

## HYPERTENSION PROFILE IN AN ADULT DENTAL POPULATION

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أجريت هذه الدراسة لتحديد نسبة انتشار مرض ضغط الدم المرتفع بين مرضى الأسنان البالغين ( ١٨ عاماً أو أكثر ) والمتريدين على كلية طب الأسنان - جامعة الملك عبد العزيز بجدة . شارك في الدراسة ١٣٢٠ مريضاً ( ٦٢٤ من الذكور و ٦٩٦ من الإناث ) . تم تحديد مرضى ضغط الدم المرتفع بطريق السؤال المباشر عن وجود تشخيص طبي سابق للمرض ، وكذا بقياس ضغط الدم لجميع المشاركين في الدراسة . أظهرت النتائج انتشار مرض ضغط الدم المرتفع بنسبة ٢٦.٤ % بين المرضى المشاركين في الدراسة ، وكانت نسبة انتشار المرض بين الذكور ( ٣٠.٨ % ) أعلى منها بين الإناث ( ٢٢.٤ % ) . كذلك أظهرت النتائج ازدياداً اضطرابياً في نسبة انتشار المرض مع تقدم العمر ، وكانت أعلى نسبة انتشار للمرض بين هؤلاء الذين تعدوا الخامسة والخمسين عام ( ٥٨.٦ % بين الذكور و ٦٠.٦ % بين الإناث ) . أشارت النتائج إلى أن نسبة كبيرة ( ٥٩.٢ % ) من ذوي ضغط الدم المرتفع والذين تم تحديدهم في هذه الدراسة كانوا إما غير مدركين لحالة ارتفاع ضغط الدم لديهم ، أو كانوا مدركين لحالتهم المرضية ومع ذلك كانت قياسات ضغط الدم لديهم مرتفعة . تتفق نتائج الدراسة الحالية مع نتائج الدراسات المماثلة والتي أظهرت نسب انتشار عالية لمرض ضغط الدم المرتفع بين مرضى الأسنان في مجتمعات أخرى ، مما يؤكد أهمية التعرف على حالة ضغط الدم لدى مرضى الأسنان وتحديد المرضى ذوي ضغط الدم المرتفع لاتخاذ الاحتياطات اللازمة تجنباً لأية مضاعفات طبية محتملة أثناء أو بعد العلاج في عيادات الأسنان .

The objective of the present study was to determine the frequency and distribution of hypertension in an adult population of dental patients (>18 years). The study was conducted on 1320 patients (624 males and 696 females). The frequency of hypertension was determined through history taking, and by measuring the blood pressure values of every patient. Blood pressure values and hypertension frequencies were analyzed as related to the age and sex of the total population studied. The results showed a hypertension frequency of 26.4%. Males showed more frequent hypertension (30.8%) compared to females (22.4%). Of the recognized hypertensive patients, 59.2% were either unaware or uncontrolled hypertensive patients. Blood pressure values and frequency of hypertension increased with age. In older individuals (55 years or more), hypertension frequency markedly increased to 58.6% in males, and to 60.6% in females. The findings were compared to those reported in other populations, and the dental implications were discussed.

### Introduction

The potential risk associated with dental treatment of patients with hypertension has been well documented. Variable increases and fluctuations in blood pressure

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values, as well as adverse hemodynamic and cardiovascular changes have been recognized during dental treatment of hypertensive patients." In addition, the identified adverse metabolic effects and interactions of antihypertensive medications represent another potential risk further complicating dental treatment. Despite the identified risk, evaluation of dental patients regarding their blood pressure status is not always as thorough as it should be; and adverse reactions have been reported as a result of dental treatments conducted without being aware of the potential medical risks. '

Recent data have shown increased frequencies of hypertension among those seeking dental treatment. Moreover, it has been estimated that over 50% of hypertensive patients are either inadequately controlled or totally unaware of their blood pressure status. This unawareness was reported in a dental population, as well as in a general population. These recognized high frequencies of hypertensive patients, and the high percentage of unaware and uncontrolled cases represent a dental management challenge that needs to be further addressed. More studies need to be conducted on the profile of hypertension in other dental populations; and, the role of the dentists in the identification and management of hypertensive patients needs to be further emphasized.

The objective of the present study was to determine the frequency and distribution of hypertension in an adult population of dental patients

among the Faculty of Dentistry, King Abdul-Aziz University.

### Materials and Methods

A total of 1,320 adult patients (>18 years of age) were randomly selected to participate in the present study. The patients were selected from those who attended the screening clinic, Faculty of Dentistry, King Abdul-Aziz University, between 1995 and 1996. The patients' age ranged between 18 and 76 years, and the average age was  $37.2 \pm 13.9$  years. These were 47.3% male (mean age  $38.6 \pm 14.4$  years), and 52.7% female patients (mean age  $36 \pm 13.6$  years).

The blood pressure of every patient was evaluated by two methods. First, by responses on direct questioning regarding previous blood pressure measurements, previous diagnosis of hypertension, and current intake of antihypertensive medications. Second, by measuring the blood pressure, applying the auscultation method.

Blood pressure measurements were performed by one and the same examiner. For every patient, blood pressure was taken twice. One measurement was taken at the beginning of the screening session, after the patient was seated comfortably for five minutes; the other measurement was taken at the end of the same screening session. The lower of the two blood pressure measurements was recorded as the patient's true blood pressure to avoid over-estimation of hypertension frequency in the population studied. A patient was categorized as hypertensive based

on either a positive history of diagnosed hypertension, or a measured blood pressure value  $\geq 140$  mm Hg Systolic, and  $\geq 90$  mm Hg, Diastolic, or  $\geq 140 / 90$  mm Hg.

Patients were divided into five age groups (Table 1). Descriptive statistics were used to summarize the collected data; blood pressure values and hypertension frequencies were analyzed as related to the age and sex of the population studied.

medication. Of those patients, 117 (45.2%) were inadequately controlled based on hypertension threshold  $\geq 140/90$  mm Hg,  $\geq 140$  mm Hg Systolic, or  $\geq 90$  mm Hg diastolic.

Table I shows the mean systolic and diastolic blood pressure values, as well as the frequencies of hypertension in different age groups.

The relationships of systolic values, diastolic values, and

**Table I.** Blood pressure values and hypertension frequencies in different age groups.

Groups (Age in years)	Number of Patients	Systolic blood pressure (mm Hg) X $\pm$ SD	Diastolic blood pressure (mm Hg) X $\pm$ SD	Hypertension frequency (%)
Group I (18 - 24)	339	116.3 $\pm$ 11.3	<b>74.4 <math>\pm</math> 8.5</b>	5.3%
Group II (25 - 34)	303	117.1 $\pm$ 13.3	<b>76.4 <math>\pm</math> 9.7</b>	13.9%
Group III (35 - 44)	264	122.4 $\pm$ 15.1	79.5 $\pm$ 10.2	22.7%
Group IV (45 - 54)	228	130.2 $\pm$ 20.7	<b>83.5 <math>\pm</math> 9.9</b>	51.3%
Group V (55 or more)	186	135.6 $\pm$ 21.8	<b>84.8 <math>\pm</math> 10.6</b>	59.7%

## Results

The prevalence of hypertension in the studied population of dental patients was 26.4%. The frequency of hypertension in males (30.8%) was greater than that in females (22.4%). Of the recognized hypertensive patients, 259 (74.4%) gave a positive history of previously diagnosed hypertension, and 89 (25.6%) were unaware of their blood pressure status, but their measured blood pressure values were  $\geq 140$  mm Hg systolic,  $\geq 90$  mm Hg diastolic, or  $\geq 140/90$  mm Hg. Patients with previously diagnosed hypertension were all on antihypertensive medications but with variable compliances to

hypertension frequencies to the age and sex of the population studied are shown in Fig. (1) to Fig. (3). Systolic and diastolic blood pressure values, as well as hypertension frequencies increased with age. A dramatic increase in the frequency of hypertension was noted in older age groups (groups IV and V, Table 1).

In younger age groups (< 55 years), males showed higher systolic and diastolic pressure values, and more frequent hypertension compared to females. In older patients (55 years or more), however, systolic and diastolic blood pressure values in females were closer to those in males; and the frequency of hypertension in female, slightly

exceeded that in male patient; (Figs. 1 - 3).

**Discussion**

The potential risk associated with dental treatment of hypertensive patients has been largely related to the adverse hemodynamic and cardiovascular changes recognized during stressful dental procedures.<sup>3,4,2</sup> On the other hand, significant blood pressure increases and variable fluctuations have been also recognized in association with non-stressful dental procedures, suggesting a potential risk regardless of the dental procedure.<sup>13,15</sup> The need for a routine screening for hypertension has been stressed in order to prevent unexpected complications and systemic exacerbations during dental treatment.<sup>13,4</sup>

In the present study, screening of an adult dental population revealed a hypertension frequency of 26.4%. This recognized frequency is comparable to those recently recognized in other dental populations (24%, 28%),<sup>8</sup> further supporting an increased prevalence of hypertension among dental patients. Over the last two decades, advances in diagnosing and treating hypertension have resulted in a major decline in cardiovascular and stroke mortalities and enabled hypertensive patients to live longer and more productive lives.<sup>11,6</sup> This might have changed the assembly of dental populations to include higher percentage of those patients with hypertension, hence, the

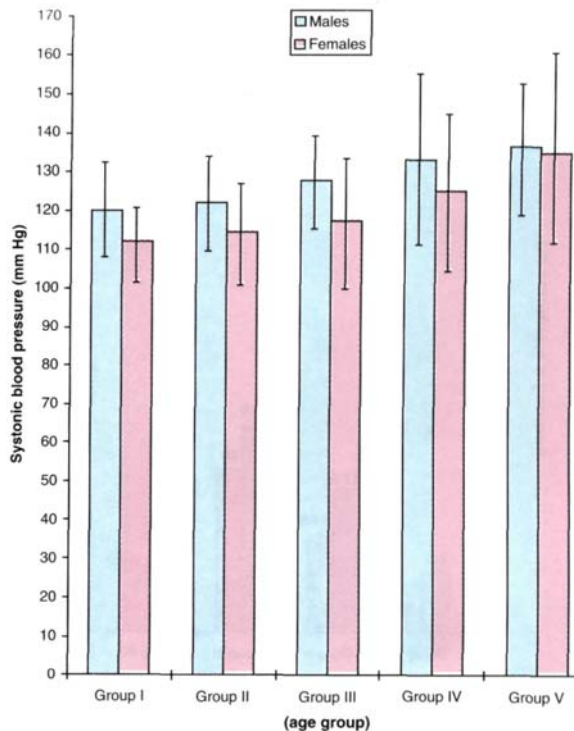


Figure 1. Systolic blood pressure values as related to the age and sex of the population studied.

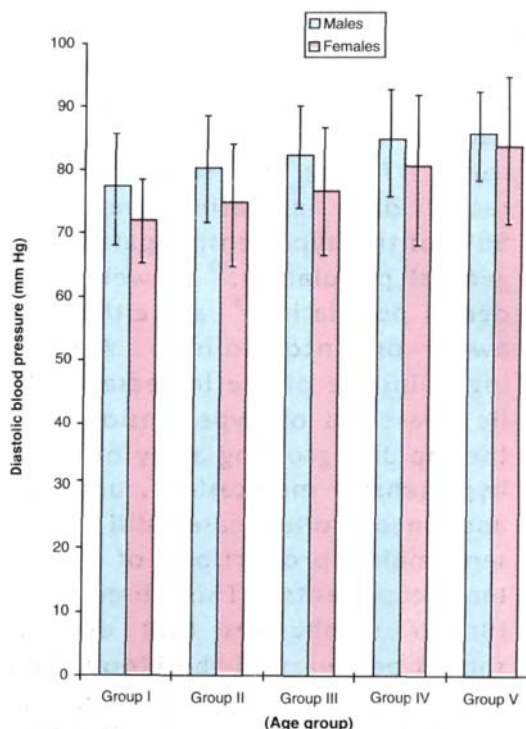


Figure 2. Diastolic blood pressure values as related to the age and sex of the population studied.

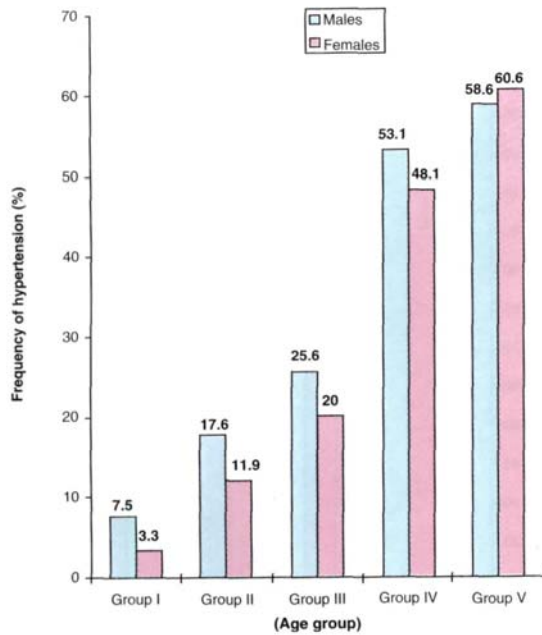


Figure 3. The frequency of hypertension as related to the age and sex of the population studied.

recognized high frequencies.

Collectively, unaware and uncontrolled patients represented 59.2% of the total hypertensive patients recognized in the present study. This is consistent with the recent data indicating that over 50% of the hypertensive patients in general population, as well as in dental populations<sup>8</sup> are either unaware or uncontrolled. Accordingly, in spite of the increased public awareness of hypertension, and the rapidly growing array of anti-hypertensive medications, unaware and uncontrolled cases still represent major proportions of hypertensive patients. This observation further emphasizes that dentists should be aware of the blood pressure status of their patients in order to avoid the complications and interactions anticipated during treatment of asymptomatic or un-

controlled cases.

Data in the literature indicates a higher prevalence of hypertension in males compared to females, but, with comparable hypertension frequencies between males and females in older age groups.<sup>17</sup> The results of this study are consistent with these data. In younger age groups (<45), males showed higher blood pressure values and more frequent hypertension than females, which contributed to the higher overall hypertension frequency in males compared to females in the total patients studied. In older patients, however, blood pressure values of females were closer to those of males, and the frequency of hypertension in females slightly exceeded that in males.

Both blood pressure values, and hypertension frequency increased with age. In older patients (55 years or more), the highest blood pressure values were recognized, and the frequency of hypertension markedly increased to 59.7%. This is consistent with the studies identifying hypertension as the most common systemic disease in elderly dental patients,<sup>18</sup> and in older populations in general.<sup>19</sup> Thus, older individuals are at a markedly greater risk of dental treatment. Efforts towards evaluation of their blood pressure are even more important than in younger individuals.

In conclusion, the results of the present study indicate that an increasing number of hypertensive patients are seeking dental treatment. The recognized higher frequency of hypertension in older patients, and the high percents of unaware and uncontrolled cases

suggest an increased risk. Performing dental procedures on those patients could bring about serious complications, and acute exacerbations of their systemic conditions. Consequently, it is the responsibility of the dentist to identify those patients at risk, evaluate the associated risk, and be aware of the side effects and interactions of the relevant antihypertensive medications. Furthermore, it is essential that the dentist should be prepared to apply preventive and stress reduction measures, as well as to manage unexpected hypertensive emergencies.

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