



## Evaluation of the Prevalence of Systemic Diseases in Patients Referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran During 2016-17

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### ARTICLE INFO

Article Type  
Original Article

Article History  
Received: Nov 2017  
Accepted: Dec 2017  
ePublished: Feb 2018

Keywords:  
Prevalence,  
Disease,  
Epidemiology,  
Drug Therapy

### ABSTRACT

**Background and Aim:** Given the relatively high prevalence of systemic diseases, the importance of these diseases in patient management, treatment planning, and treatment outcomes, the controversy in the reported incidence rates, and changes in the frequency of diseases over time, we aimed to determine the prevalence of systemic diseases among the patients referring to the Dental Branch of Islamic Azad University of Tehran in 2016-17.

**Materials and Methods:** The present research was carried out by studying the existing data. All records of patients who referred to the Oral and Maxillofacial Medicine Department during 2016-17 were extracted from the archives and evaluated for systemic diseases. The prevalence of systemic diseases in the subjects was estimated with 95% confidence interval. The role of related factors (age, gender, etc.) was statistically determined by Chi-square test.

**Results:** Out of 6270 records, 2595 patients (41.4%) had systemic diseases and conditions; hypertensive diseases (8.42%), thyroid diseases (7.05%), and digestive diseases (6.5%) had the highest prevalence rates. 50.7% of the patients were women and 49.3% were men; the prevalence of systemic diseases was 41.5% below 45 years of age and 48.5% over 45 years of age. Medical consultation was requested for 702 patients, and drug intake was observed in 2029 patients. Request for medical advice and drug intake were more frequent in women and at over 45 years of age.

**Conclusion:** The results showed that the prevalence of systemic diseases (41.4%) is high. Hypertension showed the highest prevalence. The incidence of systemic diseases increases with age and is higher in women.

DOI: 10.29252/jrdms.3.3.9

Please cite this paper as: Taghibakhsh M, Moezzi ghadim N, Rayat zadeh M. Evaluation of the Prevalence of Systemic Diseases in Patients Referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran During 2016-17. J Res Dentomaxillofac Sci. 2018; 3(3):9-18.

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## Introduction:

Systemic conditions and diseases have general effects throughout the body and can interfere with dental treatments in addition to being able to produce oral manifestations.<sup>(1,2)</sup> There is an extensive association between systemic diseases and oral diseases, and dental treatments are affected by systemic diseases and drug consumption, and they can also affect the systemic conditions of patients.<sup>(3-6)</sup> Cardiovascular diseases, respiratory diseases, diabetes, and adverse outcomes of pregnancy are associated with oral diseases including periodontitis.<sup>(2,7,8)</sup> Bacterial endocarditis is one of the most serious problems in dentistry.<sup>(9)</sup> The incidence of systemic diseases in studies conducted in India, Saudi Arabia, Tehran, and Mashhad has been reported to be 10.3% to 52.8%. In these studies, diabetes, hypertension, and digestive disorders showed the highest prevalence.<sup>(4,5,10,11)</sup> Significant differences have been observed in the prevalence of systemic diseases by gender, age, race, geographical location, ecological conditions, and the genetic structure of the population.<sup>(3,12)</sup>

Advancement in medical and dental techniques, greater access to medical facilities, and better socioeconomic conditions have led to an increase in elderly population with complicated medical conditions such that the percentage of reported systemic diseases consistently increases with an increase in age.<sup>(4,5,7,11)</sup> It has been well proven that taking a complete and comprehensive clinical history by the dentist is necessary before dental treatments.<sup>(13)</sup> Thus, changing the treatment process of oral-dental illnesses is necessary to provide a better and safer treatment and to prevent potential interference with the stability of the patient's systemic health and drug consumption.<sup>(1,3,12,14)</sup>

Considering the relatively high prevalence of systemic diseases, the importance of patient management, treatment planning, and treatment outcomes as well as the consequences of lack of knowledge in this regard, the lack of similarity of the reported prevalence in various studies, changes in the frequency of diseases over time, and also the lack of investigation in this regard

during the last 10 years at the Dental Branch of Islamic Azad University of Tehran, we decided to determine the prevalence of systemic diseases among the patients referring to this university during 2016-17 in order to have accurate, new, and valid statistics of various systemic diseases.

## Materials and Methods

The research was performed through reviewing the existing data (census sampling method) and through studying all the complete and signed files of the patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 in the archives (containing 6292 records). The files containing the patient's personal data, including age, sex, marital status, and type of systemic disease were examined, and incomplete records were excluded.

Systemic diseases evaluated in this study include coronary artery disease, hypertension, bacterial endocarditis, congenital cardiovascular disease, rheumatic fever, cardiac rheumatism, hematopoietic and hemorrhagic diseases, diabetes, asthma, allergy, epilepsy, psychological disorders, kidney failure, gastrointestinal disease, infectious disease, hepatitis, thyroid disease, a history of blood transfusion, addiction, chemotherapy, radiation therapy, and pregnancy.<sup>(4,5,10,11,14)</sup> Obviously, chemotherapy, radiotherapy, addiction, pregnancy, and history of blood transfusion are not systemic diseases, but due to their consequent complications and problems, they were studied along with systemic diseases.

Considering that patients over 12 years of age are admitted to this department, systemic diseases were classified in age groups of 12-25, 25-45, 45-65, and over 65 years old.

The frequency of illnesses was determined in two groups of women and men, distinguished by marital status. The frequency of people taking medications and those who were given medical advice was also determined.

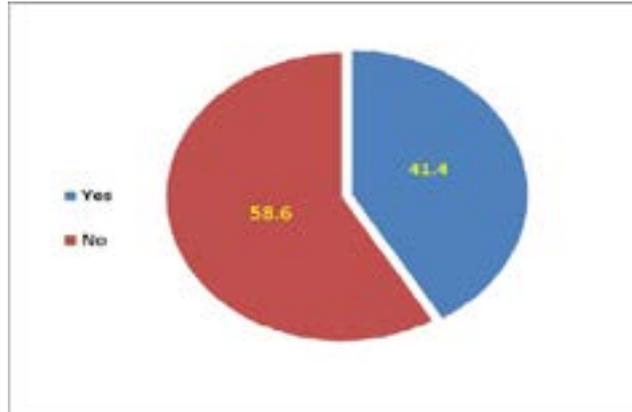
Statistical analysis:

The role of related factors such as age, sex, marital status, type of systemic disease, drug consumption, and medical consultation was analyzed

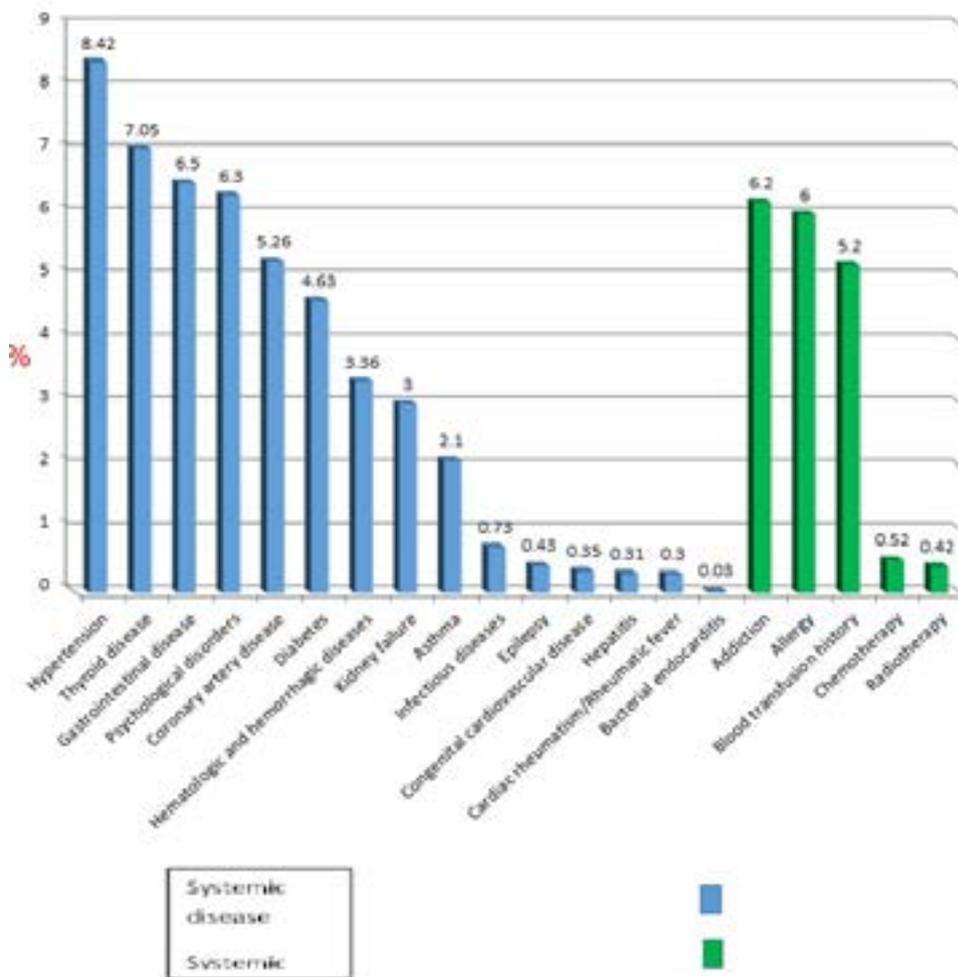
by Chi-square test.

**Results:**

The findings of the present study are shown in Figures 1 and 2 and in Tables 1 to 5.



**Figure 1. Prevalence (%) of systemic diseases and conditions in patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran during 2016-17.**



**Figure 2. Prevalence (%) of systemic diseases and conditions in patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran during 2016-17 by type of systemic disease.**

**Table 1: Distribution of patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran during 2016-17 by sex, age, and marital status.**

Systemic disease		No	Yes	Test result
		58.6%	41.4%	
Variables				
Gender:	Male	50.7%	44.2%	P<0.0001
	Female	49.3%	55.8%	
Age:	Under 45 years old	95.2%	41.5%	P<0.0001
	Over 45 years old	4.8%	48.5%	
Marital status:	Single	31.7%	25%	P<0.01
	Married	68.3%	75%	

**Table 2: Prevalence of systemic diseases and conditions in patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 by type of systemic disease.**

Systemic disease		Frequency	Number	Percentage
Hypertension			528	8.42
Thyroid disease			442	7.05
Gastrointestinal disease			411	6.5
Psychological disorders			396	6.3
Coronary artery disease			330	5.26
Diabetes			290	4.63
Hematologic and hemorrhagic diseases			211	3.36
Kidney failure			185	3
Asthma			132	2.1
Infectious diseases			46	0.73
Epilepsy			27	0.43
Congenital cardiovascular disease			22	0.35
Hepatitis			20	0.31
Cardiac rheumatism/Rheumatic fever			19	0.3
Bacterial endocarditis			2	0.03
Addiction			389	6.2
Allergy			382	6
Blood transfusion history			330	5.2
Chemotherapy			33	0.52
Radiotherapy			26	0.42
Pregnancy			23	0.4

**Table 3: Prevalence of systemic diseases and conditions in patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 by gender and type of systemic disease**

Systemic disease	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Coronary artery disease	139	42.1	191	57.9
Bacterial endocarditis	2	0	2	100
Hematologic and hemorrhagic diseases	53	25.1	158	74.9
Diabetes	118	40.7	172	59.3
Thyroid disease	79	17.8	363	363
Hypertension	205	38.8	323	61.2
Asthma	46	34.8	86	65.2
Cardiac rheumatism/Rheumatic fever	12	63	7	37
Epilepsy	13	48	14	52
Psychological disorders	172	43.4	224	56.6
Kidney failure	79	42.7	106	57.3
Congenital cardiovascular disease	5	19.2	17	80.8
Infectious disease	15	32.6	31	67.4
Hepatitis	7	35	13	65
Gastrointestinal disease	179	43.5	232	56.5
Chemotherapy	20	60.6	13	39.4
Allergy	118	30.9	264	69.1
Addiction	343	88	46	12
Radiotherapy	11	42.3	15	57.7
Pregnancy	---	---	23	100
Blood transfusion history	224	67.8	106	32.2

**Table 4: Prevalence of systemic diseases and conditions in patients referring to the Oral and Maxillo-facial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 by the age groups**

Systemic disease	12-25 years		25-45 years		45-65 years		Over 65 years	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Coronary artery disease	13	3.9	86	26.1	139	42.2	92	27.8
Bacterial endocarditis	0	0	2	100	0	0	0	0
Hematologic and hemorrhagic diseases	42	19.9	111	52.6	53	25.1	5	2.4
Diabetes	13	4.5	53	18.3	171	58.9	53	18.3
Thyroid disease	39	8.8	218	49.3	152	34.4	33	7.5
Hypertension	5	0.9	101	19.1	303	57.4	119	22.6
Asthma	8	6.1	33	25	72	54.5	19	14.4
Cardiac rheumatism/Rheumatic fever	0	0	9	47.4	8	42.1	2	10.5
Epilepsy	9	33.3	11	40.8	6	22.2	1	3.7
Psychological disorders	39	9.8	218	55.1	86	21.7	53	13.4
Kidney failure	13	7	112	60.5	54	29.2	6	3.8
Congenital cardiovascular disease	5	22.8	12	54.5	2	9	3	13.7
Infectious disease	0	0	33	71.7	13	28.3	0	0
Hepatitis	0	0	13	65	5	35	2	10
Gastrointestinal disease	33	8	207	50.4	132	32.1	39	9.5
Chemotherapy	3	9.1	11	33.3	17	51.5	2	6.1
Allergy	52	13.6	238	62.3	66	17.3	26	6.8
Addiction	39	10	185	47.5	125	32.2	40	10.3
Radiotherapy	0	0	6	23.1	19	73.1	1	3.8
Pregnancy	5	21.8	11	47.8	7	30.4	0	0
Blood transfusion history	40	12.1	145	43.9	132	40	13	4

**Table 5: Prevalence of systemic diseases and conditions in patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 by marital status.**

Systemic disease	Single		Married	
	Frequency	Percentage	Frequency	Percentage
Coronary artery disease	53	16	277	84
Bacterial endocarditis	0	0	2	100
Hematologic and hemorrhagic diseases	92	43.6	119	56.4
Diabetes	33	11.4	257	88.6
Thyroid disease	66	15	376	85
Hypertension	46	8.7	482	91.3
Asthma	5	3.8	127	96.2
Cardiac rheumatism/Rheumatic fever	8	37	12	63
Epilepsy	7	26	20	74
Psychological disorders	92	23.2	304	76.8
Kidney failure	40	21.6	145	78.4
Congenital cardiovascular disease	4	18	18	82
Infectious disease	5	10.9	41	89.1
Hepatitis	9	45	11	55
Gastrointestinal disease	114	27.7	297	72.3
Chemotherapy	11	33.3	22	66.7
Allergy	112	29.3	270	70.7
Addiction	112	28.8	277	71.2
Radiotherapy	5	19.2	21	80.8
Pregnancy	0	0	23	100
Blood transfusion history	99	30	231	70

In this research, the demand for medical counseling was higher in women ( $P < 0.001$ ) and in the age range of over 45 years old ( $P < 0.001$ ).

In the present study, drug intake was significantly higher in women ( $P < 0.05$ ) and in the age range of over 45 years old ( $P < 0.0001$ ).

Analgesics and narcotics (59.3%), cardiovascular drugs (36.06%), and gastrointestinal drugs (25.9%) showed the highest rates of intake.

## Discussion:

The findings of this study showed that 41.4% of the patients referring to the Oral and Maxillofacial Medicine Department of the Dental Branch of Islamic Azad University of Tehran in 2016-17 had systemic conditions and diseases, which is very close to the findings of research by Al-Bayaty et al in West Indies (42%),<sup>(12)</sup> Mesgarzadeh et al in Tehran (41%),<sup>(10)</sup> Parirokh et al in Kerman, Mashhad, and Tehran (33.8%),<sup>(14)</sup> and Ayazi and Esfahani in Qazvin (32.5%) in the range of 30-50%.<sup>(1)</sup>

In research by Khader et al in Northern Jordan (58.6%),<sup>(3)</sup> Amirchaghmaghi et al in Mashhad (73.3%),<sup>(11)</sup> and Kumar and Rajan in South India (52.8%),<sup>(5)</sup> the prevalence of systemic diseases has been reported to be higher than this range; However, in the three mentioned studies, the studied populations were small, and the studies were conducted over a short period of time; in studies by Kolte et al in Central India (4.05%)<sup>(15)</sup> and Mohammad et al in Southern Saudi Arabia (10.3%),<sup>(4)</sup> the prevalence of systemic diseases has been reported to be lower than this range.

In the present study, hypertension, thyroid diseases, and gastrointestinal diseases showed the highest prevalence, respectively. In the study by Al-Bayaty et al,<sup>(12)</sup> high blood pressure, diabetes, and asthma, in the study by Mesgarzadeh et al,<sup>(10)</sup> hypertension and diabetes, in the study by Parirokh et al,<sup>(14)</sup> cardiovascular diseases and high blood pressure, in the study by Amirchaghmaghi et al,<sup>(11)</sup> cardiovascular disease and high blood pressure, in the study by Kumar and Rajan,<sup>(5)</sup> diabetes and high blood pressure, in the study by Ayazi and Esfahani,<sup>(1)</sup> cardiovascular disease and gastrointestinal diseases, and in the study by Khader et al,<sup>(3)</sup> digestive diseases showed the highest prevalence, and the high prevalence of hypertension in the majority of the results is evi-

dent.

Gender had an impact on the frequency of systemic diseases, and women were more likely to have systemic disease than men, which matched the findings by Al-Bayaty et al,<sup>(12)</sup> Ayazi and Esfahani,<sup>(1)</sup> Parirokh et al,<sup>(14)</sup> and Mesgarzadeh et al.<sup>(10)</sup>

In the present study, other diseases and systemic conditions, except for cardiac rheumatism, chemotherapy, addiction, and a history of blood transfusion, were more common in women than in men such that hematologic and hemorrhagic diseases, thyroid diseases, and allergy were significantly higher in women than in men.

In the study by Ayazi and Esfahani, endocrine disorders and cardiovascular diseases were more frequent in women.<sup>(1)</sup> In the study by Amirchaghmaghi et al, thyroid diseases were more frequent in women.<sup>(11)</sup> In the study by Khader et al, anemia and bleeding tendency were more frequent in women.<sup>(3)</sup>

The prevalence of systemic diseases increased significantly with age, which was consistent with the findings by Kumar and Rajan<sup>(5)</sup> and Al-Bayaty et al.<sup>(12)</sup> But in the research by Ayazi and Esfahani,<sup>(1)</sup> the age group of 20-29-year-old showed the highest prevalence of systemic diseases, whereas in the present study, the age group of 25-45 and 45-65 years showed the highest prevalence of systemic diseases, which corresponded to the findings by Kumar and Rajan<sup>(5)</sup> and Al-Bayaty et al.<sup>(12)</sup>

In the current study, in the age range of 25-45 years old, allergies, digestive diseases, thyroid diseases, hematologic and hemorrhagic diseases, psychological disorders, congenital cardiovascular diseases, kidney failure, epilepsy, infectious diseases, and hepatitis, and in the age range of 45-65 years old, hypertension, cardiovascular disease, and diabetes were the most prevalent diseases; in the research by Khader et al, bleeding tendency and gastrointestinal disease at ages below 40 years, and hypertension and diabetes at ages over 40 years showed the highest prevalence.<sup>(3)</sup> In the research by Ayazi and Esfahani, allergies and digestive diseases at ages below 40 years, and cardiovascular diseases at ages over 40 years showed the highest prevalence.<sup>(1)</sup>

The present study showed that the prevalence rates of all systemic diseases, especially high

blood pressure, thyroid diseases, coronary artery disease, and diabetes, have increased over the past 10 years, while the frequency of pregnancy, which was considered as a systemic condition in the present study, has declined.

In this study, the effect of marital status on the prevalence of systemic diseases in the studied population was also examined, and the prevalence of systemic diseases in married people was higher than that of single individuals. One of the reasons for the higher prevalence of systemic diseases in married individuals is their higher age compared to single people. Moreover, the pressures of livelihood difficulties and other problems associated with marriage can also affect the incidence of systemic diseases in married people. In the present study, analgesics and narcotics, cardiovascular drugs, and gastrointestinal medicines showed the highest levels of consumption, which was consistent with the findings by Al-Bayaty et al (cardiovascular medicines),<sup>(12)</sup> and Amirchaghmaghi et al (analgesics and cardiovascular drugs).<sup>(11)</sup> But in the research by Ayazi and Esfahani, hormonal and thyroid drugs showed the highest rates of intake.<sup>(1)</sup>

The strengths of the present study include the high number of samples, the study of drug intake, and the absence of bias. Conducting research at a particular center which most of its clients have low financial feasibility is among the limitations of this research.

### Conclusion:

The results of the present study showed that the prevalence of systemic diseases (41.4%) is relatively high and it is of concern. The incidence of systemic diseases in women was higher than that in men; hypertension showed the highest prevalence. There was an increase in the incidence of systemic illness with an increase in age. The prevalence of systemic diseases in married people was higher than that of single individuals. Demand for medical advice and drug intake were more evident in women and at over 45 years of age.

### Acknowledgement:

This article is based on general dentistry thesis No.24685 registered at faculty of Dentistry, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.

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