

## ORIGINAL ARTICLE

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## The frequency of diseases and awareness of the patients about medicines at a faculty of dentistry

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### Abstract

The presence of systemic diseases and the medications used by patients presenting to the dentist have a significant impact on oral health and the dental treatment plan. The aim of this study was to determine the prevalence of systemic diseases in patients attending the Faculty of Dentistry and to investigate the awareness of the medications used by patients. A total of 635 patients with systemic diseases who applied to the Ordu University Faculty of Dentistry, Department of Dentomaxillofacial Radiology between November 2021 and May 2022 were included in the study. In addition to demographic information, a questionnaire consisting of 2 questions was applied to patients with at least one systemic disease. 63.1% of the patients were female and 36.9% were male. The most common systemic diseases were hypertension (41.2%), diabetes (22.4%), thyroid disorders (11.3%) and cardiac diseases (8.9%) respectively. According to the patients' answers, 45.1% knew their systemic disease and the medicine they were taking, 53.7% knew their systemic disease but did not know the medicine they were taking, and 1.2% did not know their systemic disease but knew the medicine they were taking. It is important for individuals who apply to the dentist to have knowledge and awareness about their systemic diseases and the medicine used, in order to prevent possible complications related to oral health and dental treatments.

**Keywords:** Awareness, medicine, oral health, systemic diseases

### Introduction

The relationship between oral health and systemic diseases warrants significant attention [1,2]. Systemic diseases can manifest various oral symptoms, and the concurrent deterioration of oral health and systemic conditions with advancing age may adversely affect a patient's overall health status [3]. Moreover, individuals with systemic diseases may exhibit reduced tolerance for dental interventions and diminished motivation for oral healthcare practices [4]. Among systemic conditions Cardiovascular Disorders and Diabetes Mellitus exhibit notably robust correlations with oral health [5].

Dentists must be aware of patients current systemic conditions, ongoing pharmacological treatments and relevant medical history in order to take appropriate precautions to reduce the risk of complications during and after dental treatment [6]. The probability of complications is increased by factors such as patients' tendency to underestimate the severity of their current illnesses, their non-adherence to prescribed medication, and their lack of awareness regarding the necessity of these medications. Furthermore, an absence of disease control contributes to an elevated risk of complications.

### CITATION

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Drug interactions play a significant role in dental practice. Antimicrobial agents commonly used in dentistry, such as clarithromycin, erythromycin, azole antifungals, and metronidazole, interact with various substrates including CYP3A4, CYP2C9, and CYP1A2, thereby affecting the cytochrome P450 system. This interaction can lead to potentially serious consequences with numerous medications, including antiepileptics, antihistamines, anticoagulants, anticonvulsants, antidepressants, antipsychotics, antiviral agents, lipid-lowering drugs, calcium channel blockers, immunosuppressants, opioids, and benzodiazepines. Furthermore, pharmacological interactions may occur between epinephrine, commonly used in dental local anesthetics, and medications such as tricyclic antidepressants and beta-blockers [7].

In addition to treatment complications and drug interactions, pharmacological agents can exert numerous adverse effects on oral health. The spectrum of adverse oral effects encompasses xerostomia, salivary gland hypofunction, dysgeusia, angioedema, alterations in mucosal pigmentation, gingival hyperplasia, oral ulcerations, erythema multiforme, and lichenoid drug reactions, among others [8].

The aim of this study is to determine the frequency of diseases in individuals with systemic disease who apply to the faculty of dentistry and to investigate their awareness of the medication they take.

Material and Methods

Permission for the study was obtained from Ordu University Clinical Research Ethics Committee on 03.06.2022 with Decision Number 2022/140. The principles of the Declaration of Helsinki conducted the research.

This study consists of 815 patients over the age of 15 with systemic disease who applied to Ordu University Dentomaxillofacial Radiology Department between November 2021 and May 2022. Patients were divided into 4 according to age groups. After the patients applied to the clinic, a questionnaire was applied to those who volunteered after the information. After examining the questionnaire forms, patients who said incorrect or incomplete medicine names were excluded from the study and a total of 635 patients were included in the study. The questions in the questionnaire were made by the dentists to the patients in the form of question and answer. Demographic information (gender and age) was recorded first. Then 2 questions were asked.

1. Do you know the name of your systemic disease?
2. Do you know the medicine you use for your disease?

In the study, in addition to the frequency of systemic diseases, the patients' knowledge and awareness about their systemic diseases and the medication they take were evaluated. The responses provided by the patients were classified into three categories based on their awareness.

1. The patient is aware of their systemic disease and the medication they take.
2. The patient is aware of their systemic disease but lacks knowledge about the medication they take.
3. The patient is unaware of their systemic disease but is cognizant of the medication they take.

IBM SPSS for data analysis in research 20.0 statistics package program was used. In the study, descriptive data are shown as n and % values in categorical data. Chi-square analysis (Pearson Chi-square) was used to compare categorical variables between groups. The statistical significance level in the analysis was accepted as ( $p<0.05$ ).

Results

The study was carried out with a total of 635 individuals, 63.1% female and 36.9% male. The ages of the individuals ranged from 15 to 82, with an average of 51,17. 9.3% of the individuals are in the 15-30 age group, 22.4% are in the 31-45 age group, 41.3% are in the 46-60 age group, 27.1% are in the 61 and over age group (Table 1). While the number of people in the 15-30 age group with two or more diseases was 10.2%, the number of people aged 61 years and older with two or more diseases was found to be 39%. As the age group progresses, the number of diseases seen in individuals also increases (Table 2). When systemic disease types are examined; the most common systemic disease was hypertension (41.2%), followed by diabetes (22.4%), thyroid disorders (11.3%) and cardiac diseases (8.9%) (Table 3).

Table 1. Demographics of participants

	n (%)
Total	635 (100)
Female	401 (63.1)
Male	234 (36.9)
Age group	
15-30	59 (9.3)
31-45	142 (22.4)
46-60	262 (41.3)
61≥	172 (27.1)

Table 2. Number of systemic diseases of individuals

	Those with a systemic disease n (%)	Those with two systemic diseases n (%)	Those with three or more systemic diseases n (%)
15-30	53 (89.8)	6 (10.2)	0 (0)
31-45	125 (88)	14 (9.9)	3 (2.1)
46-60	174 (66.4)	71 (27.1)	17 (6.5)
61≥	105 (61)	58 (33.7)	8 (5.3)
Total	457 (72)	149 (23.5)	28 (4.6)

Table 3. Prevalence rate of systemic diseases

	n (%)
Hypertension	347 (41.2)
Diabetes	189 (22.4)
Thyroid disorders	95 (11.3)
Cardiac disease	75 (8.9)
Asthma	46 (5.5)
Psychological disorders	44 (5.2)
Rheumatoid arthritis	16 (1.9)
Epilepsy	12 (1.4)
Osteoporosis	5 (0.6)
Reflux	3 (0.4)
Doesn't know systemic disease	10 (1.2)

Table 4. Distribution of awareness by gender

	Female n (%)	Male n (%)	P*
Knows systemic disease and medication	183 (45.6)	109 (46.6)	.267
Knows systemic disease, doesn't know medication	217 (54.1)	122 (52.1)	
Doesn't know systemic disease, knows medication	1 (0.2)	3 (0.6)	

\*According to the Chi-square Test, a value of P<0.05 will be considered significant

Given that individuals with multiple systemic diseases provided more than one response, a total of 842 responses were received. According to the answers, 45.1% knew their systemic disease and the medicine they used, 53.7% knew their systemic disease but did not know the medicine they used, 1.2% knew the medicine they used but did not know what they were using (Table 5). The highest rate of patients who did not have information about their medications was observed in patients with hypertension (49.3%), followed by patients with diabetes (26.5%), asthma and heart disease (6.2%) and psychiatric disorders (5.3%). Despite the high prevalence of thyroid disease (11.3%), the proportion of patients who were unaware of the medication they were taking was relatively low (3.3%). Considering the age groups, 66.1% of the 15-30 age group knew the systemic disease and its medicine, while 72.1% of the 61-year-old and older age group knew their systemic disease and did not know the medicine they used. As the age progressed, the rate of patients knowledge about their medication decreased (Figure 1). There was no statistically significant difference between the gender in the groups (p>0.05) (Table 4).

Table 5. Distribution of the total answers given by the patients about awareness

	n (%)
Knows systemic disease and medication	380 (45.1)
Knows systemic disease, doesn't know medication	452 (53.7)
Doesn't know systemic disease, knows medication	10 (1.2)

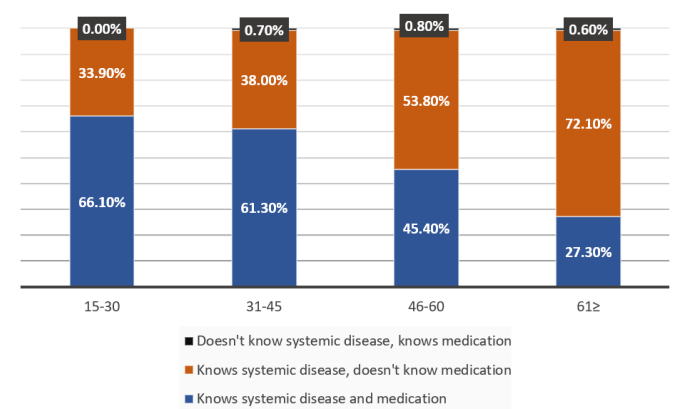


Figure 1. Awareness by age groups

Discussion

Systemic diseases constitute a group of diseases that are important in terms of dental treatment applications. In order to minimize or prevent complications that may occur during dental treatments, it is necessary to know in advance the systemic diseases encountered, the age range, and the possible causes [9]. The dentist's objective during treatments is to provide a safe and effective treatment without any complications [10]. For this, individuals need to have information about their systemic diseases and the medicine they use and to inform the dentist correctly. Adequate patient knowledge about their medicines supports safe treatments. Although new educational methods such as mobile apps and pictograms have been developed to inform patients about their medicines, verbal instructions or written information are still the most commonly used approaches in low- and middle-income countries. However, in areas where these resources are limited, patients' knowledge of their medicines is often low [11]. In their study, Chan et al. attributed the lack of information about medications, especially in older patients, to their limited vision and memory [12]. Huang et al. emphasised the need to address patients' psychosocial factors and patient-provider communication, taking into account their health literacy levels, in order for patients to be informed about their medicines [13]. In this study, patients aged 61 years and older had the least knowledge about their medications.

It has been reported in the literature that the incidence of systemic disease increases with age [14,15]. In the study of Hatipoğlu et al. [16], the most common disease was found between the ages of 21-40, and in parallel with this study, it was found between the ages of 20-40 in the study of Altan et al. [17]. In our study, the

most common systemic disease was seen between the ages of 46-60. The discrepancies observed in the studies may be attributed to variations in the demographic characteristics of the populations residing in the regions where the studies were conducted.

In our study, the most common systemic disease is hypertension, the second most common systemic disease was diabetes. Studies in the literature have similar results [10,18,19]. In studies conducted, the incidence of systemic disease was found to be higher in female than in male [17-19]. In this study, the prevalence of systemic disease was found to be higher in female, which is consistent with the literature. Unlike the literature, the study only included people with systemic diseases, and 63.1% of the participants were female.

It is estimated that more than 100 systemic diseases and nearly 500 medicine, especially in the elderly population, are associated with oral symptoms [20]. Various medicines can cause changes in the soft and hard tissues of the mouth, lead to harmful conditions or making people more susceptible to oral infections [21]. A review of the literature reveals that individuals taking antidepressant and antihypertensive medications exhibit elevated gingival and plaque index scores. The use of these medications has been demonstrated to have a deleterious impact on oral health, with the potential to alter the composition of plaque and affect pH levels within the oral environment [22,23]. It has been observed that certain medications may increase the likelihood of patients developing conditions such as erythema multiforme or lichenoid lesions. Furthermore, alterations in taste (dysgeusia) have been documented in association with certain medications, manifesting as a range of sensations from bitter to metallic. Some pharmaceutical agents have been observed to induce discolouration of oral tissues, which may present as conditions such as Kaposi's sarcoma, lead pigmentation or amalgam tattooing. The long-term use of corticosteroids, particularly methylprednisolone and prednisone, has been associated with an increased risk of osteoporosis. This condition typically affects long bones but can also manifest in the alveolar bone. Furthermore, a reduction in bone mineral density has been observed in outpatients taking enzyme-inducing antiepileptic drugs (phenytoin, phenobarbital, carbamazepine and primidone) in comparison to those taking non-enzyme-inducing drugs (valproic acid, lamotrigine, clonazepam, gabapentin, topiramate and methylphenidate). The findings illustrate the impact of diversified pharmaceutical agents on oral health and their correlation with systemic health conditions [8,24,25]. In our study, over half of the patients (53.7%) were aware of their systemic disease but lacked knowledge regarding the medications they were taking. The medicines used by patients are of great importance in terms of potential interactions with other medications, the effect of the medicines on oral health, and the prevention of complications that may occur during or after dental treatment. In the study of Altan et al. [17], the risk of complications, including acute hypertensive crisis, hypertensive encephalopathy, cerebral haemorrhage, and left ventricular failure, is elevated in hypertensive patients when

the vasoconstrictor content of local anaesthetic solutions, which is frequently utilised during dental procedures, is administered in higher doses than the recommended value. In our study, nearly half of the patients with hypertension (49.3%) were unaware of the medications they were taking.

In the study of Yuen et al. [26], it was reported that approximately half of the patients with diabetes had insufficient oral health information about diabetes. Many studies have reported that people with diabetes are at greater risk of oral and dental health problems such as gingivitis and periodontitis, delayed wound healing, dental caries, oral candidiasis, and tooth loss than those without diabetes [27]. In our study, despite the high prevalence of diabetes, 26.5% of patients lacked knowledge about diabetes medication.

Possible interactions with medications should always be considered when dentists prescribe or prescribe any medication [28]. It is known in the literature that there is a pharmacological interaction between adrenaline used in dental local anesthetics and medicine such as tricyclic antidepressants and beta blockers [7]. In this study, 6.2% of the cardiac patients and 5.3% of the patients receiving psychological treatment did not know the medicine they used. Dentists frequently prescribe Nonsteroidal anti-inflammatory drug (NSAID) after treatment. Metformin is an oral antidiabetic medicine that may increase the hypoglycemic effect with long-term use of NSAIDs and aspirin [28]. Diuretics are the most commonly used medicine in the treatment of hypertension. NSAIDs may reduce the effectiveness of thiazide diuretics and  $\beta$ -blockers when used for more than 5 days [29]. Elderly patients should be prescribed the lowest effective NSAID dose for the shortest possible duration. NSAIDs can also cause new-onset hypertension or worsen pre-existing hypertension. Blood pressure should be routinely monitored in patients prescribed NSAIDs [28]. In order to prevent these complications that may occur, patients should provide accurate and complete information about the medicine they use to their physicians during the anamnesis.

It has been reported in the literature that patients using antiaggregant and anticoagulant medicine may experience prolongation of bleeding time and hemorrhagic complications during or after the surgical procedure [30,31]. According to the total number of answers given in the study, 1.2% knew the medicine they were taking but did not know what they were taking it for. 90% of these individuals were knowledgeable about the blood thinners they used. It is very important for patients to know these medicine they use and to inform the physician when taking anamnesis, in order to prevent complications related to bleeding.

## Conclusion

As a result, it is important for individuals who apply to the dentist to have knowledge and awareness about their systemic diseases and the medicine they use, in terms of oral health, possible medicine interactions and prevention of possible complications related



to dental treatments. In addition, determining the frequency of systemic diseases that dentists encounter most frequently during dental treatments is important for physicians to have information about these diseases and to manage complications related to these diseases.

#### Conflict of Interests

*The authors declare that there is no conflict of interest in the study.*

#### Financial Disclosure

*The authors declare that they have received no financial support for the study.*

#### Ethical Approval

*Permission for the study was obtained from Ordu University Clinical Research Ethics Committee on 03.06.2022 with Decision Number 2022/140.*

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