

A survey on the Awareness of Interrelationship of Periodontal Disease and Systemic Health Among Qassim Population

Relationship
Between
Periodontal
Disease and
Systemic Health

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ABSTRACT

Objective: The study is aimed to assess the general awareness of the relationship of periodontal disease & systemic health among Qassim population.

Study Design: cross-sectional study

Place and Duration of Study: This study was conducted at the Qassim University, Saudi Arabia from March 25, 2023 to May 25, 2023.

Methods: An online questionnaire involving 21 questions related to general awareness about periodontitis and its impact on systemic health were circulated amongst the people residing in Qassim region and were asked to select either yes, no or don't know as their preferred option.

Results: A total of 1760 participated in this study, and more than half of the participants (52.46%) were females. Nearly all the respondents were Saudi citizens. The majority of the participants (69.53%) were aware of the relationship between periodontal and systemic diseases. The awareness levels of the respondents were low for cardiac disease, hypertension, pregnancy, osteoporosis, and respiratory diseases effect on periodontium.

Conclusion: Within the limitations of this study, it can be concluded that the awareness of Qassim population regarding the relationship between periodontal diseases and systemic diseases is high.

Key Words: Awareness, General Population, Periodontal Disease, Systemic Disease

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INTRODUCTION

Oral health is an unabating and imperative attribution towards systemic well-being of an individual. Oral hygiene maintenance is the key for good systemic health. An inextricable relation between periodontitis and systemic health is often understated, understood, and undervalued in many circumstances mainly due to lack of awareness.

Oral health is the cornerstone of good health, happiness, and quality of life. One's physical and mental health, quality of life is affected which is highly valued by both society and individuals.^[1] The World Health Organization's "Oral Health for a Healthier Life" campaign emphasizes the significance of the mouth cavity as a doorway to the body and a gauge of overall health.^[2]

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Periodontal disease impairs the teeth's supporting tissues resulting in tooth loss implicating Gingivitis and periodontitis as the two extremes of a spectrum of disorders.^[3] According to the Global Disease Burden ranking, chronic periodontitis is the sixth most common disease and is thought to be the second most common oral condition worldwide.^[4] From 1990 to 2020, it has been anticipated that this won't change.

When periodontitis develops into an advanced condition, it has a significant effect on the patient, leading to changes in diet, cosmetic concerns, and difficulty speaking. The fact that oral infections are a persistent possible cause of all illnesses and inflammation raises the possibility that periodontitis and systemic disorders including diabetes, autoimmune diseases, and cardiovascular diseases have a bidirectional relationship.^[5] A systemic illness predisposes a person to mouth infection, which settles down for a long period of time amplifying the systemic condition. This type of connection illustrates a cyclical link.^[6] However, early action to enhance oral hygiene might easily avert such repercussions, and the adoption of proper oral hygiene habits is correlated with awareness and knowledge levels.

A variety of characteristics, including gender, age, career, educational attainment, and systemic diseases, appear to have an impact on how conscious people are of good oral hygiene habits and how knowledgeable they are about systemic and periodontal disease.^[7] To

help people maintain both their dental and overall health, the general public has to be made aware of periodontitis and its effects on the body as a whole.

To help with this, several actions may be performed. As an illustration, regular trips to the dentist for oral prophylaxis to maintain good oral health and modify lifestyle changes like quitting smoking. Periodontists play a critical role in educating patients about this systemic connection.

Thus, the current study is aimed to assess the cognizance between systemic health and periodontal disease in people inhabiting in Qassim province, which, by raising awareness and enhancing dental and overall health, can assist to lessen the burden of growing periodontal damage in the aforementioned demographic.

METHODS

The present cross-sectional study was conducted amongst the general population residing in Qassim province, from March 25, 2023, to May 25, 2023. After attaining the approval from the Committee of Research Ethics, (Ethical committee clearance reference number: 23-3-04) Qassim University, Saudi Arabia. The information was gathered online using a Google form and a questionnaire that was circulated to friends, family, and other relations via WhatsApp groups, emails, and Twitter. At the outset of the questionnaire, participants were told of the study's background and goals and that all responses would be kept private and anonymous. Before starting the questionnaire, online informed permission was requested from patients who were 18 years of age or older, could understand the questionnaire's content, and consented to participate in the study. Patients without schooling, healthcare professionals, dentists, and paramedics were excluded from the study.

The questionnaire was aimed to extrapolate the general awareness of people towards periodontitis and its interrelationship with various compounding factors like nutrition, smoking, diabetes, cardiovascular disease, respiratory diseases, osteoporosis, and pregnancy. A 21 questions framework was drawn based on literature of review, sociodemographic characteristics, and discussion by the researchers. The participants were allowed to select from the options: YES, NO, and DON'T KNOW. The questionnaire required an expected time of 2–3 minutes to complete. The questions were categorized into nine groups:

Group I: To know about the general mindfulness about periodontitis.

Group II: Smoking as a compounding factor in periodontitis.

Group III: Nutrition and its effects on periodontium.

Group IV: Diabetes and its periodontal implications.

Group V: Cardiovascular diseases and their repercussions on periodontal health.

Group VI: Hypertension and its ramifications on periodontal health.

Group VII: Pregnancy related outcomes on periodontal health

Group VIII: Periodontitis & respiratory diseases Interrelatedness

Group IX: Osteoporosis and periodontitis interrelationship.

Statistical Analysis: The data analysis was performed using SPSS version 25.0 (Chicago, Illinois, USA). Editing, coding, and sorting was done using Microsoft Excel. The excel file was then imported into SPSS software. The answers obtained from the questionnaire and demographic factors were calculated using Descriptive statistics.

RESULTS

The study prevailed for a span of 8 weeks which involved 1785 respondents. However, 25(1.40%) respondents were excluded from the calculation due to incompleteness of the questionnaire and those who didn't give informed consent. Hence, the data was calculated and obtained from 1760 (98.59%) participants. Female's participants showed a greater participation around 52.46% and majority of the participants ranging between 36 years and 45 years (30.55%). Amongst the respondents (>98%) were Saudi citizens and just 2% attributed were non-Saudi citizens. The educational background of the participants revealed 35.44 % of those who completed high school education, 39.55 % were graduates, and 21.22 % of them were postgraduates. Detailed socio-demographic characteristics of participants are in Table: 1.

The results show that the awareness levels of the respondents were low for cardiac disease, hypertension, pregnancy, osteoporosis, and respiratory diseases effect on periodontium. (Table: 2).

Table No.1: Demographic details of study participants

Age (years)	
25-35	33.25 %
36-45	30.55 %
46-55	20.56 %
56-65	13.26 %
Above 66	2.38 %
Gender	
Male	47.54 %
Female	52.46 %
Nationality	
Saudi	95.36 %
Non- Saudi	12.64 %
Educational qualification	
High School	35.44 %
Bachelors	39.55 %
Masters	21.22 %
Others	03.79 %

Table No.2: Distribution of awareness among the question categories

Questions	Yes	No	Don't Know
General awareness about periodontitis.	69.53%	20.46%	10.01%
Smoking	76%	14.20%	9.8%
Vitamin	59.4%	12.20%	28.40%
Diabetes	52.41%	38.55%	9.04%
Heart diseases	24.8%	56.30%	18.90%
Hypertension	19.5%	65.88%	14.62%
Pregnancy	17.8%	59.22%	22.98%
Osteoporosis	22.9%	44.21%	32.89%
Respiratory diseases	11.25%	65.32%	23.43%

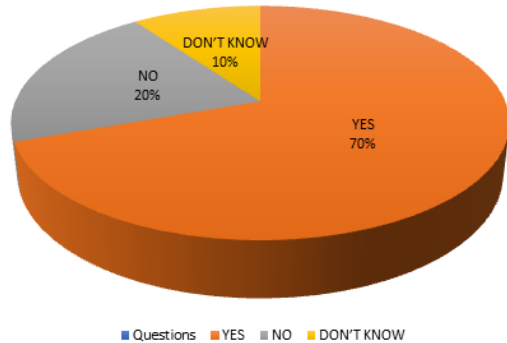


Figure No.1: General awareness about periodontitis

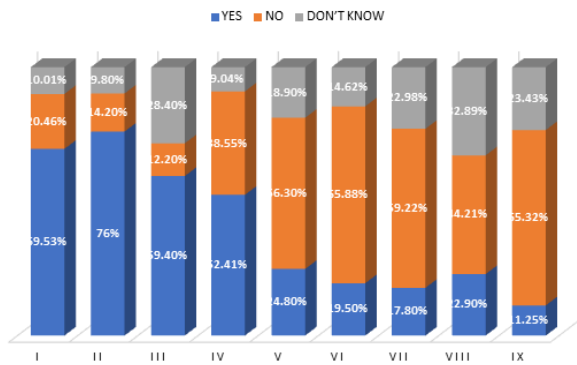


Figure No.2: Graph comparing awareness level based on the category

More than half of the respondents had a general awareness about periodontitis (Figure: 1). Figure 2 shows the comparing awareness level based on the category.

DISCUSSION

The goal of the current study was to determine how well the general community of Qassim understood the connection between systemic disorders and periodontal disease. In order to gather information through WhatsApp, Twitter, and the mail, a web form was circulated. Social media use is widespread among people and enables efficient and quick information sharing.^[8]

The intended demographic is properly represented by the study's response rate. However, online surveys have

a drawback in that some parts of the public cannot use them, most notably those without internet connection or those who are IT illiterate, as well as maybe elderly individuals. This was consistent with the current findings, which indicated that the majority (33.25%) of respondents were between the ages of 25 and 35 and had a majority (39.55%) of education.

About 69.53% of the participants were cognizant of the link between periodontal and broader illnesses. The current findings supported the study by Hemalatha DM et al^[9] and were in opposition to the finding of a research by Bhatia et al^[10] which revealed a low level of knowledge among the population of North India. The greater literacy rate of the Qassim populace may be to blame for this increased degree of awareness. In line with Gupta et al, the current study likewise revealed that females exhibited a greater degree of awareness than males.^[11] Better dental hygiene habits and better oral and systemic health may result from having a thorough understanding of the connection between periodontal disease and systemic disease.

Earlier studies conducted in the United Kingdom by Lung et al^[12] showed an awareness of only 7% and in congruent to it were reports by Nwhator et al^[13] with 2.2% awareness level. But the current finding that 76% of respondents showed a high degree of public knowledge when they concurred that smoking was connected to periodontal disease. Despite the high rate, attention should be drawn to the need to enhance understanding of the connection between smoking and periodontal disease in this group. Additionally, more than half of the population (59.4%) was aware of the damaging consequences that dietary inadequacies have on periodontium.

In contrast to earlier reports by Lung et al^[12] in the United Kingdom that reported the level of awareness at only 7% and a study in Nigeria by Nwhator et al^[13] with 2.2%, the current finding that 76% of respondents showed a high degree of public knowledge when they concurred that smoking was connected to periodontal disease. Despite the high rate, attention should be drawn to the need to enhance understanding of the connection between smoking and periodontal disease in this group. Additionally, more than half of the

population (59.4%) was aware of the damaging consequences that dietary inadequacies have on periodontium.

Around 52.41% of study participants in the research accurately recognized the connection between periodontal disease and diabetes. In addition, studies have revealed that diabetics have a threefold increased chance of developing periodontitis and have greater than non-diabetics do in their saliva and gingival crevicular fluid levels of inflammatory mediators.^[14] On the other side, a diabetic patient's periodontitis affects glycemic management through raising insulin resistance.^[15]

The majority of responders (65.88%) were unaware of the link between systemic illness and hypertension. The alarmingly high number of individuals taking antihypertensive medications raises the distant possibility that some of these people are aware that gingival hyperplasia could be attributed with some antihypertensive medications. The possible danger of cardiac accidents brought on by periodontitis ought to be made known to cardiac patients.

Prostaglandin E2 levels are elevated in chronic inflammatory conditions like periodontitis. Amniotic fluid in women who gave birth prematurely showed high quantities of periodontopathic bacteria and high quantities of prostaglandin E2. Contrary to Tak et al^[16] this study indicates that only a small percentage of people (59.22%) are aware of the harmful consequences of periodontal disease on pregnancy.

Both osteoporosis and periodontitis share some risk factors and exhibit cumulative rates of bone loss with age.^[17] Bone demineralization is a side effect of osteoporosis, and periodontal disease raises the risk of pathologic fractures. The majority of participants in the current study (65.32%) were not aware of the connection between osteoporosis and periodontitis.

Only 11.25 percent of the respondents knew that periodontitis and respiratory problems are related. The modification in neutrophil function is the most often cited contributing cause. Tissue oxidative stress damage is another frequently shared mechanism. Poorer periodontal health condition is linked to a higher chance of developing chronic obstructive pulmonary disease, according to research by Scannapieco et al.^[18] In a thorough review, controlling oral biofilm lowers the likelihood of nosocomial pneumonia, according to Vilela et al.^[19]

Based on the findings of our survey, it was clear that most people were aware about the interrelationship between periodontal disease and overall health. Patients with systemic disorders need to be identified as such and encouraged to follow a tight recall dental appointment schedule. It is necessary to inform the general population that self-medication may conceal a significant underlying periodontal and systemic issue. Improve public understanding of the level of

professional care for periodontitis and the possibility to save money on medical care by receiving prompt periodontal treatment.

CONCLUSION

It is undeniable that a person's oral health significantly affects their general health. In order to better understand the links between periodontal and systemic diseases as well as the potential advantages of treating periodontal disease as a means of treating systemic disorders, researchers need to continue searching for fresh data. It's important to spread awareness of the advantages of practicing proper dental hygiene among the general audience. Additionally, primary and community health services must include periodontal health care. The current poll was only done in one area or locale; hence the findings cannot be generalized to the entire population. Therefore, larger research with more comprehensive questions is required for more precise and illustrative findings, to evaluate the results of the present study.

Author's Contribution:

Concept & Design of Study:	Yazeed Alotaibi, Nubesh Khan
Drafting:	Yazeed Alotaibi, Nubesh Khan
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