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Cardiologists' Awareness of the Relationship Between Periodontal Diseases and Cardiovascular Diseases: A Region-Wide Survey in Türkiye

Kardiyologların Periodontal ve Kardiyovasküler Hastalıklar Arasındaki İlişkiye Dair Farkındalıkları: Türkiye'de Bölge Çapında Yapılan Bir Araştırma

ABSTRACT

Objective: The relationship between oral health and general health has gained increased attention in recent years. This study sought to assess the knowledge, attitudes, and practices of cardiologists in Türkiye concerning the link between periodontal disease and cardiovascular disease (CVD).

Methods: After a pilot test, a modified survey was dispatched to 1,894 practicing cardiologists in Türkiye. Two mailings were carried out, and descriptive statistics were used to analyze the data.

Results: Of the 1,894 cardiologists surveyed, 166 responded, yielding a response rate of 11.5%. The majority of respondents (77%) were male and held professional positions in academia (45%), as assistant doctors (17.5%), or in private practice (12.7%). Ninety percent of respondents accurately recognized periodontal disease as a chronic, multifactorial inflammatory disease. Meanwhile, 78% concurred that inflammation is a pivotal connection between periodontal disease and CVD. On the topic of whether treating periodontal disease could reduce a patient's CVD risk, 37% of the polled cardiologists expressed uncertainty, while 9% disagreed. Seventy six percent believed that periodontists and cardiologists should collaborate to reduce shared risk factors for both cardiovascular and periodontal diseases. Additionally, 80% expressed interest in deepening their understanding of the link between periodontitis and CVD.

Conclusion: While the vast majority of participants acknowledged that microbially-associated, host-mediated inflammation is a hallmark of periodontitis, consensus was lacking on inflammation being the primary factor linking periodontal diseases and CVDs. The majority of respondents expressed eagerness understand better the relationship between these two diseases, with the intention of enhancing oral health content in medical school and attending relevant seminars.

Keywords: Cardiologists' awareness, cardiovascular diseases, clinical guidelines, inflammation, periodontitis

ÖZET

Amaç: Son yıllarda, ağız-diş sağlığı ile genel sağlık arasındaki bağlantıya dair farkındalıkta bir artış olmuştur. Bu çalışmada, Türkiye Cumhuriyeti'ndeki kardiyologların kardiyovasküler hastalıklar ve diş eti hastalıkları ile ilgili bilgi, düşünce ve uygulama davranışları incelenmiştir.

Yöntem: Pilot uygulama sonrasında, Türkiye Cumhuriyeti'nde hekimlik yapan 1894 sertifikalı kardiyologa revize edilen anket toplamda iki kere gönderildi. Veriler, tanımlayıcı istatistikler kullanılarak analiz edildi.

Bulgular: Yüz altmış altı katılımcıyla yanıt oranı %11,5 oldu. Katılımcıların çoğu erkekti (%77), katılımcılar akademide uzman (%45) ve asistan doktor (%17,5) olarak veya özel muayenehanelerinde (%12,7) çalışıyordu. %90'ı periodontal hastalığı, kronik multifaktöriyel inflamatuar hastalık olarak doğru bir şekilde tanımladı, ancak yalnızca %78'i inflamasyonun, periodontal hastalık ile kardiyovasküler hastalıklar arasındaki ilişkiye yönelik önemli bir bileşen olduğunu kabul etti. Ankete katılan kardiyologların %37'si, periodontal hastalıkların tedavisinin, hastanın kardiyovasküler hastalık riskini azaltabileceği konusunda emin değildi ve %9'u ise bu görüşe katılmadı. Ankete katılanların %76'sı, kardiyoloji ve periodontoloji uzmanlarının hem kardiyovasküler hem de periodontal hastalıklar için ortak risk faktörlerini ortadan kaldırmak amacıyla birlikte çalışması gerektiği konusunda hemfikirdi. Ankete katılan kardiyologların %80'i kardiyovasküler hastalık ve periodontitis arasındaki ilişki hakkında daha fazla bilgi edinmek istediklerini belirtti.

ORIGINAL ARTICLE
KLİNİK ÇALIŞMA

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Sonuç: Katılımcıların büyük çoğunluğu, mikrobiyal ilişkili, konak aracılı inflamasyonun, periodontitisin ayırt edici özelliği olduğuna inanmasına rağmen, periodontal ve kardiyovasküler hastalıkları birbirine bağlayan birincil faktörün inflamasyon olduğuna yönelik eğilimleri benzer düzeyde değildi. Ankete katılanların çoğu, iki hastalık arasındaki bağlantıya ilişkin bilgilerini artırmak istediğini belirtti, bu sebeple, mezuniyet sonrası eğitimler ve tıp eğitiminde ağız diş sağlığına ilişkin verilen bilgilerin arttırılması, bu isteğin gerçekleştirilmesine yardımcı olabilir.

Anahtar Kelimeler: Kardiyologların farkındalıkları, kardiyovasküler hastalıklar, klinik rehberler, inflamasyon, periodontitis

Noncommunicable diseases (NCDs), also known as chronic diseases, are typically characterized by their long-lasting nature and are influenced by a variety of genetic, physiological, environmental, and behavioral factors. NCDs account for 74% of all global fatalities, leading to 41 million deaths annually. The primary cause of NCD-related mortality is cardiovascular disease (CVD), with cancer, chronic respiratory conditions, and diabetes following in prevalence.[1]

Periodontitis, a chronic, multifactorial, inflammatory ailment, is a consequence of a dysbiotic dental biofilm. This results in the gradual losss of periodontal attachment and bone.[2] Severe periodontitis is a high-prevalence NCD affecting 11.2% of the global population and ranks as the sixth most prevalent disease.[3] Despite not being directly lethal, periodontitis is a significant public health concern due to its high prevalence and adverse effects on oral health. If left untreated, periodontitis may exacerbate other inflammatory conditions such as atherosclerotic cardiovascular disease (ASCVD), given its chronic and progressive nature.[4]

Systemic inflammation is a common factor in the majority of NCDs, with elevated serum concentrations of Interleukin-6 (IL-6) and C-reactive protein (CRP) being the most frequently detected biomarkers.[5] Treatment of periodontitis not only reduces local inflammation but also systemic inflammation, bringing serum CRP levels down to those comparable with results from standard lifestyle or pharmacological therapies.[6] Thus, promoting periodontal health could be seen as a unique non-pharmacological approach for managing NCDs.[5] Although there is no observed effect on the lipid profile, there is substantial evidence that periodontal treatment can reduce systemic inflammation, indicated by a decrease in CRP and an improvement in both clinical and surrogate markers of endothelial function.[7]

The main causative and modifiable risk factors for ASCVD are blood apolipoprotein-B-containing lipoproteins, high blood pressure, smoking, and diabetes mellitus.[8] Both periodontitis and CVD have common risk factors, such as smoking and diabetes mellitus.[9] Periodontitis and diabetes mellitus are two chronic conditions that share several comorbidities, all of which heighten the risk of CVD.[10] Several conditions, including cancer, chronic kidney disease, obesity, chronic obstructive pulmonary disease (COPD), and pneumonia, have at least a weak link to periodontitis.[7] Additionally, periodontal disease is associated with an increased risk of preterm birth and/or low birth weight.[11]

ABBREVIATIONS

AAP	American Academy of Periodontology
AHA	the American Heart Association
ASCVD	Atherosclerotic cardiovascular disease
COPD	Chronic obstructive pulmonary disease
CRP	C-reactive protein
CVD	Cardiovascular disease
EFP	European Federation of Periodontology
ESC	the European Society of Cardiology
IL-6	Interleukin-6
NCDs	Noncommunicable diseases

The aim of this study was to assess the knowledge, beliefs, and clinical practices of Turkish cardiologists concerning the association between CVD and periodontal disease.

Materials and Methods

A questionnaire, originally developed at the University of North Carolina for the same topic, was adapted and modified, especially the section discussing knowledge and views about periodontal diseases.[12] This questionnaire consisted of 34 questions, divided into five sections that covered the following subjects:

1. Practice settings and demographics
2. Survey respondents' oral health status
3. Intraoral examination of patients with CVD
4. Knowledge and views on the association between periodontal diseases and CVD
5. Education level and awareness of the connection between periodontal diseases and CVD, based on publications from the American Heart Association (AHA) and the European Society of Cardiology (ESC).[13,14]

The content of the survey was mainly based on the reports by the European Society of Cardiology (ESC), the American Heart Association (AHA), and the consensus report from the Joint European Federation of Periodontology (EFP)/American Academy of Periodontology (AAP) Workshop on Periodontitis.[7,13,14] The survey was designed to evaluate participants' understanding of the link between periodontal diseases and CVD.

The questionnaires were mailed to cardiologists who were members of the Turkish Society of Cardiology. The selection criteria included cardiologists working either full-time or part-time in public or private practice in Türkiye. Cardiologists who were retired were not included in the study.

The survey received approval from the Clinical Research Ethics Committee of the Istanbul University Faculty of Dentistry (Approval Number: 2016/50, Date: 26.10.2016). Following this approval, the survey was distributed via the Turkish Society of Cardiology's mailing system, accompanied by a cover letter outlining its objectives and a professional reply envelope. Two mailings took place in October 2016 and January 2017. Only the study team had access to the password-protected database

Table 1. Practice Settings and Demographics

	Number	Percentage of responders %
Age (in years)		
30<	35	21
31-40	89	53.6
41-50	28	17
51-60	8	4.8
61-70	5	3
>70	1	0.6
Gender		
Male	128	77
Female	38	23
Practice setting		
Medical specialty student	31	18.5
Academia (specialist)	75	45.2
Solo practice	21	12.7
State Hospital	37	22,4
Other	2	1.2
Years providing care to patients with cardiovascular disease		
5< year	38	23
5-10 year	60	36
11-15 year	28	17
16-20 year	15	9
>20 year	25	15
Hours per week providing patient care		
<10 hours	4	2.4
11-20 hours	18	10.8
21-30 hours	21	12.7
31-40 hours	44	26.5
>40 hours	79	47.6

where all the data was stored. The data was analyzed using Statistical Package for the Social Sciences (SPSS) for Windows, Version 21.0, and results were presented as percentages using descriptive statistics (IBM Corp., Armonk, NY).

Results

Section 1: Practice Settings and Demographics

The majority of respondents (74%) were under the age of 40. Most respondents were men, with 50% being specialists, approximately 20% in medical specialty training, and 15% employed in public hospitals. A significant number were academics, combining clinical treatment, teaching, and research. Only 12.7% were in private practice. Roughly half of the participants worked 40 hours or more weekly, while 26% worked between 30 and 40 hours. Over half of those surveyed reported working in the field of CVD treatment for ten years or less (Table 1).

Section 2: Survey Respondents' Oral Health Status

Most survey participants mentioned visiting their dentist only when they had a complaint. Nearly half rated their oral health as fair, and only 38.6% considered it good. Merely 3% had not received dental care, while only 25% had undergone a periodontal examination. Half had been diagnosed with periodontal disease (Table 2).

Table 2. Survey Respondents' Oral Health Status

	Number	Percentage of numbers
Dental appointment frequency		
<6 months	11	6.6
6-12 months	41	24.7
1-2 years	33	19.9
>2 years	13	7.8
Only complain about something	68	41
How would you rate your oral health		
Excellent	6	3.6
Good	64	38.6
Fair	75	45.2
Poor	15	9
Very Poor	6	3.6
Last time received dental care		
<6 months	40	24.1
6-12 months	40	24.1
1-2 years	36	21.7
>2 years	45	27.1
Received any dental care	5	3
Last time received a periodontal examination		
<1 year	58	34.9
1-2 years	26	15.7
>2 years	40	24.1
Received any periodontal examination	42	25.3
Ever been told you have periodontal disease		
Yes	87	52.4
No	79	47.6

Table 3. Intraoral Examination of Patients with Cardiovascular Diseases

	Number	Percentage
Patients referred with periodontal disease		
0	29	17.5
≤5	39	23.5
≥6	98	59
Patients referred to you from a dentist/ dental facility		
0	42	25.3
≤5	15	9
≥6	109	65.7
Frequency Survey Respondents Perform Oral Health Examinations on Patients with Cardiovascular Disease		
Only patients have a complaint about it	61	36.7
At the initial visit only	2	1.2
At every visit	5	3
Rarely	41	24.7
Never	57	34.3

Section 3: Intraoral Examination of Patients with CVDs

When CVD patients raised concerns about their dental health, only 36.7% of respondents conducted oral health examinations; 24.7% did so infrequently, and 34.3% never did (Table 3). When

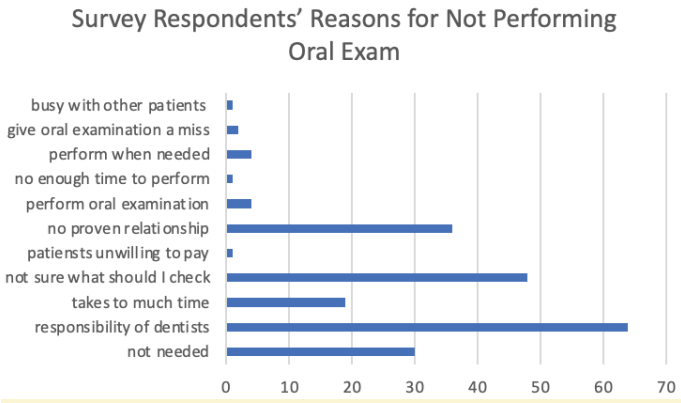

Figure 1. Intraoral examination of a patient with cardiovascular diseases, reasons for not performing an oral examination.

asked about not examining their patients' oral health, 38.6% felt it was a dentist's responsibility, 28.9% were uncertain about what to check during an oral exam, 20.5% believed there was no proven link, so they did not see the need, 18.1% felt it was unnecessary, and 11.4% felt it was too time-consuming. A mere 2.4% said they regularly performed oral exams or did them as required (Figure 1). Twenty five point three percent of respondents reported not receiving any referrals from a dentist or dental facility, whereas 17.5% indicated they had not encountered any patients with periodontal disease (Table 3).

Section 4: Knowledge and Opinions about Periodontal Diseases and CVDs

This section of the survey contains ten statements designed to assess participants' knowledge and five questions exploring their opinions on the relationship between CVD and periodontal disease. Participants were asked to select only one response for seven out of the ten questions (Strongly Agree, Agree, Uncertain/ Don't Know, Disagree, Strongly Disagree). The remaining three questions permitted multiple selections.

The statement, "Controlling periodontal health is important for controlling oral health and the rest of the body" received the highest overall percentage of respondents who either strongly agreed or agreed. In contrast, the statement, "Patients diagnosed with CVD are more likely to have periodontal disease" garnered the fewest strong agreement and agreement responses. The second and third statements with highest 'strongly agree' and 'agree' responses pertain to the definitions of periodontitis.

The statement emphasizing the connection between periodontal disease and CVD did not garner as strong an agreement as the statement, "Controlling periodontal health is important for overall oral and bodily health." While nearly all participants agreed that maintaining good periodontal health is essential for the the body's overall health and recognized periodontitis as a chronic multifactorial inflammatory disease, only 26% strongly agreed and 52% simply agreed that inflammation is the main link between periodontal disease and CVD.

Participants expressed reservations about accepting claims on the impacts of periodontal diseases on atherosclerosis, myocardial infarction, and stroke, as well as the potential benefits of periodontal treatment in reducing CVD risk. Only 11% strongly agreed, and 43% agreed with the statement, "Treatment of periodontal disease can reduce a patient's risk for CVD" (Table 4). Fortyone percent of respondents felt that evidence was weak regarding the benefits of periodontal

Table 4. Knowledge and Opinions about Periodontal Diseases and Cardiovascular Disease

	Strongly Agree	Agree	Unsure/ Don't Know	Disagree	Strongly Disagree
	Number (percent)	Number (percent)	Number (percent)	Number (percent)	Number (percent)
Periodontitis is a chronic multifactorial inflammatory disease caused by microorganisms and characterized by progressive destruction of the tooth-supporting apparatus leading to tooth loss	66 (39.8)	90 (54.2)	8 (4.8)	2 (1.2)	-
Inflammation is a key component between periodontal disease and cardiovascular disease.	43 (25.9)	87 (52.4)	32 (19.3)	2 (1.2)	2 (1.2)
Periodontitis is a major public health issue because it is common, it is a source of social inequality, it reduces the quality of life, it reduces chewing function and impairs aesthetics, it causes tooth loss and disability, it is responsible for a substantial proportion of edentulism and masticatory dysfunction, it has an impact on escalating dental costs and it is a chronic disease with possible impact on general health.	71 (42.8)	79 (47.6)	16 (9.6)	-	-
Controlling periodontal health is important for controlling the oral and the rest of the body's health.	85 (51.2)	78 (47)	2 (1.2)	1 (0.6)	-
Patients with periodontal disease are more likely to have increased atherosclerosis and risk for myocardial infarction and stroke, even after adjusting for traditional cardiovascular disease risk factors than periodontally healthy subjects.	30 (18.1)	64 (38.6)	62 (37.3)	8 (4.8)	2 (1.2)
Patients diagnosed with cardiovascular disease are more likely to have periodontal disease	11 (6.6)	43 (25.9)	77 (46.4)	31 (18.7)	4 (2.4)
Treatment of periodontal disease can decrease a patient's risk for cardiovascular disease.	19 (11.4)	72 (43.4)	61 (36.7)	11 (6.6)	3 (1.8)

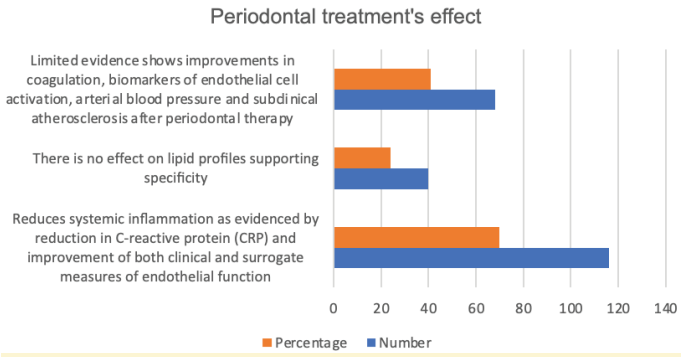

Figure 2. Opinions about whether treating periodontal disease can decrease a patient's risk for cardiovascular disease.

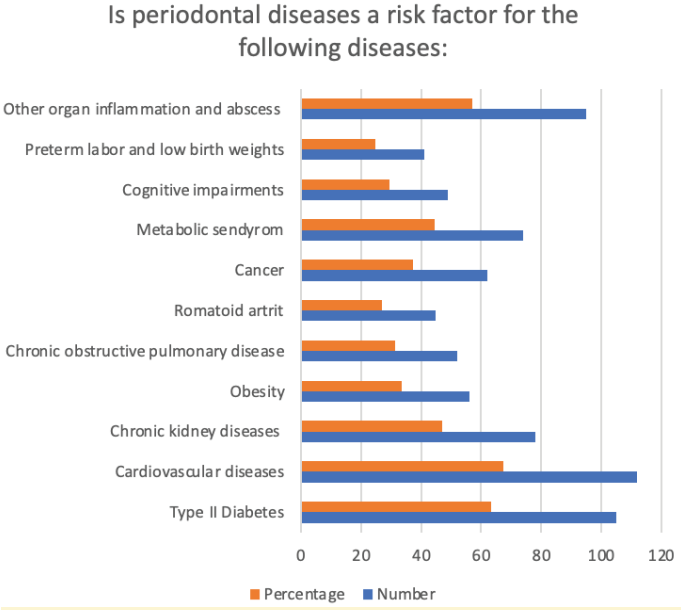

Figure 3. Opinions on periodontitis as a risk factor for systemic diseases/conditions.

therapy on coagulation, endothelial cell activation indicators, arterial blood pressure, and subclinical atherosclerosis. However, 69% believed there is moderate evidence suggesting periodontal treatment reduces systemic inflammation, evidenced by reduced CRP levels and improvements in both clinical and surrogate markers of endothelial function. Moreover, 24% stated that periodontal treatments do not affect lipid profiles (Figure 2).

Participants perceived periodontitis as a risk factor for various health conditions, including CVDs, Type 2 diabetes mellitus, organ inflammation and abscesses, chronic renal diseases, metabolic syndrome, cancer, obesity, COPD, pneumonia, cognitive impairment, rheumatoid arthritis, preterm labor, and low birth weights (Figure 3). They also highlighted shared risk factors between CVD and periodontitis, such as smoking, diabetes, age, blood pressure, and total cholesterol (Figure 4).

Participants were asked to share their thoughts and attitudes about periodontal diseases in response to five statements. Over

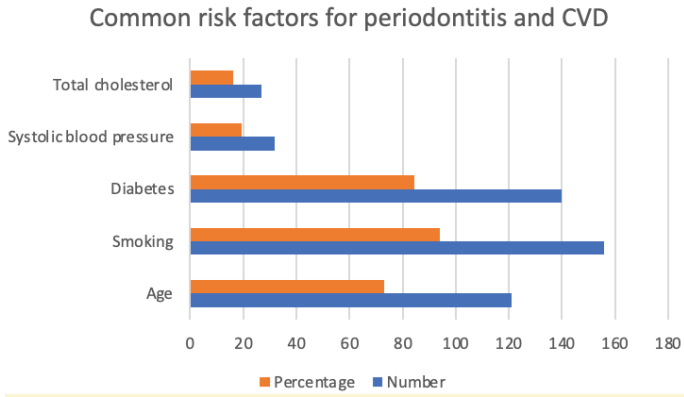

Figure 4. Opinions about common risk factors for periodontal diseases and cardiovascular diseases.

half acknowledged the need to enhance their understanding of the link between CVD and periodontal disease, suggesting a collaborative approach with dentists to address shared risk factors. When asked whether cardiologists should perform periodontal examinations, about half of the participants were unsure. More than half expressed uncertainty or were not inclined to further their education in order to perform oral health examinations. While half believed that cardiologists should incorporate periodontal evaluations into their clinical examinations, the other half were either skeptical or did not believe that such an examination should be included as a criterion (Table 5).

The education status and awareness concerning the relationship between periodontal diseases and CVDs were based on reports published by the AHA and ESC. Only 21% of respondents indicated that they had been educated about oral health during their medical training. More than half did not receive education on oral and periodontal health as part of their medical curriculum. Most felt that their understanding of oral health, outside of what they learned in medical school, was insufficient. Only 36% were aware of the connection between periodontal disease and atherosclerotic vascular diseases as stated in the 2012 AHA recommendation. However, a relatively higher percentage of participants knew about the ESC guideline, "CVD Prevention in Clinical Practice (version 2016)", which includes section on periodontitis (Table 6).

Section 5: Education Status and Awareness of the Relationship Between Periodontal Diseases and CVDs Based on Reports from AHA and ESC

Only 21% of respondents indicated that they had been educated about oral health during their medical training. More than half did not receive education on oral and periodontal health as part of their medical education. The majority felt their understanding of oral health, beyond what was taught in medical school, was inadequate. Only 36% of them were aware of the connection between periodontal disease and atherosclerotic vascular diseases as outlined in the 2012 AHA recommendation. However, a notably larger percentage of participants recognized the periodontitis section in the ESC guideline, "CVD Prevention in Clinical Practice (version 2016)" (Table 6).

Table 5. Cardiologist Opinions about Periodontal Evaluations

	Strongly Agree	Agree	Unsure/ Don't Know	Disagree	Strongly Disagree
	Number (percent)	Number (percent)	Number (percent)	Number (percent)	Number (percent)
Cardiologists should also consider periodontal evaluation as a criterion in their clinical examinations.	25 (15.1)	66 (39.8)	57 (34.3)	16 (9.6)	2 (1.2)
A cardiologist should do periodontal examinations.	16 (9.6)	39 (23.5)	68 (41)	34 (20.5)	9 (5.4)
Cardiologists should work with dentists to eliminate common risk factors for cardiovascular disease and periodontitis.	32 (19.3)	94 (56.6)	30 (18.1)	9 (5.4)	1 (0.6)
I am improving my knowledge to perform oral health examinations.	9 (5.4)	60 (36.1)	45 (27.1)	43 (25.9)	9 (5.4)
I need to improve my knowledge of the relationship between cardiovascular disease and periodontal disease.	35 (21.1)	99 (59.6)	20 (12)	11 (6.6)	1 (0.6)

Table 6. Education Staus and Awareness of the Relationship Between Periodontal Diseases and Cardiovascular Diseases

	Number	Percentage
Did you receive oral health content during your medical education (undergraduate and specialty)?		
Yes	36	21.7
No	130	78.3
How many hours did you receive regarding oral health-periodontal health during your medical education (undergraduate and specialty)?		
< 3 hours	49	29.5
3-5 hours	16	9.6
>10 hours	6	3.6
I didn't receive any content about oral and periodontal health.	95	57.2
Rate your knowledge of oral health except received from oral content during your medical training:		
Excellent	2	1.2
Good	23	13.9
Fair	66	39.8
Poor	43	25.9
Very Poor	32	19.3
Do you know/Are you aware that there is a periodontitis subheading under the heading of 'Clinical conditions affecting cardiovascular disease risk' stated as risk markers according to the directive published by the European Society of Cardiology in 2016 on CVD Prevention in Clinical Practice Guidelines?		
Yes	84	50.6
No	82	49.4
Do you know/Are you aware of the relationship between periodontal disease and atherosclerotic vascular diseases in the directive published by the American Heart Association in 2012?		
Yes	60	36.1
No	106	63.9

Discussion

The foundation for the awareness items pertaining to guidelines addressing periodontitis is rooted in the ESC 2016 and AHA 2012 guidelines.[13,14] While only 36% of respondents were familiar with the AHA's recommendation, approximately 50% were acquainted with the periodontitis section of the ESC guideline. This suggests that the majority of participants adhere to the ESC's guidelines. In the revised version of the ESC recommendation published in August 2021, periodontitis was identified as a risk factor for CVD, analogous to HIV and influenza.[8] However, since periodontitis is characterized by microbial-associated, host-mediated inflammation and is recognized as a chronic multifactorial inflammatory disease, it is challenging to classify it as an infection akin to HIV or influenza. Therefore, there may be misconceptions surrounding the term, nature, or pathophysiology of periodontitis. It is critical for cardiologists to recognize periodontitis in order to undertsand the connection between CVD and periodontitis, which is based on inflammation. This misunderstanding needs to be addressed to better inform the subscriber group, especially since the majority of participants adhere to the ESC's guidelines.

Even though nearly all participants agreed that periodontitis is characterized by microbially-associated, host-mediated

inflammation, only 78% concurred that inflammation is the primary factor connecting periodontal diseases and CVDs. This leads us to believe that participants were unsure about the effect of periodontal inflammation on CVD. The new guidelines state that inflammatory conditions, such as rheumatoid arthritis, active inflammatory bowel disease, psoriasis, and ankylosing spondylitis, increase the risk of CVDs both acutely and over time.[8] CRP is widely accepted as a sensitive marker of inflammation that predicts the future risk of coronary heart disease.[15] Additionally, there is moderate evidence suggesting that periodontal treatment reduces systemic inflammation, as shown by the reduction in CRP levels and improvements in both clinical and surrogate measures of endothelial function.[7] Therefore, we propose that periodontitis should be scrutinized as a risk factor for CVDs through inflammation mechanisms, rather than as an infection. If the link between periodontal diseases and CVDs is not clearly established, eliminating the risk factors to prevent or treat these diseases may be unattainable.

Periodontal medicine establishes a bidirectional relationship between periodontal diseases and overall health. Throughout the 1990s, the periodontal community highlighted an increasing number of links between periodontal health and systemic diseases, leading to the valuable concept of "periodontal medicine". The observation that periodontal diseases are associated with 57 other systemic diseases suggests potential shared pathophysiological pathways.[16] Participants believed that systemic diseases influenced by periodontitis include CVDs, Type 2 diabetes mellitus, other organ inflammation and abscesses, chronic renal diseases, metabolic syndrome, cancer, obesity, COPD and pneumonia, cognitive impairments, rheumatoid arthritis, preterm labor, and low birth weights.

In 2012, a panel of experts from the United States and Europe reviewed the evidence supporting the associations between periodontal diseases and systemic diseases, focusing on the most studied relationships such as those with diabetes, pregnancy complications, and CVDs. These experts concluded that periodontitis increases the bacterial burden, causing a significant systemic inflammatory response, which likely plays a role in the pathophysiology of diabetes, pregnancy complications, and CVDs.[4,17,18]

Smoking, diabetes, age, blood pressure, and total cholesterol were cited as common causes of CVD. However, only smoking and diabetes are recognized as common risk factors for periodontitis, even though all of these risk factors are associated with CVD.[19] Respondents considered age, blood pressure, and total cholesterol as common risk factors for periodontitis at rates of 72.9%, 19.3%, and 16.3%, respectively, despite the fact that they do not actually increase the risk of developing periodontitis. While age is a risk determinant for periodontitis, blood pressure and total cholesterol are neither risk factors, risk indicators, risk determinants, nor risk predictors for periodontitis.[19]

Fiftyseven percent of respondents reported not receiving any content on oral and periodontal health, with 30% receiving less than 3 hours of instruction on the topic. Eighty five percent believed that the oral health education they received in medical school was insufficient, and expressed a desire to learn more. Eighty one percent intended to improve their awareness of the link between CVD and periodontal disease, with 50% wanting to improve their knowledge of oral health assessments. Interestingly, 55% believed that a periodontal evaluation should be a criterion during clinical examinations. However, only 33% felt a cardiologist should perform this examination, as the majority believed that cardiologists should work in collaboration with dentists to address shared risk factors for CVD and periodontitis.

Limitations of the Study

The survey was mailed to 1,894 licensed, practicing cardiologists in Türkiye. However, the response rate was only 11.5% (n=166), even after two rounds of mailings.

Conclusion

While cardiologists were aware of periodontal disease, there was uncertainty regarding its relationship to CVD. Recognizing the shared factor between these two diseases is important for mitigating their common risk elements. Consequently, in the ESC guideline, periodontitis should be categorized under inflammation rather than infection since inflammation is the shared characteristic between these conditions.

Ethics Committee Approval: The survey was approved by the Clinical Research Ethics Committee of Istanbul University School of Dentistry (Approval Number: 2016/50, Date: 26.10.2016).

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – S.K., D.K.O., G.A.Ş., B.M.; Design –S.K., D.K.O., G.A.Ş.; Supervision – B.M., G.A.Ş.; Materials – S.K.; Data Collection and/or Processing – S.K., B.M., D.K.O.; Analysis and/or Interpretation – S.K.; Literature Review – S.K.; Writing – S.K.; Critical Review – D.K.O., G.A.Ş., B.M.

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