

AWARENESS OF PERSONAL ORAL HEALTH AND ORAL HYGIENE PRACTICES AMONG PATIENTS WITH CORONARY ARTERY DISEASE

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ABSTRACT

Objective: To assess the awareness of personal oral health and oral hygiene practices among coronary artery disease patients in AFIC-NIHD.

Study Design: Descriptive cross-sectional study.

Place and Duration of Study: Armed Forces Institute of Cardiology & National Institute of Heart Diseases, Rawalpindi Pakistan, from Sep to Nov 2021.

Methodology: This study was conducted on 270 CAD patients in Rawalpindi, Pakistan. CAD patients with diabetes or a habit of smoking were included in the study. A proposed questionnaire was used to determine the awareness of oral health and oral hygiene practices. Data were analyzed using SPSS version 24.

Results: Bleeding gums were reported by 74.4% participants, 90% had some difficulty in chewing hard foods, 82.2% were aware of visible gaps between their teeth; 94% thought that oral health and general body health are unrelated; 14% mentioned that diabetes affects oral health; 80.7% had a habit of brushing their teeth once a day and 6% reported the use of interproximal cleaning aids daily. Most patients visited the dentist because of a toothache; 51.9% had scaling done in the last 3 years. Many patients, 128 (47.4%) had diabetes along with CAD.

Conclusion: A significantly higher percentage of poor oral health was reported. Most patients had poor knowledge of oral health and did not practice adequate oral hygiene.

Keywords: Awareness, Coronary artery disease, Oral health.

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INTRODUCTION

Cardiovascular diseases account for more than 30% of deaths worldwide.¹ Among CAD, coronary artery disease (CAD), also known as Ischemic Heart Disease (IHD) and atherosclerotic cardiovascular disease (ACD), is the most prevalent.² It is considered one of the leading causes of morbidity and mortality in developed nations with developing nations affected severely as well. Studies suggest that the contributing risk factors of CAD include family history, hypertension, hyperlipidemia, diabetes, sedentary lifestyle, obesity, and tobacco use etc.³ The contribution of poor oral health as a risk factor to Cardiovascular Diseases (CVD) has been debated.⁴ However, there is growing evidence that poor oral health, especially periodontal diseases are a modifiable risk factor for CAD.^{5,6}

Proper oral hygiene care such as tooth brushing, flossing, and regular dental visits has been associated with a reduced risk of aggravated CAD.⁷ In contrast, Park *et al*, found that advanced periodontal diseases,

tooth loss, and excessive dental caries adversely affect cardiovascular events.⁷ In an international study, periodontitis had an independent association with atherosclerotic CVD.⁸ Systematic reviews and meta-analyses have reported a similar association between periodontal disease and CVD.⁹⁻¹¹

Periodontal disease is a chronic inflammatory disease of tooth-supporting structure, that is gums, cementum, alveolar bone, and periodontal ligament, due to bacterial infection.¹² There is a lack of national data on the prevalence of periodontal disease in the Pakistani population, but a study conducted in Rawalpindi revealed that one-fourth of the study sample had periodontitis.¹³ Among other factors contributing to periodontitis, an important factor related to poor peri-odontal health is the lack of preventive approach. Most dental professionals focus on treating the condition only, while medical professionals often have poor understanding of oral health and its link to medical conditions like CAD.¹⁴

Over the last two decades, researchers have gathered increasing evidence to link periodontal diseases and the adverse outcomes of CAD.^{5,15,16} The consensus

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report by the European Federation of Periodontology and the American Academy of Periodontology conclude that patients who have concurrent CVD and periodontal disease have an increased risk for future CVD and this association is independent of other risk factors of CVD.¹⁷

There are several perspectives on how periodontal diseases are linked to CVD.^{6,18} The most convincing so far is the belief that the inflammation of periodontium allows the entry of bacteria into the circulatory system, which activates a cascade of events that ultimately result in atheroma formation and hence, an increased risk of CVD.¹⁷

With more studies suggesting the association between oral health status and CVD, there is growing demand to include oral health in caring for cardiovascular diseases. Patients with CAD need to be educated on the importance of oral health and its link to CAD as a possible risk factor.¹⁸

There is a scarcity of data focusing on CAD and oral health. To our knowledge, no study has explored the oral hygiene practices and awareness of personal oral health in patients with CAD in a hospital cardiac setting. Our research, therefore, aimed at finding out oral care practices and awareness of oral health status in CAD patients. Collecting this data could help healthcare professionals promote oral health among patients with CAD, especially those with comorbidities like diabetes. Furthermore, exploring oral health practices will highlight the need for dental education.

METHODOLOGY

We conducted a descriptive cross-sectional study in the Armed Forces Institute of Cardiology & National Institute of Heart Diseases, Rawalpindi Pakistan, from September to November 2021. The sample size was 270. Study participants were selected based on non-probability consecutive sampling after getting formal ethical approval from the Institutional Ethical Review Board (IERB) of AFIC/NIHD Rawalpindi.

Patients were given details about the study and were assured that their data will only be used for research purposes and confidentiality will be maintained for all data and records. Written informed consent was taken from the patients before the commencement of the study.

Inclusion Criteria: Male and female patients suffering from CAD who were smokers and/or had diabetes were included.

Exclusion Criteria: Patients having severe illness and those unwilling to participate were excluded from the study.

A self-administered questionnaire was given to the patients. The questionnaire consisted of four sections: study population characteristics, perception of dental health care, perception of personal oral health, and habits and perception of dental self-care.

Data were recorded and analyzed through SPSS version 24. Frequency and percentages were computed for demographics and other study population characteristics. Mean and standard deviation were calculated for age, number of teeth, number of cavities, and number of cigarettes.

RESULTS

A total of 270 subjects were included in this study out of which 206 (76.3) were males. The mean age of the sample was 48.8 ± 16.3. The majority of the patients were married (87%). In our study, 56 (20.7%) were former smokers, 35 (13%) were smokers, whereas others never smoked. Many patients, 128 (47.4%) had diabetes along with CAD. Demographics of participants are shown in Table-I.

Table-I: Baseline characteristics: frequency and percentages.

Characteristics	n (%)
Gender	
Male	206 (76.3)
Female	64 (23.7)
Marital Status	
Single	26 (9.6)
Married	235 (87.0)
Separated/Widowed	9 (3.3)
Education	
1-12 years	256 (94.8)
University	44 (16.2)
Occupation	
Working	137 (50.7)
Retired	67 (24.9)
Other	66 (24.4)
Income	
Less than 15,000	36 (13.5)
15,000-25000	50 (18.5)
25000-35000	66 (24.4)
35,000-50,000	66 (24.4)
50,000 or more	52 (19.2)
Diabetes Status	
Diabetics	128 (47.4)
Non-Diabetics	142 (52.6)
Smoking Status	
Never	179 (66.3)
Former	56 (20.7)
Current	35 (13.0)

While answering questions about awareness of personal oral health (Table-II), 253 (93.7%) respondents stated that their teeth are not mobile, 243 (90%) had some difficulty chewing all kinds of food, 228 (84.4%) reported they can chew apples, but poorly, 222 (82.2%) were aware of visible gaps between their teeth, 197 (72.96%) thought that they had good teeth and 56 (20.74%) were of the view that their teeth were neither good nor bad, 221 (81.85%) considered their oral health was better as compared to their age fellows, and 201 (74.4%) had bleeding gums.

Table-II: Self-reported oral health status of patients with CAD.

Question	Answer	n (%)
Do you have non-mobile teeth?	Yes	253 (93.7)
	No	17 (6.2)
Are you able to chew all kinds of food?	Yes	243 (90)
	No	27 (10)
Do you have any visible gaps between teeth?	Yes	222 (82.2)
	No	48 (17.8)
Do you think that you have good or bad teeth?	Good	197 (72.96)
	Neither Good Nor Bad	56 (20.74)
	Bad	17 (6.3)
How do you consider your oral health compared to those in the same age as you?	Better	221 (81.85)
	Neither better nor worse	37 (13.7)
	Worse	12 (4.4)
Do you have sore OR bleeding gums?	Yes	201 (74.4)
	Yes only when brushing teeth	7 (2.3)
	No	62 (22.96)
Can you chew hard food like apples or crisp bread?	Yes, very easily	23 (8.5)
	Yes, but poorly	228 (84.4)
	No, avoid hard food	19 (7)

In the knowledge section, 246 (91.1%) reported they knew sweets affect dental health, 255 (94.4%) stated that discolored teeth affect dental appearance, 254 (94.1%) thought that the health of the mouth and teeth does not impact the health of the body, and only 38 (14.1%) mentioned that diabetes affects oral health.

Most respondents 218 (80.7%) had a habit of brushing their teeth once a day. Only 16 (5.9%) reported the use of interproximal cleaning aids on a daily basis. Fluoride toothpaste was used by the majority, 213 (78.9%). Over half of the respondents had visited a dentist in the last 3 years (50.7%). The main dental services used by participants were private dentists (54%) compared to 27.8% who attended the public

dental setups. Most of them (51.85%) visited the dentist because of a toothache.

About half of the participants (51.9%) had scaling done in the last 3 years, and nearly half found it uncomfortable visiting a dentist.

Table-III: Oral health practices of patients with CAD.

Question	Answer	n (%)
How often do you brush your teeth?	Once a day	218 (80.7)
	More than once	34 (12.6)
	Every other day/less	18 (6.7)
How often do you use interproximal cleaning aids?	Daily	16 (5.9)
	Every other day	27 (10)
	Once a week or less	199 (73.7)
	Never	28 (10.4)
Describe your use of toothpaste?	With fluoride	213 (78.9)
	Without fluoride	5 (1.9)
	Don't use toothpaste	52 (19.3)
Had an appointment with a dentist in the last 3 years	Yes	137 (50.7)
	No	133 (49.3)
Had a scaling done in the last 3 years	Yes	140 (51.9)
	No	130 (48.1)
Find it uncomfortable to visit the dental office	Yes	131 (48.5)
	No	139 (51.5)
Reason for last appointment with a dentist	Sensitivity	13 (4.8)
	Routine Check-up	42 (15.56)
	Toothache	140 (51.85)
	Problem to chew	47 (17.4)
	Other tooth problem	28 (10.37)
Type of Dental Office visited	Public Dental Care	75 (27.8)
	Private Dental Care	146 (54.07)
	Other	49 (18.15)

Table-IV: Dental health knowledge of CAD patients.

Question	Answer	n (%)
Do sweets affect dental health?	Yes	246 (91.1)
	No	24 (8.9)
Do discolored teeth affect appearance?	Yes	255 (94.4)
	No	5 (1.9)
	Don't know	10 (3.7)
Does the health of the mouth and teeth impact the health of the body?	Yes	9 (3.3)
	No	254 (94.1)
	Don't know	7 (2.6)
Does oral health affect diabetes?	Yes	38 (14.1)
	No	232 (85.9)

DISCUSSION

The frequency of toothbrushing is a good predictive indicator for oral health habits.¹⁹ In our study, the majority (80.7%) of the participants brushed their teeth only once a day. International recommendation for frequency of tooth brushing is twice daily.¹⁹ In a study by Maqsood *et al*, 41.58% of respondents reported brushing once daily.²⁰

More than 70% of our participants said they use interproximal cleaning aids once a week. In another study conducted to find an association between flossing and periodontal diseases, subjects with good flossing habits had less periodontal disease and fewer carious and missing teeth compared to those who did not floss or use another interproximal cleaning aid.²¹ Flossing is an important oral hygiene practice that helps prevent periodontal diseases.²¹ The recommended frequency for flossing is once a day.²²

Our study participants did not have adequate flossing habits. Almost half of the patients (51.85%) said that they go to the dentist only for a toothache. This is similar to the results of another study conducted to evaluate the oral health-related attitude of patients, in which 55% of participants said that they visit the dentist only if they have dental pain, whereas 61% reported dental phobia.²³ Whereas, in our study, 48.5% of patients felt uncomfortable going to a dentist's office. The same pattern seems to be there in youngsters. In a study conducted on students of a university, 69.40% reported that they visit dentists only for a toothache.²⁰

If we relate participants' reasons for a dental visit to the fact that 74.4% of them reported bleeding gums and 82.2% had visible gaps between their teeth, which could be a sign of bone loss and poor periodontal health, it can be assumed that CAD patients in our study only took dental health seriously under emergency conditions, i.e., toothache. Moreover, in the study sample, the number of participants reporting bleeding gums (74.4%) versus the number of individuals who believed that they had better oral health as compared to others (81.85%) was of concern. Around half of the participants had no scaling done in the last 3 years.

It seems that our patients are not made aware of periodontal diseases. This is in comparison to the results of other studies. McQuistan *et al*, in their study that determined the levels of oral health knowledge among the elderly reported that most participants were aware of the basic dental caries and their prevention, but they were unfamiliar with periodontal diseases.²⁴

While Pakistan has no national data on the complete oral health status of CAD patients, a higher prevalence of periodontal diseases is seen in older adults.¹³ A huge percentage (84.4) of our participants reported they could chew hard food like apples, but only poorly. This difficulty in eating could lead to restricted intake of foods such as fruits and vegetables that are

beneficial in the prevention and management of CAD.²⁵

We have limited access to oral health data of CAD patients. Little is known about their oral health and oral hygiene practices. Incorporation of oral care plans in the management of CAD is also rare. Our findings suggest that people with CAD may have a higher prevalence of oral health issues and poor knowledge about their disease and its relation to oral health. Results also suggest that cardiac care providers offer little to no oral health information to patients with CAD. Further clinical studies are required to find out the oral health status of patients with CADs. Patients could also benefit from programs on the importance of oral health in cardiac patients.

CONCLUSION

In patients with CAD, a significantly higher percentage of poor periodontal health was reported. Patients depicted poor knowledge of oral health and most of them did not practice adequate oral hygiene. The brushing frequency was less than recommended. Similarly, the use of interproximal cleaning aids was not enough. Many of them only visited a dentist for toothache with no special attention to bleeding gums, gaps between teeth, and periodontal health.

Conflict of Interest: None.

Author's Contribution

SP: Main author, SA: Data collection, AK: Manuscript writing, AS: Data analysis, MS: Intellectual contribution, US: Manuscript writing.

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