

Correlation Between Cigarette Smoking and Blood Pressure (BP) In Baghdad City.

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Abstract

Tobacco uses and high blood pressure are two main contributors to cardiovascular disease, Iraq's leading cause of death. In Iraq, the correlation among smoking with blood pressure (BP) is unknown. This study looked at the variations in (SBP) systolic BP as well as (DBP) diastolic BP between daily average cigarette smokers and nonsmokers in Baghdad adults aged 19 to 82 years using information collected from various hospitals in Baghdad city from December to April 2023 patients and the Healthy Survey. A total of 300 persons, 280 patients included 160 men and 120 women with 20 health control divided into 10 men and 10 women their data matches the patients. With their valid blood pressure measurement, age, gender, socio economic, blood viscosity in multivariate regression linear regression analysis, these serve as potential confounders. The study group was divided into two aged group (19-44) years and (45-82) years. Analyses were provided to detect a variation in systolic blood pressure among smokers 2.2 mm Hg higher than nonsmokers in males. Whereas Female smokers had considerably lower SBP and DBP (mean difference 2 mm) than non-smokers. Older smokers for both genders have higher diastolic BP. There were no such differences between younger patients either for DBP in same age group. Lower blood pressure in female tobacco users in Baghdad city may be described by the effects of daily cigarette smoking in women, or by unmeasured confounding factors related with a traditional way of life that may lower blood pressure (For instance, diet and exercise).

Keywords: smoking, hypertension, blood pressure, tobacco, nicotine

Introduction

A self-reported diagnosis of hypertension, usually called high blood pressure, was defined as having a systolic blood pressure (SBP) with at least 140 mmHg, a diastolic pressure (DBP) from at least 90 mmHg, or both. Over the world, hypertension is a serious public health issue. 40.8% of adults in 17 nations participated in a cross-sectional study that determined the prevalence of hypertension [1]. In 2010, 9.4 million fatalities were attributed to hypertension, the main risk factor for the world's disease burden [2]. Heart disease and stroke account for 45% of all fatalities [3]. In China, the average of daily smoking is 37.5% for men with 2.2% in women in 2015. An age-standardized incidence of daily smoking is 25.5% in men with 5.4% for women worldwide in 2015[4]. According to the WHO, roughly 49.3% of males and around 2.0% of women who are 15 years old and older smoke [5]. Since smoking causes almost 6.3 millions of deaths and 6.3% of all DALYs globally, it poses a serious risk to public health [2]. It poses a significant risk for a few illnesses, including lung cancer, stroke and coronary heart disease [6,7,8]. Smoking as well as blood pressure do not, however, always correlate in the same way, with some research demonstrating a positive correlation and many others an inverse one [9,10]. Previous studies reported that smoking could directly harm endothelial cells, which would affect endothelium-dependent coronary vasodilation and endothelial function [11]. Furthermore, research has found that smoking causes endothelial damage, statistically significant

modifications in forearm hemodynamics' that affect both small and large arteries and is thought to play a role there in pathophysiology of hypertension [12]. American Heart Association measurement of blood pressure recommendations noted that SBP but also DBP, in addition to median arterial pressure (MAP) as well as pulse pressure, are clinically established parameters that potentially indicate vascular disease (PP).[13]. The impact of tobacco use on the development of hypertension is still being studied. Nicotine is the primary mediator of cigarette smoking's hemodynamic effects [33]. It can cause an abrupt and temporary elevation in blood pressure (BP) by stimulating the sympathetic nerve system [34]. Long-term nicotine intake, on the other hand, may have various effects. Cotinine, a nicotine metabolite, is thought to lower blood pressure by a vasodilatory impact [35]. Nicotine may potentially lower blood pressure by lowering body weight as a result of its appetite suppression or metabolism-boosting actions [36]. Epidemiological research on the link between smoking and high blood pressure have yielded conflicting results. Some investigations have discovered a link in current tobacco use and hypertension [37]. BP, on the other hand, has been observed to be similar or lower in several smokers when compared to nonsmokers [38,39]. High blood pressure causes greater-than-normal pressure on the artery walls. This can harm them over time, increasing your risk of stroke, heart attack, coronary artery disease, and kidney damage. Adults should maintain a blood pressure that is typically 120/80 mmHg. To our knowledge, there is no study of the relationship between smoking and blood pressure indices. In this study, we aimed to investigate the association between smoking and blood pressure in Baghdad city.

Patients and Methods

Designing, setting, and participants of the study

The primary outcome variations were systolic blood pressure (SBP) and diastolic blood pressure (DBP). Following the regular DHS biomarker collection protocol, The automatic Dinamap 8100 monitor was used to measure blood pressure. 10 After a 5-minute rest, three blood pressure readings were obtained just on right arm with an appropriate size cuff and the informant seated. Participants who had eaten or smoked within 30 minutes of the measurement were not included in the analysis. The average of both second and third measurements was used in this study.

Comprehensive data on smoking behavior was gathered. Subjects were defined as nonsmokers. Present smokers were further classified based on their daily cigarette consumption (1 to 9 light, 10 - 19 moderate ,20 heavy). (BMI) Body mass index was calculated as weight (kg) divided by height (m)². BMI was assigned to respondents in one of four categories: underweight <20 kg/m²; normal weight >20 to 25 kg/m²; overweight >25 to 30 kg/m²; and obese >30 kg/m².

The Registrar General's standard classification was used to assign social class based on the profession of such head of the household [13]. Manual (unskilled occupations, partly skilled and skilled manual) and nonmanual social classes were created (skilled occupation, manager and technical, as well as professionalism).

Analyses have been provided for the 300 people (the majority of whom were interviewed) who collected details on smoking habits and had valid BMI, BP, and viscosity measurements, and of whom the 20, 280 were never and cigarette users, respectively.

Results

The aspects of smokers through our sample (table 1) revealed some many differences of men and women, as well as between smokers and non-smokers. Approximately the same proportion of women (92.3%) and men (94%) smoked cigarettes daily, and a smaller proportion of women (15.8%) than men (56.8%) people who smoke were moderate to heavy smokers (10 cigarettes or more per day). While both men and women who smoked cigarettes had lower BMIs than nonsmokers, the mean difference in BMI was greater in women (2 units vs. 1 unit in men respectively). Uneducated women had a higher proportion of smokers (65.3%), whereas educated men (75.2%) had a much higher proportion than uneducated men (24.7%). men and women smokers, on average, 38.9 years younger than nonsmokers. Women and men smokers were more likely to be married (76.9%,70.5%) than unmarried (23%,29.4%), respectively. smokers male and female who participated in physical exercise were (92.3% and 80%, respectively). The proportion of

smokers suffering from blood viscosity in women and men is around the same (52.5% and 69.3%, respectively).

Table1: Participant characteristics according to smoking status

Characteristics		Healthy (non-smok.)	Smokers	Cigarette / day	
				1-9	≥ 10
Men = 170 (56.6%)		10 (5.88%)	160 (94%)	69 (43%)	91(56.8%)
Age	19-44 y.	5	90 (56.2%)	50 (55.5%)	40(44.4%)
	45-82 y.	5	70 (43.75%)	19 (27.5%)	51(72.8%)
Uneducated = 42(24.7%)		5 (11.9%)	37 (23%)	17 (45.9%)	20 (54%)
Educated (75.2) (students/workers) = 128		5 (3.9%)	123 (76.8%)	52(42.2%)	71(57.7%)
Married = 120(70.5%)		7(5.8%)	113(70.6%)	49(43.3%)	61(53.9%)
Un married = 50(29.4%)		3(6%)	47(29.3%)	20(40%)	30(60%)
BMI Kg/ m ²		6	69(43%)	29(42%)	40(43.9%)
Viscosity		0	111(69.3%)	38(34.2%)	73(65.7%)
Physical activity 157 (92.3%)		6	151(94.3%)	69(45.6%)	82(54.3%)
Women = 130(43.3%)		10 (7.6%)	120(92.3%)	101(84%)	19(15.8%)
Age	19-44 y.	5	73(60.8%)	63(86.3%)	10(13.6%)
	45-82 y.	5	47(39%)	29(61.7%)	18(38.2%)
Un educated = 85(65.3%)		5(5.88%)	80(66.6%)	69(86.2%)	11(13.7%)
Educated = 45(34.6)		5(11%)	40(33.3%)	32(80%)	8(20%)
Married =100(76.9%)		9(9%)	91(75.8%)	80(87.9%)	11(12%)
Un married =30(23%)		1(3.3%)	29(24%)	21(72.4%)	8(27.5%)
BMI Kg/ m ²		2	49(40.8%)	31(63.2%)	18(36.7%)
Viscosity		0	43(52.5%)	32(74.4%)	11(25.5%)
Physical activity 104(80%)		4	100(83.3%)	86(86%)	14(14%)

Mean DBP and SBP are strongly linked to BMI category for women as well as men, with substantially greater average Bp among overweight adults (2-4mm). significantly lower blood pressure (3-5 mm) in the underweight population compared to the typical BMI. Working men had substantially greater than nonworking men, by roughly 2 mm at P 0.01. From the 160 (94%) male smokers, 43% smoked less than 10 cigarettes per day, whereas 56.8% smoked more than 10 cigarettes per day. Overall, 22 out of 90 younger males aged 19-44 years had substantially greater mean SBP and 18 had considerably lower mean DBP versus non-smokers (table 2).

There are no significant variations in blood pressure between the 29 heavy smoker young men who had higher SBP and the 21 heavy smoker young men who had higher DBP. The age group 45-82 years old showed 21,16 out of 70 with high SBP and DBP respectively with significant association, whereas heavy smokers showed 22 and 11 out of 91 with high SBP and low DBP with no significant relation.

SBP as well as DBP increase considerably with age and BMI category for men and women. In men, a median increase in blood pressure from overweight to an average weight is 4-5 mm, and 6-9 mm among obese. The mean rise in BP in women who were overweight compared to those of normal weight was roughly 4 mm, and 7-9 mm in obese at P < 0.01.

From the 120 (92.3%) female smokers, 84% smoked less than 10 cigarettes per day, whereas 15.8% smoked more than 10 cigarettes per day. Overall, 17 out of 73 younger women aged 19-44 years had substantially greater mean SBP and 13 had significantly lower mean DBP compared non-smokers (table 2).

There were not any significant differences in blood pressure between the 23 heavy smoker young women who had higher SBP and the 20 heavy smoker young women who had higher DBP. The age group 45-82 years old had 16,5 out of 47 with high SBP and DBP, respectively, with a significant relationship, whereas

heavy smokers had 19 and 7 out of 47 with high SBP and low DBP, respectively, with no significant relationship.

Table 2: SBP and DBP mean values adjusted for age in both women and men.

Characteristics		Cigarette / day	
		1-9	≥ 10
Age/men smokers	160 (94%)	69 (43%)	91(56.8%)
19-44 y. N=90	SBP	22(24.4%)	29(32.2%)
	DBP	18(20%)	21(23.3%)
45-82 y. N=70	SBP	21(30%)	22(31.4%)
	DBP	16(22.8%)	11(15.7%)
Age/women	120(92.3%)	101(84%)	19(15.8%)
19-44 y. N=73	SBP	17(23.2%)	23(31.5%)
	DBP	13(17.8%)	20(27.3%)
45-82 y. N=47	SBP	16(34%)	19(40.4%)
	DBP	5(10.6%)	7(14.8%)

Discussion

This study examined the connection among everyday smoking of cigarettes with BP in Iraq/Baghdad adults aged 19-82 years using representative survey data. After controlling for age, BMI, social position, and physical activity, both men and women had a connection between cigarette smoking and blood pressure.

While smoking is an important risk factor of cardiovascular disease, the link between smoking and high blood pressure is largely unknown. [14]

Over the last two decades, national questionnaires and longitudinal studies conducted around the world have discovered distinct patterns for the smoking-BP relationship based on geography, gender, and race. The National Health and Nutrition Study of England [15]observed no statistically significant variance in BP between male smokers aged 16-44 years and non-smokers, although lower BP was identified in other nationwide studies of men, particularly in China and Japan[14].A 30-year follow-up study in the United States found no significant rise in SBP or DBP among male or female people who smoke, while white female smoking had reduced DBP.[16].

Studies in the China and United Kingdom found lower BP in women who currently smoke compared to non-smokers, which is consistent with our findings, and a U.S. longitudinal investigation examining the risk of incident hypertension in women observed cigarette smoking does not substantially raise the risk of occurrence hypertension in female using cigarettes per day [17].A systematic review of hypertension in low- and middle-income countries discovered geographic differences in the relationship between smoking and blood pressure (BP), with lower proportions of hypertension among smokers in Europe and Central Asia, Latin America and the Caribbean[18].After adjusting for other factors, a single investigation in peri urban Kathmandu discovered a link with current use of cigarettes and increased blood pressure [19].Other studies in Nepal [20], as well as a statewide survey [21], indicated that current smoking were not substantially linked to BP in multivariate analyses. A meta-analysis and systematic review of 12 studies conducted in Nepal during the last two decades [22].

The current study's findings, the largest to date on this topic, reveal that any independently chronic impact from smoking on blood pressure is minor. After controlling either age, BMI, social status, and a variety of other factors, we discovered that heavy or moderate smokers had significantly greater SBP and DBP than never smokers. As a result, our findings, especially in men, support those of earlier research that found lower BPs with increasing amounts of cigarette usage[23].The discovery of elevated SBP and DBP in older men is a significant new finding that is consistent with what is expected in relation with chronically improved atherogenesis in large capacity vessels, which is associated with smoking and results in diastolic and systolic hypertension[24].In women, we found that light smokers had lower average BP levels than

nonsmokers along with heavier smokers, while the differences were statistically not significant in younger ages. Because of the substantial interrelationships between smoking and BMI, as well as the detection of an interaction, it was necessary to investigate the association between smoking with BP in accordance with BMI categories [25]. Previous studies were too small to adequately correct data for the possibility of confounding implications of these additional factors. Smoking had no effect on blood pressure in people who were normal weight, but in people who were overweight or obese, not just heavy smokers, but also moderate smokers, had a significant rise in blood pressure [26].

Several studies have revealed a link among the number of cigarettes smoked and comparative body weight among smokers, among those smoking between ten and twenty cigarettes.[27] Despite the fact that smoking is related with higher 24-hour energy expenditure,[28,29] Heavy smokers may weigh more as a result of other habits such as physical activity, educational status, social status, and diet food intakes or other dietary factors, like as electrolytes consumption, which could further confound the BP-smoking incorporation, because smokers have different diets than nonsmokers.[30,31] We did not have dietary data, but we found that heavy smokers represent those distinct items compared to nonsmokers or lighter smokers, and had higher cholesterol levels in previous research.

Overall, we found that BP in everyday cigarette smokers is lower, higher, or the same as in nonsmokers in the two age groups 19-44 and 45-82 years.

Our finding that the younger men between 19-44 years, 22 out of 90 were significantly higher mean SBP and 18 of them were in lower mean DBP than non-smokers, whereas the heavy smokers within the same age group have higher SBP and DBP with no significant differences.

the younger women between 19-44 years, 17 out of 73 were significantly higher mean SBP and 13 of them were in lower mean DBP than non-smokers, While the heavy smoker young women with high SBP and DBP with no significant differences.

The age group 45-82 years old, showed high SBP and DBP with significant relation, but in heavy smoker showed 19 and 7 out of 47 with high SBP and low DBP with no significant relation.

Conclusion

This study looked at the relationship between smoking cigarettes and hypertension in persons aged 19 to 82 in Baghdad. Our discovery that daily smoking of cigarettes was related with higher blood pressure in either men or women in this cohort adds to our understanding of the association between these two important risk factors for heart disease in populations with similar features. However, because smoking cigarettes is a substantial significant risk factor of cardiovascular disease, the findings of the present research should be used to impact health education efforts on smoking cessation. Long-term research, the use of continuous BP monitoring, controlling other confounders, and investigations on stiffness of the arteries and systemic blood pressure could offer new insight into the influence of smoking on BP [32].

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