Original Article

Attitude and Knowledge of Family Medicine Practitioners towards the Association between Periodontal Disease and Obesity

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Abstract

Objectives: To assess the attitude and knowledge of family medicine practitioners (FMPs) towards the association between periodontal disease and obesity. **Materials and Methods:** A cross-sectional study was performed and a 13-item survey questionnaire was given to FMPs practicing in 12 different teaching hospitals in Karachi, Pakistan. The questions were aimed at exploring the knowledge of FMP's regarding the association of obesity and periodontal disease and their attitude towards the association of obesity and periodontal disease. Chi-square and Spearman co-efficient were conducted to compare subgroups and correlate factors with the knowledge score of FMPs. **Results:** A total of 314 questionnaires were completed (response rate = 92%). Median age of participants was 41 years and 57% were females. Almost 61% of FMPs answered all the knowledge questions correctly and 64% reported moderate understanding of the association between periodontal health and obesity. Nearly 73% FMPs inquired from obese patients regarding the periodontal disease and more than half (58%) refer patients to a dentist for evaluation. More than half of FMPs perform periodontal disease screening. Nearly all FMPs considered informing obese patients regarding periodontal disease as one of their roles. **Conclusions:** FMP's play an important role in the early diagnosis, prevention and treatment of periodontal conditions in obese patients. More than two thirds of FMPs showed good knowledge of the association of obesity and periodontal disease. The attitudes of FMPs towards assessing and referring obese patients at a risk of having periodontal disease were reassuring.

Keywords: *Attitudes, medicine, obesity, periodontal disease, survey*

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Introduction

Periodontal disease is a chronic inflammatory condition characterized by destruction of tooth supporting structures including connective tissue attachment and alveolar bone resulting in a tooth loss.[1] The current data reveals that an estimated 64.7 million people have periodontitis with 8.9% having severe forms of periodontal disease in the United States.[2] It is reported that 34.5% of the adult population in Pakistan is known to be affected with periodontal disease (community periodontal index- CPI ≥3).[3] Various systemic disorders have been implicated as risk indicators in periodontal disease.[4,5] It is suggested that in the presence of systemic diseases, periodontal tissue immune response is impaired increasing the susceptibility for destructive periodontal disease.[6]

Obesity has become prevalent worldwide, which is reported at 36.9% for men and 38% for women.[7] Obesity is a condition characterized by exaggerated amount of fat accumulation to an extent that health becomes impaired.[8] There is growing evidence that obesity, in particular, have been identified as a potential risk indicator for periodontal disease in recent cross-sectional studies.[9-11] It

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is suggested that obesity produces a hyper-inflammatory state due to which secretion of pro-inflammatory cytokines from the periodontal tissue increases thereby causing poor periodontal health.[12]

Obese individuals, apart from having a higher risk of developing periodontal disease also suffer from systemic disorders like diabetes mellitus[13] and joint problems[14] for which they are regularly managed by general medical physicians. Therefore, general physicians by prevention and early diagnosis of periodontal problems along with greater collaboration with dental practitioners could play a vital role in the disease prevention and management.[15] In particular, a recent model of risk assessment[16] recommended that patients with obesity should receive a periodontal evaluation and should be informed about the potential increased risk of periodontal disease. To our knowledge from indexed literature, there are no studies that have examined the knowledge and attitudes of medical physician's in educating obese patients with regards to periodontal disease, along with screening and providing disease preventive oral hygiene instructions in obese adults. Therefore, the present study aimed at assessing the knowledge and attitudes of family medicine practitioners (FMPs) in practice with regards to the association of obesity and periodontal disease.

Materials and Methods

A self-administered structured questionnaire was distributed to FMPs practicing in 12 different teaching hospitals in Karachi, Pakistan. The questionnaires were hand delivered to FMPs of different University hospitals. It was developed to assess the knowledge, attitudes, and behaviors of FMPs towards periodontal disease and obesity. Participation was voluntary and anonymous, and the questionnaire was designed based on previously published questionnaire.[17] The questionnaire was pre-tested to apply and validate required modifications. The first section of the questionnaire inquired regarding demographic details of participants including age, gender, undergraduate training institute and training level. Section two included five true/false questions assessing knowledge items. Next section included eight Likert-scale questions, which summarized the responses to questions exploring behavior towards clinical practice, perceived knowledge and training. The questions also explored attitudes toward periodontal disease and perceptions that may influence clinical practices of FMPs. The respondents were instructed to mark the single best answer. FMPs were asked to respond to questions related to clinical practices based on their clinical experiences.

Statistical analyses were performed using commercially available statistical software (SPSS v.21, Chicago IL). Medians and interquartile ranges forage and true/false knowledge items were reported. Each respondent could score a maximum of 5 and minimum of 0 score (for section 2), earning a point for each true/false question answered correctly. Chi-square analyses were conducted to compare male and female subgroups. The Spearman correlation co-efficient was used to correlate behavior, perceived knowledge and clinical perceptions with the knowledge score of FMPs. The Ethic Review and Research Committee, Karachi Medical and Dental College approved the study. The informed consent was exempted because of the minimal risk nature of this study.

Results

342 questionnaires were handed out to participants. A total of 314 participants [179 (57%) female; 135 (43%) male] returned completed questionnaires at a response rate of 92%. 28 questionnaires were incomplete and were excluded from the analysis. [Table 1] shows the demographic characteristics of the participants. All the participants had graduated from 12 different medical institutes (97% in Pakistan and 3% outside Pakistan). The median age of the participants was 41 years (interquartile range: 38 to 45 years). [Table 2] shows the true/false knowledge items with the correct answer and

Table 1: Demographic characteristics of family medicine practitioners

FMPs† characteristics	Respondents – n [%]
Age*	
– Male	40.9 ± 3.5
– Female	[41.1] ± 2.5
Gender	
– Male	[135] [43]
– Female	[179] [57]
National Graduate medical schools	
– Ziauddin Medical University	[29] [9.5]
– Aga Khan University Hospital	[25] [8.1]
– Baqai Medical University	[21] [6.8]
– Jinnah Medical and Dental College	[32] [10.4]
– Jinnah Postgraduate Medical Centre	[39] [12.7]
– Liaquat University Hospital	[28] [9.1]
– Sindh Medical University	[45] [14.7]
– Liaquat College of Medicine and Dentistry	[16] [5.2]
– Dow University of Health Sciences	[19] [6.2]
– Karachi Medical and Dental College	[15] [4.9]
– Bahria Medical College	[25] [8.1]
– Bin Qasim Medical Institute	[8] [2.6]
International Graduate medical school	[3] [0.9]

*age expressed in mean ± SD, † Family medicine practitioners

the percentage of subjects who answered each question correctly. Most FMPs demonstrated good knowledge regarding the signs, symptoms and etiology of periodontal disease, and nearly 78% and 71% were aware of the association between periodontal disease and obesity. It was also found that periodontal disease is associated with increased levels of systemic inflammatory markers respectively. [Figure 1] summarizes the overall scores of the responders' (percentage) in response to the five-true and false questions assessing knowledge items. The median score for five-question quiz was 4 (interquartile range: 1 to 5), and a maximum score of 5 was achieved by 61% of the FMPs.

[Table 3] summarizes the responses to questions assessing attitude, practice and behavior of FMPs towards periodontal disease. Questions regarding clinical practices [Table 3I] were interpreted to reflect practices and behaviors in medical institute: almost 73% of FMPs asked their obese patients whether they were diagnosed with periodontal disease, 52% screened obese patients for any signs of periodontal disease, and nearly 58% of FMPs referred obese patients to a dentist for evaluation and care. The questions exploring attitudes towards periodontal

Table 2: Response summary of family medicine practitioners regarding knowledge items assessed in the study

Questions	Correct Answer	Answering Correctly (%)
Are bleeding gums, gum recession, loose teeth, and loss of teeth are signs and symptoms of periodontal disease?	True	96
Does periodontal disease affect as many as 90% of adult population worldwide?	True	61
Is periodontal disease associated with abundant bacterial deposits?	True	87
Can obesity be associated with periodontal disease?	True	78
Can obesity be associated with increased levels of serum inflammatory biomarkers whereas periodontal disease is not?	False	71

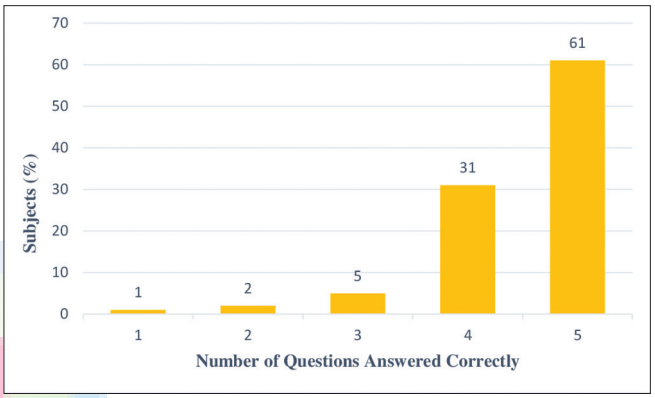

Figure 1: Percentage of knowledge items answered correctly by family medicine practitioners in the study

Table 3: Behavior, attitude and perceived knowledge of FMPs towards periodontal disease and its association with obesity

(I) FMPs behavior towards clinical practice

	Questions	Always	Sometimes	Never
A	Do you ask your obese patients if they have ever been diagnosed with periodontal disease?	73%	23%	4%
B	Do you screen your obese patients with periodontal disease?	52%	28%	20%
C	Do you refer obese patients to a dentist for evaluation/care?	58%	39%	3%

(II) FMPs attitude toward periodontal disease and perceptions that may influence clinical practices

	Questions	Very	Somewhat	Never	
D	How comfortable are you in performing a simple periodontal exam in an obese patient?	4%	61%	35%	
		Strongly agree	**Agree**	**Disagree**	**Strongly disagree**
E	"Obese patients expect me to discuss/screen for periodontal disease"	15%	45%	25%	15%
F	"Discussing/evaluation periodontal status of your obese patients is peripheral to my role as physician"	6%	25%	31%	38%

(III) FMPs perceived knowledge about the periodontal diseases and the training received to treat them

	Questions	Excellent	Good	Moderate	Limited
G	How would you rate your knowledge about periodontal disease and its association with obesity?	1%	24%	64%	11%
		Yes		**No**	
H	Did you receive training in treating periodontal disease in obese patients in medical school?	35%		65%	

disease assessment and perceptions of FMPs in obese patients that may influence FMPs clinical practices are shown in [Table 3 II]. It was reported that 61% of the responders expressed that FMPs are somewhat comfortable to perform a simple periodontal screening and acumulative 69% agreed that discussing or screening periodontal status of obese patients was their role as physicians.

The questions exploring perceived knowledge and training of FMPs are tabulated in [Table 3 III]. 64% of FMPs reported moderate understanding of the association between periodontal health and obesity. However, 65% percent of participants did not receive any training to undergo screening obese patients with periodontal disease.

For the subgroup analysis by gender, no significant difference was found among male and female for the knowledge, as well as other questions presented in [Table 3]. No statistical correlation was found between the knowledge items score of participants and their behavior (r = 0.15), attitude (r = 0.03) and self-rated knowledge (r = 0.12).

Discussion

To our knowledge from indexed literature, this is the first study to assess the knowledge, attitude, and behavior levels among FMPs regarding periodontal health in obese patients. The present study demonstrated that knowledge of FMPs about the association of periodontal disease and obesity is encouraging. In addition, the attitude of FMPs with regards to education, screening and referral of obese individuals for periodontal and oral health care to general dental practitioners was found positive.

Periodontal disease is prevalent among developed countries.[18,19] From the completed responses, a striking 61% of FMPs were aware of the fact that periodontal disease is highly prevalent affecting 90% of the population worldwide[1] and more than half (78%) of FMPs were aware that obese patients are more prone to have periodontal disease than lean subjects. Periodontal disease is not only associated with intermittent pain, sensitivity and bleeding gums, but eventually leads to tooth loss. Therefore, early recognition of obese patients developing periodontal disease by FMPs and adequate referrals, can lead to the prevention of adverse periodontal and oral health consequences population wide.

In addition, in-line with the above mentioned findings related to knowledge of the association of obesity and periodontal disease, it was shown that more than half (52%) FMPs inquired about the current oral health/ periodontal status of obese patients attending family medicine clinics. And in relation to this, nearly 58% of FMPs agreed that they refer obese patients to dentists for evaluation of periodontal health. This might be attributed to the education and basic understanding of FMPs regarding association of various systemic problems with periodontal disease.[20] It was also found that 65% of the participants reported to have never received training or education during undergraduate courses for screening periodontal conditions. Given the high prevalence of obesity and its deleterious impact on oral health,[21] it is suggested that medical practitioners should be trained in providing oral hygiene instructions for preventing oral plaque related disorders in obese patients.

From the perspective of periodontal management, patient's weight management may also be as equally important as cessation of smoking and glycemic control in the standard consideration to periodontal treatment.[22,23] This concern should be echoed by medical practitioners and dentists alike in their respective fields to counsel obese subjects regarding the potential periodontal complications, and encourage protocols on the effective management of weight loss for improved periodontal health among obese people. While medical practitioners are aware that periodontal disease is a risk factor for several debilitating systemic conditions such as diabetes mellitus, cardiovascular disease, adverse pregnancy outcomes and others,[24] they may also be aware with regards to obesity, which may be linked to periodontal tissue destruction.[25] With this regard, medical practitioners may also suggest weight control management to patients having periodontal disease and obesity. With Pakistan being the ninth most obese country,[26] and United State and Africa where obesity is increasing at an alarming rate,[27,28] sustained physical activity should be counseled, and treatments for eating disorders may be offered to limit weight gain and increase chances of having good general and periodontal health by medical practitioners. In this manner, medical practitioners can play a critical role in prevention and control of periodontal disease progression, by referring obese patients to weight management centers and dental clinics for disease management.

It is recommended that dentists should also assess obesity in high-risk patients for periodontal disease in dental clinics. This may include measuring parameters such as waist-to-hip ratio, waist circumference, body mass index, and should refer cases for medical advice. Moreover, exposure of FMPs during hospital training to oral health screening procedures is suggested. This may include examining gingival health status and recording basic periodontal indices. Therefore, joint continuing professional development (CPD) sessions related to education and screening methods in oral health of obese patients for FMPs and assessment of obesity,

and its systemic and oral impacts in patients for dental practitioners should be arranged for prevention and early identification of obesity related disorders.

Conclusion

FMP's plays an important role in an early diagnosis, prevention and treatment of periodontal conditions in obese patients. The study showed that more than two thirds of FMPs showed good knowledge of the association of obesity and periodontal disease. The attitude of FMPs towards assessing and referring obese patients at risk of having periodontal disease was reassuring.

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Conflicts of interest

The authors declare that they have no conflict of interests for the present study and all the authors have read and approved the final draft.

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