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Self-Reported Medical Conditions among a Sample of Adult Patients Screened at Faculty of Dentistry's Clinics, King Abdulaziz University

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Abstract. Many dental practitioners assume that their patients are systemically healthy, so medical history is often overlooked. The objective of this study was to determine the prevalence of reported medical conditions among a sample of dental school patients at King Abdulaziz University. Retrospective evaluation of patients' screening records at the Faculty of Dentistry's clinics was conducted. A random sample of 297 dental records of patients who were admitted to the dental school during the year 2003 and were 18 years of age or older were selected. Descriptive statistics including mean, median, frequency and Pearson Chi-square were used for data analysis. About 24% (n = 71) of the study sample reported a positive history for one medical condition and about 7% (n = 20) reported a positive history for more than one medical condition. Diabetes was the most frequently reported condition (11.8%), followed by anemia (8.4%) and hypertension (6.7%). These findings indicate a high frequency of reported medical conditions among dental patients. Thus, detailed medical history as well as the obtaining of any necessary medical consultation are required before making any therapeutic decision. Future studies need to address the frequency of undiagnosed and unreported medical conditions, especially diabetes and hypertension, among the dental patients.

Keywords: Medical conditions, medical history, dental care, diabetes, and hypertension.

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Introduction

It is often assumed that dental patients are systemically healthy, so medical history is not always taken seriously. This is a concern since there is some evidence to indicate that many patients presenting for dental treatment have medical conditions that may affect their treatment[1-5]. For example, patients with a previous history of infective endocarditis, prosthetic heart valves or major congenital heart disease are at higher risk for developing infective endocarditis after dental-induced bacteremia[6,7]. Thus, for these patients, the American Heart Association recommended antibiotic prophylaxis before dental procedures associated with significant bleeding from hard or soft tissues[6,7]. Furthermore, several studies implicated dental infection, especially periodontal infection, as a possible risk factor for several systemic diseases such as cardiovascular diseases and diabetes[8-12]. For example, the relation between periodontal infection and incidence of coronary heart disease (CHD) was examined in a longitudinal study of 9,760 US adults who had baseline data on dental condition and were followed for 14 years[10]. The results showed a 25% increase in the risk for developing CHD among individuals with periodontal disease as compared to those without the disease independent of major risk factors for CHD. In regard to diabetes, results from a placebo-controlled clinical trial in poorly controlled diabetics showed that treatment of periodontal infection was associated with a significant improvement in patients' glycemic control[13].

In addition, due to the increase in life expectancy, more elderly patients are now visiting their dentists than in the past. Since prevalence of chronic diseases is higher among older individuals, the number of dental patients with medical conditions is expected to increase[14]. Thus, dentists need to take an accurate and thorough medical history prior to any dental treatment in order to avoid any medical complications.

Several studies has examined the prevalence of medical conditions among dental patients[1-5]. An Australian study found that 35% of dental patients had a positive medical history[1]. In the United States, Peacock and Carson examined the frequency of medical conditions among periodontal patients and found that 52.5% of these patients had a positive finding in their medical history; the most frequently encountered conditions were drug allergies (21.7%) and cardiovascular diseases (20%)[2]. In Sweden, Lagervall *et al.*[3] found that 49.4% of patients examined had at least one medical disorder. Drug allergies were the most frequent (24.2%) followed by hypertension (14.7%). They also reported that patients with cardiovascular disease, hypertension, rheumatoid disease or diabetes had fewer remaining teeth[3]. In an Irish population, Fenlon and McCartan reported that 27.7% of the dental patients had relevant medical history. Cardiovascular disease was the most prevalent with 10.4%[4].

In Saudi Arabia, several chronic diseases, such as diabetes and hypertension, are becoming a major health problem. In a recent large community based survey involving 16,917 Saudi subjects, the prevalence of *diabetes mellitus* was about 24%[15]. In another study, prevalence of hypertension was found to reach 30%[16]. Among patients presented for dental treatment, only one study had examined the frequency of medical conditions among a sample of periodontal patients in central region of the country[5]. The results from the aforementioned study revealed that 10% of these patients had a positive history for systemic diseases or sequelae. Diabetes was the most common (4.2%), followed by hypertension (1.2%)[5]. The objective of this study was to determine the prevalence of reported medical conditions among a sample of dental school patients presenting for treatment at King Abdulaziz University (KAU) during the year 2003.

Materials and Methods

The present study is a cross sectional study, retrospectively evaluating a sample of dental records at the Faculty of Dentistry's (FOD) clinics at KAU. Dental records of patients who were screened in the year 2003 and were 18-years of age or older were selected. Of these, records of 297 patients (about 5% of the target population) were randomly selected using computer-generated random numbers. Dental records had information on the following medical conditions: convulsions, tuberculosis, heart murmur, epilepsy, ulcers, radiotherapy/chemotherapy, heart disease, diabetes, rheumatic fever, hepatitis, low blood pressure, high blood pressure, asthma, anemia, stroke, jaundice, blood disorders and mental retardation. Patients were asked about this information by dentists, during their internship year, under faculty supervision. Dentists obtained this information through a standard questionnaire that had to be completed for all patients prior to their dental examination. A dental faculty member had to check the accuracy and completeness of this information and then sign the screening records. For this study, heart murmur, heart disease and stroke were grouped in one category to represent cardiovascular diseases. The following variables were also recorded: age, gender and nationality. Statistical analysis was carried out using Stata (Stata/SE, version 7.0, Stata Corporation, Texas, USA) statistical software. Descriptive statistics including mean and median for continuous variables and frequency for dichotomous variables were performed. The Pearson Chi-square statistics was used to examine the differences in prevalence of medical conditions by gender, age and nationality. The mean age between gender (males and females) and nationalities (Saudis and non-Saudis) was compared using "student's" *t*-test.

Results

The study sample consisted of 297 patients who were between 18- and 80-years-of-age. The mean and the median age were 36 ± 14 and 34, respectively. Fifty two percent of the sample (n = 154) were females and 51% (n = 152) of the sample were non-Saudi. The mean age for males was 38 ± 15.7 which was significantly higher ($p < 0.01$) than that for females 34 ± 12.2. The mean age was not significantly different for Saudi and non-Saudi patients ($P > 0.05$); the mean age was 35 ≠ 13.0 and 37 ≠ 15 for Saudi and non-Saudi patients, respectively.

About 69% of the sample did not report any history of a medical condition. Whereas, about 24% (n = 71) reported a positive history for one medical condition and about 7% (n = 20) reported a positive history for more than one medical condition. As shown in Table 1, diabetes was the most frequently reported condition (11.8%), followed by anemia (8.4%) and hypertension (6.7%). Only about 1% of the sample reported a positive history for hepatitis. As shown in Table 2, diabetes was more common among males whereas anemia was more common among females ($p < 0.01$). Other systemic conditions had no significant difference between males and females. Table 3, presents the frequency of medical condition stratified by age (≤ 34 or > 34 years of age). A history of diabetes, hypertension or cardiovascular disease was more common among individuals older than 34 years of age than those ≤ 34 years of age. Other medical conditions showed no significant difference between younger and older persons. Stratification of the sample based on nationality (Saudi or non-Saudi) is presented in Table 4. No statistically significant differences in the prevalence of medical conditions by nationality status were found.

Table 1. Frequency (and percentage) of reported medical conditions in the total sample (n=297)*.

Medical conditions	Frequency	Percentage
None	206	69.0
Diabetes	35	11.8
Hypertension	20	6.7
Other Cardiovascular Diseases	7	2.4
Asthma	13	4.4
Anemia	25	8.4
Other Blood Disorders	2	0.7
Jaundice	3	1.0
Hepatitis	3	1.0

*Reported medical condition is not exclusive; some patients have more than one condition.

Table 2. Frequency and percentage of medical conditions by gender status.

Medical conditions	Female (n=154) (%)	Male (n=143)(%)	Statistical significance*
None	105 (68)	101 (71)	> 0.05
Diabetes	10 (7)	25 (18)	< 0.01
Hypertension	11 (7)	9 (6)	> 0.05
Other Cardiovascular Diseases	2 (1)	5 (3)	> 0.05
Asthma	8 (5)	5 (4)	> 0.05
Anemia	22 (14)	3 (2)	< 0.01
Other Blood Disorders	2 (1)	0 (0)	> 0.05
Jaundice	2 (1)	1 (0.7)	> 0.05
Hepatitis	2 (1)	1 (0.7)	> 0.05

*Based on Chi^2 p-value. Note that reported medical condition is not exclusive; some patients have more than one condition.

Table 3. Frequency and percentage of medical conditions stratified by age.

Medical conditions	≤ 34 Years of age (n = 152)	> 34 Years of age (n = 145)	Statistical significance*
None	129 (84.9)	77 (53.1)	> 0.05
Diabetes	1 (0.7)	34 (23.4)	< 0.01
Hypertension	0 (0)	20 (13.8)	< 0.01
Other Cardiovascular Diseases	1 (0.7)	6 (3.6)	< 0.05
Asthma	6 (3.9)	7 (4.8)	> 0.05
Anemia	14 (9.2)	11 (7.6)	> 0.05
Other Blood Disorders	2 (1.3)	0 (0.0)	> 0.05
Jaundice	1 (0.7)	2 (1.4)	> 0.05
Hepatitis	2 (1.3)	1 (0.7)	> 0.05

*Based on Chi^2 p-value. Note that reported medical condition is not exclusive; some patients have more than one condition.

Table 4. Frequency and percentage of medical conditions among Saudi and non-Saudi patients*.

Medical conditions	Non-Saudi (n = 152)	Saudi (n = 145)
None	109 (71.7)	97 (66.9)
Diabetes	19 (12.5)	16 (11.0)
Hypertension	7 (4.6)	13 (9.0)
Other Cardiovascular Diseases	4 (2.1)	3 (2.1)
Asthma	5 (3.3)	8 (5.5)
Anemia	10 (6.6)	15 (10.3)
Other Blood Disorders	2 (1.3)	0 (0.0)
Jaundice	2 (1.3)	1 (0.7)
Hepatitis	3 (2.0)	0 (0.0)

*The differences between Saudi and non-Saudi were not significant ($p > 0.05$). Note that reported medical condition is not exclusive; some patients have more than one condition.

Discussion

In the present study, records of 297 dental patients were reviewed for positive medical history. Thirty one percent of these patients had a positive finding in their medical history for at least one systemic condition. The frequency of medical conditions among this study sample is higher (31%) than that reported by Almas and Awartani (10%)[5]; but it is less than that reported in several other studies (35% -53%)[1-3]. The lower prevalence of reported medical conditions in the present study could be attributed in part to the possibility that some of the study sample may have undiagnosed medical conditions. In addition, some patients may consider this information irrelevant to dental treatment and might intentionally not report it. Regional differences in the prevalence of medical conditions are another possible explanation.

Diabetes and hypertension were common medical conditions among the present study sample. This is in line with that reported by Almas and Awartani in a Saudi population[5]. Drug allergies and cardiovascular disorders were the most commonly reported medical conditions in different populations[2,4]. In the present study, we reported on the frequency of hypertension and other cardiovascular disorders as two different categories. When hypertension was combined with the other cardiovascular diseases, the prevalence of cardiovascular diseases became 9.1%. Thus, cardiovascular diseases became the second most commonly reported systemic condition.

About 12% of the present sample reported a history of diabetes. Prevalence of diabetes in Saudi Arabia varies from 2.6 to 9.7%[17-19]. The higher frequency of diabetics among dental patients could be attributed to the increased prevalence of periodontal disease among these patients, which might be the cause for their dental visit. Periodontal disease is considered the "sixth complication" of diabetes[20]. Furthermore, treatment of periodontal infection was shown to improve the glycemic control among diabetics[13,21]. Dental health professionals should be able to recognize and treat diabetic patients and should be alert to potential complications that may arise as a result of their systemic condition. Medical health professionals, on the other hand, need to advise their patients to seek dental and periodontal treatment which may improve their glycemic control.

In the present study, 6.7% of the sample reported a positive history for hypertension. The actual prevalence, however, is probably higher since some patients may have undiagnosed or intentionally unreported hypertension. A study in a US dental school patient population reported that 49% of the hypertensive patients in their sample were not aware of their high blood pressure prior to their dental visit[22]. Another study in the US found major discrepancies between the reported medical conditions in the dental records as compared to the patients' medical record[23]. In Saudi Arabia, Wahid Saeed *et al*.[24] reported that 27% of all hypertensives in their study were not aware of their disease and more than 31% of known hypertensives were not well controlled. Since measuring an individual's blood pressure is the only method to diagnose hypertension, screening dental patients routinely for hypertension is necessary[25]. It is important to detect hypertensive patients in the dental office; since stress and anxiety associated with dental treatment, and/or the use of a concentrated vasoconstrictor to control bleeding or in the local anesthesia, may raise their blood pressure to a dangerous level resulting in cerebrovascular accident or myocardial infarction[26]. In addition, hypertensive patients may be treated with diuretics that may cause xerostomia and subsequently may increase their susceptibility to caries[27-29].

Anemia was also a common finding in the present study. Dental records did not have information on what type of anemia. However, iron deficiency anemia is expected to be the most commonly encountered. In Saudi Arabia, iron deficiency anemia was reported to affect all vulnerable groups of the population and the prevalence varied from 4.5% to 66.7%[30]. Although iron deficiency anemia has no serious dental implications, increasing awareness among dental health professionals may help the Ministry of Health in Saudi Arabia reduce prevalence of iron deficiency anemia.

Hepatitis B is one of the most common and serious infectious diseases worldwide[31]. The prevalence of Hepatitis B in Saudi Arabia is high especially in southwest region. In one study, 17% of the sample were found to be HBsAg

carriers[32]. Fortunately, hepatitis among the present study's sample was uncommon. In the present study, only 3 non-Saudi patients (1% of the sample) indicated a positive history of hepatitis. This lower prevalence however, may also indicate that the majority of those with hepatitis are unaware of their condition. Therefore, ensuring high levels of sterilization and disinfection for all dental patients are important. Dental health professionals should comply with the Universal Precautions System, where every dentist-patient encounter is considered to have the potential for cross-infection, in order to prevent the risk of new infection in the dental clinics.

One of the limitations of the present study is that the screening records at FOD, KAU do not have information about patients' drug allergies, smoking history and oral hygiene practice. It has to be noted; however, these records were the initial records obtained from patients on their initial visit to the dental clinic. Detailed dental records are then obtained from patients, who are judged to be suitable for treatment at the dental clinic, by prospective dental students or faculty members. Since not all patients who were presented for treatment at KAU will have detailed records, we selected to use the initial screening. This will be more representative of the patients who presented for dental treatment.

In summary, the findings of this study revealed a high frequency of reported medical conditions among dental patients. Dental health professionals should be familiar with the patient's medical state and obtain any necessary consultation before making any therapeutic decision. Studies to investigate the frequency of undiagnosed medical conditions especially diabetes and hypertension among the dental patients, are obviously needed.

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الحالة الصحية لدى عينة من المرضى المراجعين لكلية طب الأسنان بجامعة الملك عبد العزيز

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جـــدة – المملكة العربية السعودية

المستخلص. يفترض بعض أطباء الأسنان أن مرضاهم في صحة جيدة، وبالتالي فإنهم يهملون التاريخ الطبي للمريض. الهدف من هذه الدراسة هو تحديد نسبة انتشار الأمراض العضوية لدى عينة من مراجعي كلية طب الأسنان بجامعة الملك عبد العزيز. تم إجراء هذه الدراسة على عينة من السجلات الطبية لمئتين وسبع وتسعين مريضًا من كلية طب الأسنان بجامعة الملك عبد العزيز. تم اختيار العينة من السجلات التي فتحت في العام ٢٠٠٣م، وكانت للمرضى فوق سنّ ١٨ سنة. وجدت الدراسة أن ٢٤٪ من العينة يعانون من مرض عضوي واحد، و ٧٪ يعانون من أكثر من مرض.

مرض السكري كان الأكثر انتشاراً بنسبة (٨ , ١١٪)، يتبعه مرض فقر الدم بنسبة (٤ , ٨٪) ومرض ارتفاع ضغط الدم بنسبة (٧ , ٦٪).

تدل نتائج هذه الدراسة على ارتفاع معدل المرضى الذين يعانون من أمراض عضوية، والتي قد تؤثر على علاج الأسنان. يجب على أطباء الأسنان أن يكونوا على علم بحالات مرضاهم الصحية وأن يحصلوا على الاستشارات الطبية اللازمة قبل أي علاج. لا تزال هناك حاجة لدراسات تبين معدل الحالات غير المشخصة التي تراجع عيادات الأسنان، وبالذات حالات مرضى السكري وارتفاع ضغط الدم.