

Undiagnosed Hypertension in the Dental Clinic

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ABSTRACT

Introduction: Hypertension is defined as a systolic blood pressure (SBP) greater than 120mmHg or a diastolic blood pressure (DBP) greater than 80mmHg according to the new classification of American Heart Association AHA. It is considered the most prevalent chronic disease among the elderly population. It constitutes a world-wide public health challenge, because of its high frequency concomitant risk of cardiovascular and renal disease. People with very high blood pressure are at high risk of acute medical issues, while undergoing dental treatment. Accordingly, dentistry must continue to place an emphasis on the detection and referral of patients with high blood pressure.

Materials and Methods: The present study was based on patients randomly selected from those attending KAUFU dental hospital for dental treatment. Data were collected based on a comprehensive validated structured questionnaire gathering information regarding medical, dental, family, and social histories. In addition, a thorough clinical examination and vital sign registration for the patients was performed.

Result: This study was conducted on 200 adult patients (105 females and 95 males). The overall prevalence of hypertensive patients was 98 (49%). Among these patients 82 patients (83.67%) were totally unaware of their condition, while two patients (1%) admitted they are uncontrolled and only 14 (7%) patients were controlled taking their drugs regularly.

Conclusion: The increasing prevalence of undiagnosed and uncontrolled hypertensive patients presenting for dental treatment, with its high associated life-threatening complication throws the responsibility of its prevention on the dentist's shoulders. Dentists screening and monitoring of the patients' blood pressure should be routinely performed in conjunction with a strong awareness and patients' education about the potential risks associated with this disease.

Key words: Cross sectional study, Random patient selection, Undiagnosed hypertension, Dentistry

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INTRODUCTION

According to the American Heart Association (AHA), hypertension is defined as a systolic blood pressure (SBP) more than 120 mmHg or a diastolic blood pressure (DBP) greater than 80 mmHg. Out of the two types of hypertension, the absence of identified causal causes for increased blood pressure is referred to as essential or primary hypertension and it accounts for 90–95 percent of all hypertensive patients. Secondary hypertension, for which there is a known etiology, affects 5%–10% of hypertensive individuals in the United States. Hypertension is considered the most prevalent chronic

disease among the elderly population and the World Health Organization (WHO) has identified hypertension as one of the most important causes of mortality and morbidity [1,2]. Hypertension is regarded as the "silent killer" since it affects 80 million persons over the age of 20 in the United States alone and about one billion people globally per annum.

It is estimated that 17.3 percent of the 80 million individuals in the United States with hypertension are undiagnosed. Undiagnosed hypertension has been shown to reduce a person's life by 10–20 years. The number of individuals with hypertension in the United States and across the world, the number of people who are undiagnosed, and the disease's potential rise all make hypertension a public health problem [2].

The function of the dental practitioner as a member of the entire health care team is sometimes underestimated, although it is critical in hypertension screening. A dental visit may be an entrance point for many people in the general population into the health care system, as dental illness is a big concern, particularly in terms of pain and infection. It is critical that the oral health care practitioner understands the problems associated with prevention, management, and treatment choices for this patient group, as well as the potential possibilities that may enhance overall patient care and treatment outcomes in the dentist office. Thus, dental practitioners can play an important role in screening for undetected hypertension and referring patients to a medical practitioner, reducing morbidity and death [3,4].

Al-Nozha et al [5], conducted research to evaluate the prevalence of hypertension among 17,230 Saudi patients of both genders aged 30-70 years. Males had a hypertension prevalence of 28.6 percent, whereas females had a substantially lower prevalence. They concluded that hypertension affects more than one-fourth of the adult Saudi population. It is therefore essential that undetected hypertensive patients be brought under the protective umbrella of medical care.

The role of dentist in detecting hypertension is critical and should be considered as a part of standard dental care, while regular screening is routinely performed [6]. This might allow the dentists to be the first health provider that would discover hypertensive patient in their clinics, especially those patients who might have never sought any medical treatment.

The aim of this study is to investigate the prevalence of undiagnosed hypertension as well as uncontrolled hypertension, among the general population attending our dental clinics at King Abdulaziz university Faculty of Dentistry (KAUFD) in Jeddah, Saudi Arabia. In this study, the number of undiagnosed hypertensive patients and uncontrolled known hypertensive patients discovered during routine screening before definitive dental treatment was recorded.

MATERIALS AND METHODS

This is a cross sectional study on randomly selected adult patients from those patients seeking dental treatment from January 2020 to February 2020. The study was approved by the research ethics committee at KAUFD (REC-KAUFD). All the patients were included and there

were no exclusion criteria. The research purpose and methodology were explained to all the participants and an informed written consent was obtained for the same.

Collection of medical history: A comprehensive structured validated questionnaire was preformed, gathering information regarding medical, dental, family, and social history.

Blood pressure records: The blood pressure for all the patients was measured using a calibrated digital sphygmomanometer device (CITIZEN SYSTEMS JAPAN CO., LTD).

Using a standard method, two measurements were taken, at the antecubital region of the right and left arms while in the patient was in a relaxed semi-reclined position.

The reading obtaining was classified using the AHA guidelines [5] as:

- Normal (less than 120/80 mm Hg).
- Elevated (Systolic 120-129 mmHg and Diastolic less than 80 mmHg).
- Hypertension (Stage 1 and Stage 2) Systolic higher than 130 mmHg or Diastolic higher than 80 mmHg.

All patients with high blood pressure readings were alerted to visit their family physician.

Data analysis

The collected data was then analyzed using SPSS version 25, presenting descriptive statistics, cross tabulation and a chi-square test was used for comparison between categorical variables.

RESULTS

Descriptive and demographics

A total of 200 subjects participated in this study, there were 105 females (52.5%) and 95 males (47.5%). Seventy four percent of the subjects (n=148) had a higher-than-normal blood pressure (elevated or hypertension).

Of the 98 subjects in the hypertensive category, only 16.3 % (n=16) were aware of the elevated blood pressure (Table 1).

Table 1: Blood pressure measurements of the study sample.

	Total		Known	Unknown
	%	N	N	N
Normal (<120/80 mmHg)	26	52	16	82
Elevated (Systolic 120-129 and diastolic <80)	25	50		
Hypertension (Systolic > 130 or diastolic >80)	49	98		
Total		200		

Gender

As presented in Table 2, Gender comparison across the blood pressure categories was statistically significant (p<0.0001). Seventy five percent of the subjects in the

normal category were females (n=39). The hypertensive category was predominantly males (60%, n=59), while 40% (n=39) were females.

Table 2: Gender comparison of the study sample across the categories of blood pressure.

	Male	Female	Total	P- Value=0.000
	N (%)	N (%)		
Normal (<120/80 mmHg)	39 (75)	12 (25)		52
Elevated (Systolic 120-129 and diastolic <80)	27 (54)	23 (46)	60	
Hypertension (Systolic > 130 or diastolic >80)	39 (40)	59 (60)	98	
		Total	200	

Age

The mean age group for the patients in the hypertension category was 34.4 (=/-13). There was no difference

between the mean ages of each blood pressure category (Table 3).

Table 3: Age comparison of the study participants in the three categories of blood pressure.

	Mean (SD)	Total	P-Value>0.05
Normal (<120/80 mmHg)	34.9 (14.5)	52	
Elevated (Systolic 120-129 and diastolic <80)	36.24 (18)	50	
Hypertension (Systolic > 130 or diastolic >80)	34.4 (13)	98	
	Total	200	

Smoking

Most of the total sample was non-smokers, at 81.5%. The total number of smokers was 37 patients, with most of the smokers being in the hypertensive category. Across

the categories of blood pressure, there was a statistically significant difference between smokers and non-smokers (Table 4).

Table 4: Comparison of smokers and non-smokers across the three blood pressure categories.

	Smokers N (%)	Non-smokers N (%)	Total	P-Value=0.001
Normal (<120/80 mmHg)	7 (13)	45 (87)	52	
Elevated (Systolic 120-129 and diastolic <80)	10 (20)	40 (80)	50	
Hypertension (Systolic > 130 or diastolic >80)	20 (20)	78 (80)	98	

Family history

Among the total 98 patients in the hypertension category,

58 (59%) patients gave a family history with hypertension (Table 5).

Table 5: The number and percentage of patients with positive family history of hypertension in 3 categories of blood pressures.

	Family History		Total	P-Value=0.000
	Positive	Negative		
Normal (<120/80 mmHg)	22 (42)	30 (58)	52	
Elevated (Systolic 120-129 and diastolic <80)	14 (28)	36 (72)	50	
Hypertension (Systolic > 130 or diastolic >80)	58 (59)	40 (41)	98	
		Total	200	

DISCUSSION

Hypertension is a cardiovascular illness that has been identified as one of the leading causes of mortality globally. Some medical disorders, as hypertension, can affect the course of oral illness, as well as alter dental therapy and response to such treatment. In the present study, the total prevalence of hypertension among the adult patients that attend KAUFD in Jeddah, Saudi Arabia was 49%. Sproat et al. presented the percentage of the patients who had high blood pressures while receiving treatments in different countries, where 61% patients in the UK had high blood pressures despite having treatment for hypertension. The increased blood pressures were attributed to the different factors as gender, age, and compliance to the medication [7]. In the same study, the author displayed 29.8% patients with hypertension at the time of admission in the dental healthcare setups in the US. He also stated that psychological factors and casual behaviours towards medication compliance were the main culprits here. Moreover, there was a 62.8% prevalence of hypertension in Iran [5]. In this study, patients with undiagnosed hypertension or were unaware of their diagnosis, constituted 83.67%. This result is consistent with studies carried out in UK reporting that 82% [8] and in US 63.8% of patients were unaware of their hypertensive status, while in Amir kola only 21.6% [9] were never diagnosed for hypertension. The most common reported causative factor in the incidence of hypertension is age [10]. The great arteries get stiffened up as a person ages. Deposition and storage of toxic materials like cholesterol and lipid plaques in the arteries block them like a clog in a pipeline. The passage gets narrower and blood pressure increases. In the same study, Pinto states that many younger age patients, who present with oral healthcare problems, get diagnosed with hypertension at the dental care setting. He concluded that younger patients who get diagnosed with high blood pressure owe to the sedentary lifestyle and obesity. Moreover, hypertension when left untreated can cause many complications like cardiomyopathies, renal insufficiency, ischemic and haemorrhagic stroke, and liver problems [11]. Thus, hypertension screening has an important role in managing the post-operative patients in every setting including a dental care facility.

Psychosocial factors have been listed among the contributing factors to the increasing incidence of hypertension in the younger population. This increasing

incidence of hypertension in the young, calls for early surveillance and prompt treatment to prevent future cardiac events. The results of the gender distribution revealed preponderance of male (59) in comparison to female (39) patients. This could be attributed to both biological and behavioural factors. The biological factors include sexual, hormonal, and chromosomal differences that have inherited protective properties against hypertension in women [12]. The current study's findings are consistent with the relationship between smoking and hypertension. Most of the smokers in the research had high blood pressure. Despite being a risk factor, most hypertensive people are not smokers [13].

In this present study the prevalence of hypertension was higher in those with a family history of hypertension than those without a family history 59.1%, other study in Sri Lanka was 48% [12]. This confirms with previous work advocating that about 30% of the blood pressure variance can be attributed to genetic factors and stating that family history which constitutes an important non-modifiable risk factor for hypertension. The hereditary nature of hypertension is well established by numerous family studies demonstrating associations of blood pressure among siblings and between parents and children [14,15].

CONCLUSION

The increasing prevalence of undiagnosed and uncontrolled hypertensive patients presenting for dental treatment, with its high associated life-threatening complication throws the responsibility of its prevention on the dentist's shoulders. Dentists screening and monitoring of the patients' blood pressure should be routinely performed in conjunction with a strong awareness and patients' education about the potential risks associated with this disease.

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