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Prevalence of hypertension and its associated risk factors among bank workers of Kathmandu

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Abstract

Background: Bank workers are exposed to risk factors which make them a potential occupational risk group for hypertension and information on the prevalence and risk factors of hypertension among bank workers in Nepal is very scarce.

Objective: The aim of the study was to estimate the prevalence and associated factors of hypertension among bank employees in Kathmandu district.

Methodology: A descriptive cross-sectional study was conducted among 416 bank employees of commercial banks of Kathmandu district. The information was obtained using a self-administered questionnaire in the workplace which included demographic information of individuals and other risk factors like alcohol,tobacco use and physical activity. Anthropometric measurements and blood pressure were recorded and hypertension was defined as per Joint National Committee VII criteria. Data analysis was performed using the Statistical Program for Social Sciences version 23.

Results: Prevalence of hypertension was found to be 11.3%. Of the 47 participants with hypertension, 40(85.1%) were known cases while 7(14.9%) were newly diagnosed. Age, gender, marital status, overweight (BMI ≥25), smoking, alcohol consumption, having diabetes, and family history of -hypertension were found to have significant association with hypertension in univariate analysis. The multivariate logistic regression analysis revealed that gender, having diabetes and physical activity had independent and significant association with hypertension.

Conclusion: Based on the findings from the study, we can conclude that hypertension is significantly associated with gender, physical activity and diabetes. Measures for early detection of hypertension and diabetes are required and health education regarding lifestyle modifications is recommended.

Key words: Hypertension; Occupational; Prevalence; Risk factors.

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INTRODUCTION

Cardiovascular diseases(CVD) cause 18 million deaths annually worldwide[1]. Hypertension (HTN) is the leading global risk factor for CVD[2] and is now regarded as the major cause of premature death worldwide[3]. Hypertension is now an important issue in low- and middle-income countries and there is high prevalence of hypertension in developing countries as compared to developed countries these days[3-6].

Epidemiological studies have shown that sedentary lifestyle, obesity and stress are significant risk factors for hypertension[3,7]. As bank workers are exposed to these risk factors, it makes them a potential occupational risk group for hypertension and it is important to do screening for hypertension among them[8-12].Information on the prevalence and risk factors of hypertension among bank workers in Nepal are very limited hence this study is conducted to estimate the prevalence of hypertension

among bank workers in Kathmandu district and find its risk factors.

METHODOLOGY

A descriptive cross-sectional study was conducted among bank workers of commercial banks of Kathmandu district to estimate the prevalence of hypertension and its risk factors. The study population consisted of bank workers who had spent at least one year on their job. Pregnant women were excluded from the study. Ethical approval was taken from the Institutional Review Committee of Kathmandu University School of Medical Sciences. Kathmandu district was selected purposively as head offices of all commercial banks are located in Kathmandu district, so that no banks were missed. Both government and private commercial banks were included in the study. There are a total 27 banks in Nepal,out of which 2 banks refused to participate in the study.

The sample size 417 was estimated by using formula $n = z^2pq/d^2$ at 95% Confidence interval (Z), with expected prevalence (p) of 44%[13]and relative precision (d) of 5% with addition of 10% non-response rate. The samples were selected according to the proportion of bank workers in each bank using Probability Proportional to size (PPS) sampling method. From each bank required sample was selected using simple random sampling method.

An informed consent was read and explained to the participants and the consent was obtained. Data on baseline characteristics and risk factors were collected using self-administered questionnaire in the workplace. Height, weight, and blood pressure of each participant was measured.

Height was measured with a portable standard stature scale, without footwear, with participants standing on a flat surface facing the interviewer with their feet together and heels against the backboard with knees straight. Height was recorded in centimeters. Weight was measured with a portable digital weighing scale. The instrument was placed on a firm, flat surface. Weight was measured with minimum cloths and no footwear, with participants standing on the scale face forward and arms placed at their side. Weight was recorded in kilograms.

Body mass index (BMI) was calculated using formula, weight in kilograms divided by the square of the height in meters. Overweight was defined as BMI ≥ 25.

Blood pressure was measured following standard protocol with a digital, automated blood pressure monitor (OMRON HEM - 8712). Three readings of blood pressure were obtained and the mean of the second and third readings were calculated. Hypertension was defined as having systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg during the study as recommended by Joint National Committee 7, and the participants who were taking anti-hypertensive medicines were also considered as hypertensive[14]. Smoker was defined as those who were smoking cigarettes and those who quit less than one month before the interview. Any participant who drank alcohol within the last 30 days of data collection was defined as current alcohol user. Participants were categorized as physically active if they were involved in any type of physical activity (walking, jogging, sports, yoga) for at least 30 minutes per day on most of the days of the week.The collected data was analyzed using Statistical Program for Social Science(SPSS) version 23. Sample characteristics were described using mean and standard deviation for continuous variable and percentage for categorical variable. Chi-square test was used to test the differences between proportions. All the covariates (age, gender, marital status, BMI, smoking, alcohol, diet, physical activity, diabetes, family history of hypertension and mode of travel) were included as independent variables for multiple logistic regression analysis to identify the factors independently associated with hypertension. A p-value< 0.05 was considered as statistically significant.

RESULTS

A total of 416 individuals from 25 commercial banks participated in the study. Socio-demographic characteristics of the study population is provided in Table 1. A majority (247, 60.3%) of the participants were in the age group of 31–40 years, males were more than females (214 Vs 202). A total of 115 (27.6%) participants reported to be smokers and 176 (42.3%) to be alcohol consumers. Majority of the participants reported not having diabetes (94.5%) and family history of hypertension (66.1%). Only 27.5% were engaged in physical exercise and the most common mode of travel was by motorbike.

Of the total 416 participants, 47(11.3%) were classified as hypertensive and 87(20.9%) were pre-hypertensive (Table 2). Of the 47 hypertensive, 40(85.1%) were known hypertensives while 7(14.9%) were newly diagnosed at the time of data collection using JNC 7 criteria.

Out of all the factors that were assessed in this study; age, gender, marital status, overweight (BMI ≥25), smoking, alcohol consumption, having diabetes, and family history of HTN were found to have significant association with

hypertension in univariate analysis considering p<0.05 (Table 3).

The multivariate logistic regression analysis revealed that gender, having diabetes and physical activity have independent and significant association with hypertension. Result indicate that male gender have higher odd of having hypertension compared to female gender (AOR: 3.01, 95% CI: 1.07-8.52; p=0.03), hypertension tends to decrease with increase in physical activity (AOR: 0.33, 95% CI: 0.133-0.836; p=0.01) and individuals with diabetes have higher odd of having hypertension (OR: 4.42, 95% CI: 1.47-13.33; p<0.001) (Table 4).

Table 1: Characteristics of the participants (n=416)

Characteristics	Categories	n (%)
Age (years)	21-30	144 (34.6)
	31-40	247 (59.3)
	>40	25 (6.1)
Gender	Female	202 (48.5)
	Male	214 (51.5)
Marital Status	Married	142 (34.2)
	Unmarried	274 (65.8)
BMI	< 25	271 (65.2)
	≥25	145 (34.8)
Smoking	No	301 (72.4)
	Yes	115 (27.6)
Alcohol consumption	No	240 (57.7)
	Yes	176 (42.3)
Diet	Vegetarian	73 (17.6)
	Non vegetarian	343 (82.4)
Physical activity	No	302 (72.6)
	Yes	114 (27.4)
Diabetes	No	393 (94.5)
	Yes	23 (5.5)
Family H/O HTN	No	275 (66.1)
	Yes	141 (33.9)
Mode of travel	Walk	36 (8.6)
	Public transport	62 (14.9)
	Bike	285 (68.6)
	Car	33 (7.9)

Table 2: Distribution of Hypertension according to JNC 7 Classification (n=416)

Hypertension	Frequency	Percentage
Normal	282	67.8
Pre-hypertension	87	20.9
Stage 1	47	11.3

Table 3: Prevalence of Hypertension according to the studied risk factors

Variables	Categories	Participants with Hypertension		p- value
		Yes (%)	No (%)	
Age	21-30	2(1.4)	142 (98.6)	<0.001
	31-40	36(14.6)	211(85.4)	
	>40	9(36)	16 (64)	
Gender	Female	8(4)	194 (96)	<0.001
	Male	39(18.2)	175 (81.8)	
Marital Status	Unmarried	4(2.8)	138(97.2)	<0.001
	Married	43(15.7)	231(84.3)	
BMI (kg/m^2)	<25	14(5.2)	257 (94.8)	<0.001
	≥25	33(22.7)	112 (77.3)	
Smoking	No	24(8)	277 (92)	<0.001
	Yes	23(20)	92 (80)	
Alcohol	No	29(12.1)	147(87.9)	<0.05
	Yes	18(10.2)	222(89.8)	
Diet	Vegetarian	6(8.2)	67(91.8)	.422
	Non-vegetarian	41(12)	302(88)	
Physical activity	No	39(12.9)	263(87.1)	.117
	Yes	8(7)	106(93)	
Diabetes	No	37(9.4)	356(90.6)	<0.001
	Yes	10(43.5)	13(56.5)	
Family H/O HTN	No	24(8.7)	251(91.3)	.032
	Yes	23(16.3)	118(83.7)	
Mode of travel	Walk	2(5.5)	34(94.5)	.055
	Public vehicle	2(3.2)	60(96.8)	
	Bike	37(13)	248(87)	
	Car	6(18.2)	27(81.8)	

Table 4: Risk factors of hypertension: Multiple logistic regression analysis

Variables	Categories	Number	OR	95% Confidence Interval	p-value
Age (years)	21-30	144	Ref	Ref	0.13
	31-40	247	3.60	0.68-19.04	
	>40	25	7.49	1.03-54.30	
Gender	Female	202	Ref	Ref	0.03
	Male	214	3.01	1.07-8.52	
Marital Status	Unmarried	142	Ref	Ref	0.32
	Married	274	1.90	0.53-6.81	
BMI (kg/m^2)	<25	271	Ref	Ref	0.40
	≥25	145	2.35	2.34-1.04	
Smoking	No	301	Ref	Ref	0.35
	Yes	115	1.51	0.63-3.61	
Alcohol	No	240	Ref	Ref	0.45
	Yes	176	1.37	0.60-3.13	
Diet	Vegetarian	73	Ref	Ref	0.37
	Non vegetarian	343	1.64	0.55-4.83	

Physical activity	No	302	Ref	Ref	0.01
	Yes	114	0.33	0.133-0.836	
Diabetes	No	393	Ref	Ref	
	Yes	23	4.42	1.47-13.33	<0.001
Family h/o HTN	No	275	Ref	Ref	0.15
	Yes	141	1.71	6.82-3.58	
Mode of travel	Walk	36	Ref	Ref	0.33
	Public vehicle	62	2.64	0.43-16.37	
	Bike	285	3.87	0.48-31.25	
	Car	33	0.83	0.82-8.403	

DISCUSSION

This study conducted among 416 bank employees of Kathmandu district revealed that prevalence of hypertension was 11.3% which is comparable to the study done in Owerri, Nigeria, which reported prevalence of hypertension among bank workers as 12.4%[15]. Prevalence of hypertension among bank workers is less compared to prevalence in general population of Nepal as systematic review and nationwide survey found prevalence of hypertension in general population to be 28.4% and 26% respectively[16,17]. There are other studies which reported much higher prevalence compared to our findings, Gujrat (30.4%)[9], Uttar Pradesh (69.5%)[10], Karnataka (31%)[12], Puducherry (44.3%)[13], Nigeria (34.4%)[18], Russia (35.2%)[19]. Our study also found that males have significantly higher prevalence of hypertension than females. This finding is consistent with findings from other studies done on bank workers[9,12,20-23]. However there are studies which fail to establish a significant association between gender and hypertension[24,25].Prevalence of hypertension among males is higher than in females in general population of Nepal[16,17] which corroborates with our study finding. Significant association was found between physical activity and hypertension in this study and similar findings were reported by many other studies[9,12,13]. However, some studies have shown no significant association between physical activity and hypertension[20,26]. Our findings revealed that hypertension is significantly higher among participants with known history of diabetes as had been reported by other studies[10,25]. Unlike our findings Ismail et.al[24] in their study on bank workers reported no association between diabetes and hypertension. In contrast to our study findings, some of the previous studies reported that smoking[20] and alcohol[23] were significantly associated with hypertension. However, we believe that quantification of their usage would provide better insight into association between them.

Even though our study found comparatively low (11.3%) prevalence of hypertension, prevalence of pre-hypertension was high (20.9%). Individuals in the pre-hypertension category are at high risk of developing hypertension and should be advised to practice lifestyle modification in order to reduce their risk of developing hypertension in the future[14]. Our study has certain limitations. The study is cross-sectional, hence causal relationship between exposure and outcome cannot be established. The majority of the answers were self-reported which may lead to over reporting or under reporting of co-morbid illness, alcohol consumption, smoking status etc.

CONCLUSION

Based on the findings from the current study we can conclude that hypertension is significantly associated with gender, physical activity, and diabetes. We also found that 20.9% of the participants were classified as pre-hypertensive, which adds to the overall future risk of developing hypertension. Measures for early detection of hypertension and diabetes are required and health education regarding lifestyle modifications is recommended in reducing and controlling the prevalence of hypertension.

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