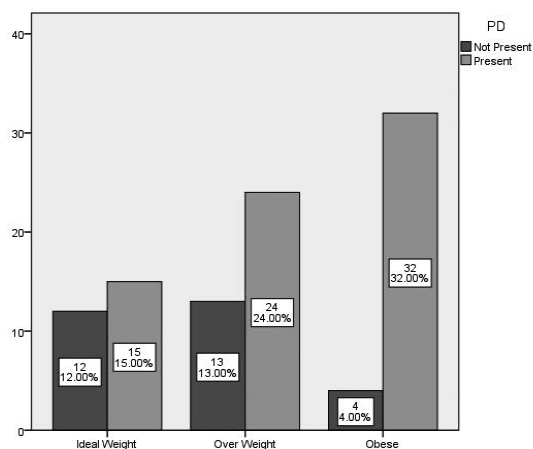


Figure-3. PD distribution according to BMI

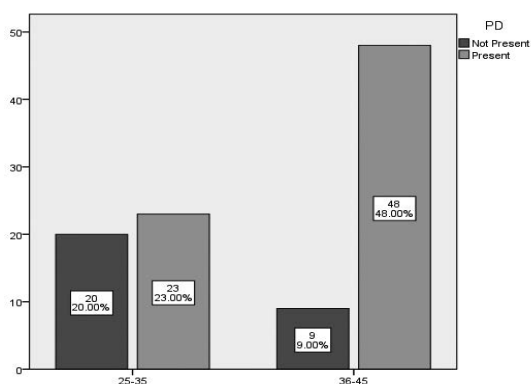


Figure-2. Age wise PD distribution

DISCUSSION

Overweight and obesity were prevalent in adult Pakistani people. In this study, obesity was significantly linked with periodontitis among females, with obese male and females proving an 80% higher possibility of having periodontitis than females of regular weight.

Saito et al¹⁷ described the community periodontal index of treatment needs (CPITN) and accounting a strong connection among BMI and periodontal diseases in a Japanese group sampled from a health support center. In another research, the

same authors calculated the association among upper body obesity, BMI, and periodontitis in 643 healthy, dentate Japanese adults and established that subjects with high upper body obesity or high total body fat had considerably elevated risk of periodontitis in compare to normal patients. A latest study 30 subjects assessed this connection in the American population using the NHANES III data and initiated a significant link between periodontal attachment loss and obesity, after altering for age, gender, diabetes, smoking, and socioeconomic status.¹⁸ A another analysis of the same data by different investigators showed a major connection between obesity and periodontal disease in the age group 18 to 34 years following regulating for gender, race, education, poverty index, smoking, diabetes, and dental appointments. Though, no important affiliation was established for the age group \pm 35 years.

Hereditarily obese people have reduced lymphocyte and natural killer counts, lower cytotoxic and phagocyte actions, and changed cytokines production. Whereas the majority human being researches point out that obesity may impair immune reaction, some studies have originate contradictory results. The outcome confirmed that, for females, this relationship was more strengthened (the altered odds ratio raised from 2.1 to 3.4) whilst female smokers were eliminated from the investigation.¹⁹

In compare to this research males and females, BMI recordings are concerned by the quantity of muscle and the heaviness of bones. In adding, body fat sharing is unlike in males and females. Therefore, raised BMI scores in males may not essentially be analytical of obesity. Within the same BMI group, males with higher waist circumference had a more risk of having periodontitis. It is established to be causally linked with periodontitis, obesity may well still be used as a predictor for individuals at elevated risk of having periodontitis.

Probable approaches that may reduce the rate of recurrence of periodontitis subsist of screening for risk of occurrence, and early sign of obesity. In

any way, the incidence of a affirmative association among obesity and periodontal diseases may be used for healthiness promotion purposes.

In current study obesity was heavily associated with periodontitis in old age female patients. These outcomes recommended that obese women may be at an elevated risk for periodontitis and that disease impediment and health promotion measures should be targeted to this group. Periodontal disease preclusion should also be the objective in health promotion programs for obesity-related diseases.

CONCLUSION

This study accomplished that there is optimistic association of periodontal disease in overweight and obese patients. The occurrence of Periodontal disease was elevated in overweight and utmost in obese older patients.






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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author's Signature
1	Khurram Attaullah	Idea, Data collection.	
2	Zubair Ahmed Khan	Introduction, Methodology Abstract.	
3	Muhammad Sibghatullah	Conclusion and Discussion writing.	
4	Zaheer Hussain Chachar	Critically reviewed the manuscript.	
5	Muhammad Ilyas Shaikh	Literature review and Proof reading.	
6	Shabir Ahmed	Literature review and referencing.	