




# The Assessment of the Association Between Systemic Diseases and Dental Findings

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## ABSTRACT

**Objective:** In dentistry, systemic diseases are extremely important in terms of taking the required precautions for overall health and preventing complications before they emerge. Many clinicians are aware of the oral symptoms of systemic diseases; nevertheless, the major source of the problem must be addressed in order to limit the rate of misdiagnosis due to systemic origins and establish an appropriate treatment strategy. The purpose of this study is to investigate whether there is a relationship between systemic diseases and dental health.

**Methods:** The study included 200 individuals, 100 women and 100 men, all between the ages of 25 and 75, who had at least one systemic disease. The patients' medical records and panoramic radiography were examined. In the panoramic radiographs of the patients, the existence of existing teeth, caries, restorations, prostheses, and endodontic conditions were documented, taking into consideration the presence of systemic disorders, gender, and age of the patients.

**Results:** Caries rates were significantly higher in the 25-40 age group (43.3%) than in the 41-60 age group (20.7%) ( $p < 0.05$ ). There was no statistically significant difference between the incidence of caries, endodontic treatment and prosthesis according to the presence of diabetes mellitus ( $p > 0.05$ ). The prevalence of prosthesis was statistically significantly greater in patients with cardiovascular disease (64.3%) than in patients without cardiovascular disease (47.7%) ( $p < 0.05$ ).

**Conclusion:** According to the findings of our study, which confirm the link between oral and overall health, challenges with general health lead to several other adverse consequences, including worsening of dental health and related complications.

**Keywords:** Diagnosis, Oral; Dental Health Survey; Cardiovascular Diseases; Diabetes Mellitus

## 1. INTRODUCTION

Systemic diseases are crucial in dentistry since they allow dentists to take the necessary measures for overall health and to take measures before they occur. As a result, clinicians must evaluate the occurrence of systemic disorders, as well as the systemic and oral findings linked with these diseases, in order to limit the challenges and hazards of dental therapy (1, 2). Anamnesis is a basic element used in the pre-treatment evaluation of patients in dentistry, which is a part of human health; it allows the patient to learn about known systemic conditions, diseases that have been treated and/or are still being treated, drugs used, special diets, infectious disease risk, and conditions that require extra caution during dental treatment (2, 3). There are many systemic conditions that require modification of dental practice, such as cardiovascular diseases, renal diseases, pulmonary disorders, patients with immunosuppression, patients receiving chemotherapy-radiotherapy, endocrinal disorders, hematological disorders, infectious diseases (4).

Oral manifestations of systemic illnesses can be many. A thorough oral examination may show indicators of an underlying systemic illness, allowing for early diagnosis and treatment. Mucosal abnormalities, periodontal inflammation and bleeding, and the overall status of the teeth should all be evaluated (5). Systemic disorders can affect teeth, jaw bones, oral mucosa, and the temporomandibular joint. When the major source of the disease is a systemic origin, knowing the intraoral findings of many systemic disorders reduces the likelihood of misdiagnosis and is crucial in developing an effective treatment approach (6, 7).

Due to the obvious increase in life expectancy, the number of people seeking dental treatment for systemic disorders is on the rise. Oral and dental health is a significant issue that should not be viewed in isolation from overall health and has a direct impact on an individual's quality of life and comfort.

There are clear links between the need for dental care and the impact of oral health on overall health. Systemic diseases, as well as systemic and oral findings linked with these diseases, should be identified in order to limit the problems and hazards that may arise during dental treatment, and measures should be taken accordingly (6-9).

Oral health is described as the absence of disease and diseases of the craniofacial complex, which includes the oral, dental, and cranial tissues. The American General Health Association's oral health report from 2000 underlined that oral health is more than just good teeth and should be examined as a component of overall health, and the link between dental and overall health has been established. In order to accomplish numerous essential human tasks including eating, tasting, speaking, kissing, and smiling, our oral health must be adequate (10). While systemic diseases can cause a variety of oral manifestations, the patient's overall health may decline in the long run as a result of the degradation of oral and dental health. The primary systemic diseases in which this association is usually recognized include cardiovascular system diseases and diabetes. Such individuals should be assessed more extensively in terms of disease progression, medicines taken, and other variables that might influence the treatment process (11, 1). According to Segura-Egea et al. (12), the total number of teeth in the mouth was lower in diabetics as a result of higher caries incidence and periodontal disease severity. Another study published in literature showed that those with cardiovascular illnesses (CVS) have tooth loss as a result of poor oral hygiene (13). Therefore, the purpose of this research is to reveal if there is a link between systemic diseases and dental results.

## 2. METHODS

The study protocol of this retrospective study was approved by Clinical Research Ethics Committee of Faculty of Medicine Marmara University on 02.07.2021 with protocol number 09.2021.814. The study group consisted of 100 randomly selected female and male individuals between the ages of 25 and 75 who applied to Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Marmara University for various reasons between June and December 2020 and had at least one systemic disease. It was made with the help of 200 patients. The patients' comprehensive anamnesis was reviewed, and their age, gender, and systemic disorders were noted. The patients' panoramic radiographs were scanned retrospectively. The patients' existing systemic disorders were investigated, and the frequency of the diseases was assessed.

### 2.1. Statistical Analysis

The IBM SPSS Statistics 22 (IBM SPSS, USA) software was used for statistical analysis for evaluating the study's findings. The parameters were tested for their fit to the normal distribution using the Kolmogorov-Smirnov and Shapiro Wilks tests, and it was established that they did not have a normal distribution. In addition to descriptive statistical methods (mean, standard

deviation, frequency), Kruskal Wallis test was used for comparison of parameters across groups and Dunn's test of the group that caused the difference while analyzing the research data. For the comparison of parameters between two groups, the Mann Whitney U test was applied. Chi-Square test, Fisher's Exact Chi-Square test, Continuity (Yates) Correction and Fisher Freeman Halton Exact test were used to compare qualitative data. Significance was evaluated at the  $p < 0.05$  level.

## 3. RESULTS

The study included 200 participants (% 50 men and % 50 women) ranging in age from 25 to 75 years old (mean age  $53.03 \pm 12.57$  years). In the research, 30 cases (15%) were between the ages of 25 and 40, 116 cases (58%) were between the ages of 41 and 60, and 54 cases (27%) were between the ages of 61 and 75. The distribution of information on the systemic conditions of all patients is shown in Table 1.

The number of teeth in the instances varied from 0 to 32, with the mean number of teeth being  $19.25 \pm 8.40$  and the median number of teeth being 21. Caries is present in 51 instances (25.5%). The number of cavities ranges from 1 to 7, with an average of  $1.47 \pm 0.9$ , and the median number of caries is 1. There are 122 persons who have received restoration (61%). The number of restored teeth varied from 1 to 16, with an average of  $3.63 \pm 2.98$ , and a median of 3. Endodontic treatment was provided to 110 individuals (55%). The number of endodontically treated teeth varied from 1 to 8, with an average of  $2.38 \pm 1.75$  and a median of 2. In 114 (57 %) of the cases, a prosthesis is present. The number of teeth in the prosthesis ranges from 1 to 28, with an average of  $8.36 \pm 5.61$  and a median of 7 teeth (Table 2).

Women's allergy prevalence (17%) was statistically substantially greater than men's (6%) ( $p < 0.05$ ). The prevalence of thyroid-parathyroid disease in women (27%) was statistically greater than in males (9%) ( $p < 0.05$ ).

There is no statistically significant difference between men and women in terms of kidney diseases, diabetes, GIS diseases, cardiovascular system diseases, smoking-alcohol use, neurological diseases, cancer, psychiatric diseases, rheumatic diseases, liver diseases, and respiratory system diseases ( $p > 0.05$ ) (Table 3).

Diabetes mellitus (DM) incidence rates varied statistically significantly between age groups ( $p < 0.05$ ). The rate of DM (0%) was found to be considerably lower in the 25-40 age group than in the 41-60 age group (27.6 %) and 61-75 age group (33.3 %) ( $p < 0.05$ ). There was no statistically significant difference between the ages of 41-60 and 61-75 ( $p > 0.05$ ).

The incidence of cardiovascular system diseases (CVS) differs statistically significantly by age group ( $p < 0.05$ ). CVS rates were substantially lower in the 25-40 age group (23.3 %) than in the 41-60 age group (53.4 %) and 61-75 age group (79.6 %) ( $p < 0.05$ ). The 41-60 age group (53.4%) had a considerably lower rate than the 61-75 age group (79.6 %) ( $p < 0.05$ ).

**Table 1.** Distribution of information on the systemic conditions of all patients

	n	%
<b>HEREDITARY FAMILIAL DISEASES</b>	<b>4</b>	<b>2</b>
Familial Mediterranean Fever	4	2
<b>ALLERGIES</b>	<b>23</b>	<b>11.5</b>
Dental Materials Allergy	3	1.5
Medicine Allergy	12	6
Other Allergies	10	5
<b>RENAL DISEASES</b>	<b>3</b>	<b>1.5</b>
Chronic Kidney Disease	3	1.5
<b>DIABETES MELLITUS</b>	<b>50</b>	<b>25</b>
Diabetes Mellitus Type 1	0	0
Diabetes Mellitus Type 2	50	25
<b>GIS DISEASES</b>	<b>16</b>	<b>8</b>
Reflux	5	2.5
Gastritis	6	3
Crohn Disease <sup>1</sup>	2	1
Ulcer	3	1.5
<b>CARDIOVASCULAR DISEASES</b>	<b>112</b>	<b>56</b>
Hypertension	87	43.5
Hypotension	2	1
Heart Attack	1	0.5
Bypass	6	3
Coronary Ater Disease	8	4
Coronary Infarct	1	0.5
Coronary Insufficiency	3	1.5
Stent Implantation	11	5.5
Angina Pectoris	3	1.5
Coronary Angiography	15	7.5
Arrhythmias	8	4
Hyperlipidemia	15	7.5
<b>TOBACCO – ALCOHOL</b>	<b>26</b>	<b>13</b>
<b>SYNDROMES</b>	<b>1</b>	<b>0.5</b>
Down Syndrome	1	0.5
<b>HEMATOLOGIC DISEASES</b>	<b>3</b>	<b>1.5</b>
Anemia	3	1.5
<b>BLEEDING TENDENCY</b>	<b>4</b>	<b>2</b>
<b>CANCER</b>	<b>12</b>	<b>6</b>
<b>RADIOTHERAPY</b>	<b>4</b>	<b>2</b>
<b>CHEMOTHERAPY</b>	<b>6</b>	<b>3</b>
<b>ORGAN TRANSPLANTATION</b>	<b>1</b>	<b>0.5</b>
<b>PSYCHIATRIC DISEASES</b>	<b>21</b>	<b>10.5</b>
<b>AUTOIMMUNE DISEASES</b>	<b>2</b>	<b>1</b>
Behçet Disease	2	1
<b>LIVER DISEASES</b>	<b>6</b>	<b>3</b>
Hepatitis	5	2.5
Cirrhosis	1	0.5
<b>RESPIRATORY SYSTEM DISEASES</b>	<b>24</b>	<b>12</b>
Asthma	18	9
Bronchitis	1	0.5
Chronic Obstructive Pulmonary Disease	4	2
Tbc	1	0.5
<b>THYROID-PARATHYROID DISEASES</b>	<b>36</b>	<b>18</b>
Goiter	4	2
Hashimoto's Thyroid	1	0.5
Hyperparathyroidism	2	1
Hyperthyroidism	6	3
Hypothyroidism	20	10
Thyroid Surgery	5	2.5

**Table 2.** Distribution of dental findings of all patients

		n (%)
Dental Caries	Present	51 (25.5)
	Absent	149 (74.5)
Restoration	Present	122 (61.0)
	Absent	78 (39.0)
Endodontic Treatment	Present	110 (55.0)
	Absent	90 (45.0)
Prosthesis	Present	114 (57.0)
	Absent	86 (43.0)

**Table 3.** Evaluation of diseases by gender

	Men (n=100)	Women (n=100)	p
	n (%)	n (%)	
Allergies	6 (6)	17 (17)	0.027 <sup>1*</sup>
Renal Disease	2 (2)	1 (1)	1.000 <sup>2</sup>
Diabetes Mellitus	25 (25)	25 (25)	1.000 <sup>3</sup>
GIS Diseases	6 (6)	10 (10)	0.434 <sup>1</sup>
Cardiovascular Diseases	57 (57)	55 (55)	0.776 <sup>3</sup>
Tobacco-Drugs	17 (17)	9 (9)	0.141 <sup>1</sup>
Neurological Diseases	7 (7)	3 (3)	0.330 <sup>1</sup>
Cancer	7 (7)	5 (5)	0.766 <sup>1</sup>
Psychiatric Diseases	9 (9)	12 (12)	0.645 <sup>1</sup>
Rheumatic Diseases	4 (4)	7 (7)	0.535 <sup>1</sup>
Liver Diseases	3 (3)	3 (3)	1.000 <sup>2</sup>
Respiratory System Diseases	11 (11)	13 (13)	0.828 <sup>1</sup>
Thyroid-Parathyroid Diseases	9 (9)	27 (27)	0.002 <sup>1*</sup>

<sup>1</sup>Continuity (yates) correction    <sup>2</sup>Fisher's Exact Test    <sup>3</sup> Chi-square test  
\*p<0.05

**Table 4.** Evaluation of systemic diseases by age groups

	25-40 years	41-60 years	61-75 years	p
	n (%)	n (%)	n (%)	
Allergies	5 (16.7)	12 (10.3)	6 (11.1)	0.623 <sup>1</sup>
Renal Disease	0 (0)	2 (1.7)	1 (1.9)	1.000 <sup>2</sup>
Diabetes Mellitus	0 (0)	32 (27.6)	18 (33.3)	0.002 <sup>1*</sup>
GIS Diseases	0 (0)	13 (11.2)	3 (5.6)	0.110 <sup>2</sup>
Cardiovascular Diseases	7 (23.3)	62 (53.4)	43 (79.6)	0.000 <sup>1*</sup>
Tobacco-Drugs	3 (10)	18 (15.5)	5 (9.3)	0.459 <sup>1</sup>
Neurological Diseases	3 (10)	3 (2.6)	4 (7.4)	0.124 <sup>2</sup>
Cancer	0 (0)	4 (3.4)	8 (14.8)	0.010 <sup>2*</sup>
Psychiatric Diseases	3 (10)	15 (12.9)	3 (5.6)	0.343 <sup>1</sup>
Rheumatic Diseases	2 (6.7)	5 (4.3)	4 (7.4)	0.610 <sup>2</sup>
Liver Diseases	0 (0)	5 (4.3)	1 (1.9)	0.603 <sup>2</sup>
Respiratory System Diseases	4 (13.3)	13 (11.2)	7 (13)	0.920 <sup>1</sup>
Thyroid-Parathyroid Diseases	8 (26.7)	24 (20.7)	4 (7.4)	0.045 <sup>1*</sup>

<sup>1</sup> Chi-square test    <sup>2</sup>Fisher's Freeman Halton Exact Test    \*p<0.05

There is a statistically significant difference in cancer incidence rates between age groups ( $p < 0.05$ ). Cancer rate (14.8%) in the 61-75 age group was found to be significantly higher than the 25-40 age (0%) and 41-60 age (3.4%) groups ( $p < 0.05$ ).

In terms of the incidence of thyroid parathyroid disease, there is a statistically significant difference between age groups ( $p < 0.05$ ). The thyroid ratio was found to be considerably lower in the 61-75 age group (7.4%) than in the 25-40 age group (26.7%) and the 41-60 age group (20.7%) ( $p < 0.05$ ).

There was no statistically significant difference between age groups in terms of the incidence of allergies, kidney diseases, GIS diseases, smoking-alcohol use, neurological diseases, psychiatric diseases, rheumatic diseases, liver diseases and respiratory system diseases ( $p > 0.05$ ) (Table 4).

In terms of caries incidence, there is a statistically significant difference between age groups ( $p < 0.05$ ). Caries rates were significantly higher in the 25-40 age group (43.3%) than in the 41-60 age group (20.7%) ( $p < 0.05$ ). Other age groups showed no significant differences ( $p > 0.05$ ).

In terms of the incidence of restorations, there is a statistically significant difference between age groups ( $p < 0.05$ ). The restoration rate in the 25-40 age group (93.3%) was substantially greater than the restoration rates in the 41-60 age group (59.5%) and the 61-75 age group (46.3%) ( $p < 0.05$ ). There was no statistically significant difference between the age groups of 41-60 and 61-75 ( $p > 0.05$ ). There is a statistically significant difference in the incidence of prosthesis between age groups ( $p < 0.05$ ).

The incidence of prosthesis usage was substantially lower in the 25-40 age group (30%) than in the 41-60 age group (60.3%) and the 61-75 age group (64.8%) ( $p < 0.05$ ).

Between age groups, there is a statistically significant difference in the number of teeth ( $p < 0.05$ ). The number of teeth in the 25-40 age group was substantially larger than the 41-60 age group and the 61-75 age group as a result of pairwise comparisons done to ascertain which age group the significance originated from ( $p < 0.05$ ). The 41-60 age group had a significantly higher number of teeth than the 61-75 age group ( $p < 0.05$ ) (Table 5).

**Table 5.** Evaluation of dental findings by age and gender

	Gender			Age			
	Male	Female	p	25-40	41-60	61-75	p
	N (%)	N (%)		N (%)	N (%)	N (%)	
Dental Caries <small>n (%)</small>	29 (29)	22 (22)	0.256 <sup>1</sup>	13 (43.3)	24 (20.7)	14 (25.9)	0.040 <sup>1*</sup>
Restoration <small>n (%)</small>	59 (59)	63 (63)	0.562 <sup>1</sup>	28 (93.3)	69 (59.5)	25 (46.3)	0.000 <sup>1*</sup>
Endodontic Treatment <small>n (%)</small>	51 (51)	59 (59)	0.256 <sup>1</sup>	20 (66.7)	63 (54.3)	27 (50)	0.330 <sup>1</sup>
Prosthesis <small>n (%)</small>	54 (54)	60 (60)	0.391 <sup>1</sup>	9 (30)	70 (60.3)	35 (64.8)	0.005 <sup>1*</sup>
Tooth number <small>Mean±SD (median)</small>	19.5±8.5 (21)	19.0±8.4 (21)	0.755 <sup>2</sup>	26.4±3.6 (27)	19.8±7.6 (21)	14.0±8.6 (17)	0.000 <sup>3*</sup>

<sup>1</sup> Chi-square test <sup>2</sup> Mann Whitney U Test <sup>3</sup> Kruskal Wallis Test SD: standard deviation \* $p < 0.05$

**Table 6.** Evaluation of dental findings according to the presence of diabetes mellitus and cardiovascular diseases

	Diabetes Mellitus Cardiovascular Diseases					
	None (%)	Present (%)	p	None (%)	Present (%)	p
Dental Caries <small>n (%)</small>	39 (26)	12 (24)	0.925 <sup>1</sup>	48 (24.4)	29 (25.9)	0.886 <sup>2</sup>
Restoration <small>n (%)</small>	98 (65.3)	24 (48)	0.030 <sup>2*</sup>	121 (61.4)	62 (55.4)	0.065 <sup>2</sup>
Endodontic treatment <small>n (%)</small>	86 (57.3)	24 (48)	0.251 <sup>2</sup>	110 (55.8)	58 (51.8)	0.303 <sup>2</sup>
Prosthesis <small>n (%)</small>	91 (60.7)	23 (46)	0.070 <sup>1</sup>	112 (56.9)	72 (64.3)	0.019 <sup>2*</sup>
Tooth Number <small>Mean±SD (median)</small>	19.9±8.2 (22)	17.1±8.8 (18)	0.036 <sup>3*</sup>	19.2±8.4 (21)	17.9±8.4 (19)	0.006 <sup>3*</sup>

<sup>1</sup> Continuity (yates) correction <sup>2</sup> Chi-square test <sup>3</sup> Mann Whitney U Test SD: standard deviation \* $p < 0.05$

The incidence of restoration in patients with diabetes (48%) was statistically significantly lower than in patients without diabetes (65.3%) ( $p < 0.05$ ). There was no statistically significant difference between the incidence of caries, endodontic treatment and prosthesis according to the presence of diabetes mellitus ( $p > 0.05$ ). The number of teeth of patients with diabetes was statistically significantly lower than those without diabetes ( $p < 0.05$ ) (Table 6). The prevalence of prosthesis was statistically significantly greater in patients with CVS disease (64.3%) than in patients without CVS disease (47.7%) ( $p < 0.05$ ). There was no statistically significant difference in the incidence of caries, restorations, or endodontic therapy when CVS disease was present ( $p > 0.05$ ). Patients with CVS disorders had significantly fewer teeth than those without ( $p < 0.05$ ) (Table 6). According to the existence of cancer, there was no statistically significant difference in the incidence of caries, restoration, endodontic treatment, and prosthesis ( $p > 0.05$ ). The number of teeth in cancer patients was statistically significantly less than in cancer-free cases ( $p < 0.05$ ).

#### 4. DISCUSSION

Systemic diseases are significant in dentistry practice because they require taking care for overall health and preventing issues before they emerge. To reduce the problems and risks that may develop during dental treatment, the incidence of systemic diseases, as well as systemic and oral findings connected to these diseases, should be recognized and precautions taken accordingly (3,5-7).

First and foremost, the anamnesis of the patients in our research was assessed, and their present systemic diseases were noted. According to the data, the most prevalent systemic illness group in our study was cardiovascular diseases, with a rate of 56%, while the rate of hypertension in this disease group was 43.5 %, and it was the most common systemic disease. In some studies, hypertension was examined within the context of cardiovascular illnesses, but in others, cardiovascular diseases and hypertension were evaluated as different disease groups, which influenced the incidence values (7-8). Despite conflicting findings in the literature, hypertension is the most frequent systemic disease. The most frequent systemic disease was found to be hypertension in the research of Maryam et al. (14), Şener et al. (8), Al-Bayaty et al. (3), and Hatipoğlu et al. (15). Diabetes mellitus was the second most prevalent systemic disease group in our analysis, while it was a less common condition in Kömerik et al. study's (16). Similar to our findings, Canger et al. (1) and Şener et al. (8) discovered it to be the second most prevalent systemic illness category. In diabetic patients, the dentist should evaluate local endothelial dysfunction and the risk of ischemia at the microvascular level, as well as the existence of atherosclerosis at the macrovascular level. According to Onat et al. (17)'s research of 3401 participants, diabetes mellitus affects roughly 11% of people aged 35 and older in Turkey, and it was more common in women. Diabetes mellitus was found in both men and women in our study,

despite the fact that it was more frequent in the middle-aged group.

In our study, 11.5 % had allergies to any chemical, with women having the highest proportion. However, 5% of allergy sufferers did not specify which allergens they are sensitive to. Despite the fact that the amount of allergy patients varies among research, most publications have concentrated on medication allergies. While the rate of medication allergy was 7% in Radfar et al. (2)'s trial, it was only 6% in ours.

In our research, gastrointestinal system diseases were discovered in 8% of the participants. These are conditions that, depending on circumstances such as food choices and stress, can induce subjective problems at various degrees and necessitate medical intervention. The physician must be informed about the pharmacological effects of the active drug, especially when prescribing, in the presence of various pathologies, which do not generally require emergency intervention during dental treatment but might create difficulties.

In panoramic radiography, tooth groups can be seen as lower-upper, right-left, and anterior-posterior at the same time. According to Ahlqvist et al. (18), the use of panoramic radiography in dental epidemiological studies is reliable. Furthermore, using new panoramic systems, high-quality images may be acquired, and the evaluation of the tooth and periapical status in panoramic radiography is accurate. Panoramic radiographs were used for this research because of their consistency and capacity to analyze all regions of the mouth at once.

Oral and dental health is a significant aspect that has a direct impact on an individual's quality of life and comfort, and it should not be viewed in isolation from overall health. The necessity for dental care and the impact of oral health on overall health were shown to have significant correlations. Periodontal therapy is one of the most often required dental treatments, according to the findings of studies on the issue (19,20). We were unable to fully examine the periodontal tissues of the patients because our study was retrospective, thus we have no findings linked to the patients' periodontal problems. The most prevalent causes of tooth loss are dental caries and periodontal diseases. We believe that tooth loss caused by periodontal disease will necessitate prosthetic therapy, which will, in turn, have an unfavorable effect on the patient's overall health, although indirectly.

Caries become less common as you become older. The aging of the enamel, its maturation, and the removal of retention sites as a result of wear on the teeth, as well as the incapacity of bacterial plaques to form readily, are all factors that contribute to the inverse relationship between age and caries. The group of 61-75 years old had the lowest rate of endodontically treated teeth in our study. In light of this finding, it's worth noting that the number of teeth lost owing to caries and periodontal disorders in patients aged 60 and older was greater in past periods than in patients in the younger age groups.

It is self-evident that the patient's current tooth deficit will have a negative impact on his or her health. Since the patient is unable to properly perform chewing activities owing to a loss of teeth, the oral area, where digestion begins, will fail to accomplish this function, and the patient's overall health will suffer in the long term. We believe that tooth loss will necessitate the use of prosthetics.

The majority of diabetics experience dry mouth. The most significant impact of dry mouth is that it promotes the production of caries, burning in the mouth, loss of taste perception, and loss of tongue papillae. Despite the fact that several research have been conducted on the link between dental caries and diabetes, the topic remains contentious. Higher caries incidence in diabetic individuals; increased glucose in the gingival groove fluid and saliva, as well as a reduced salivary flow rate, have been linked to poor metabolic control in diabetic patients (21). There was no statistically significant difference in the number of decaying teeth in diabetic individuals, according to the findings of our study. Our results are likewise consistent with the findings of this investigation and support them. Marotta et al. (22), on the other hand, found no statistically significant difference between the average number of teeth in the mouths of diabetes patients and the control group.

Individuals with CVS illness have a higher than usual incidence of prosthesis, owing to the requirement for prosthesis due to the lesser number of teeth. In a research by Nawaz et al. (13), tooth loss owing to poor oral hygiene was detected in persons with CVS illness, and they concluded that compromised oral hygiene might worsen CVS further. Vanderlei et al. (23), on the other hand, associated this disease with tooth loss, in which high blood pressure caused by hypertension causes alveolar bone loss.

One of the limitations of the study is its small sample size. The findings and conclusions of the present study are exploratory, and further studies with larger sample sizes are needed to elucidate this topic. The purpose of this study was to determine the frequency of systemic diseases that dentists may encounter in patients, as well as the dental findings associated with these systemic diseases. It revealed the importance of the clinician recognizing systemic diseases, determining the oral and dental findings associated with these diseases, and identifying possible risk factors.

## 5. CONCLUSION

While systemic problems can express themselves in a number of ways in the mouth, the patient's overall health may suffer in the long term as a result of poor oral and dental health. Patients with diabetes have fewer teeth than those without diabetes, and the incidence of caries in patients with renal disease is higher than in patients without renal disease, according to our study. In order to avoid potential complications, it is critical that the systemic diseases of patients who visit the dentist have been under control. In the dentist clinic, blood pressure, blood sugar, and pulse

levels may be measured quickly and easily. Abnormalities in these readings might also be a clinical indication of systemic disorders. Patients who do not have regular medical check-ups or who do not take their prescriptions on a regular basis should have their dental procedures postponed, and the necessary medical doctor should be consulted before proceeding.

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Analysis of data for the study: LBM, FNP, GK

Interpretation of data for the study: LBM, FNP

Drafting the manuscript: GK, LBM; FNP

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