

Risk Factors for Hypertension in Dharwad City, Karnataka

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INTRODUCTION

There are many diseases which force a person to seek immediate medical relief. A few examples of these are heart attack, diarrhoea, dysentery, fevers just to name a few. But when the disease is asymptomatic and capable of causing devastating complications including death, one has to be guarded against such a malady. In fact hypertension (or high blood pressure) is eminently such a condition, that can be called a 'silent killer'. It is an enemy that can lead to heart attack, stroke and kidney failure.

The responsible factors for increased blood pressure are hypothesised to be obesity, excess salt and fat intake, physical inactivity, smoking, emotional stress, high sodium and low potassium intake, modernisation and others. Apart from the food and water, the incidental amounts of sodium may be ingested in the form of processed foods, medicines, denrifices, barbiturates, sulfanamides, antibiotics, cough medicines, stomach alkalisers and laxatives. Tooth pastes, powder and mouth washes also may contain large amounts of sodium.

Since the prevalence of hypertension is increasing there is a need to gather information on risk factors leading to or increasing the occurrence of the disorder. Hence, the present study has been undertaken with an objective to evaluate the risk factors for hypertension in Dharwad city.

MATERIAL AND METHODS

The locale of the study was Dharwad city of Dharwad district (Karnataka). One hundred hypertensive subjects were randomly selected by contacting registered practitioners and physicians of government hospitals. Equal number of age and sex matched normotensives served as control. The blood pressure was measured using sphygmomanometer and the subjects were categorised based on their blood pressure values (Gupta, 1999).

The data regarding general information, die-

tary pattern and other habits was collected by personal interview method. The anthro-pometric measurements included were height (cm), weight (kg), mid upper arm circumference (cm), hip and waist circumferences (cm). The anthro-pometric indices like body mass index (BMI, Garrow, 1987) and waist to hip ratio (WHR, Lean et al., 1995) were calculated. The daily intake of food was estimated by 24 hours recall method. The foods consumed were further converted to nutrients with the help of computer programme 'ANNAPURNA' ver 3. designed by Dr. M.R. Chandrashekar of Bangalore. The nutrients of importance from hypertension point of view were considered.

Table 1: Scoring of risk factors

<i>Risk factors</i>	<i>Score allotted</i>
<i>Abdominal Obesity</i>	
At risk (>0.80 female, >0.95 male)	1
No risk (<0.80 female, <0.95 male)	0
<i>General Obesity</i>	
At risk BMI >25.0	1
BMI <25.0	0
<i>Smoking</i>	
Present	1
Absent	0
<i>Alcohol Consumption</i>	
Present	1
Absent	0
<i>High Fat</i>	
More than 35 g	1
Less than 35 g	0
<i>High Sodium</i>	
More than 3300 g mg	1
Less than 3300 g mg	0
<i>Low Potassium</i>	
Less than 5625 mg	1
More than 5625 mg	0
<i>Low Calcium</i>	
Less than 400 mg	1
More than 400 mg	0
<i>Low Magnesium</i>	
Less than 350 mg	1
More than 350 mg	0

Maximum score - 9 Minimum score - 0

The risk factors considered for hypertension viz., abdominal obesity, general obesity, smoking, alcohol consumption, high fat, high sodium, low potassium, low calcium and low magnesium intake were scored as given in table 1 and total scores were computed for each subject. Higher the score more will be the risk. Based on the scores obtained the respondents were categorised as given in table 2.

Table 2: Categorization based on scores obtained

Risk category	Score
No risk	0
Low risk	<3
Medium risk	3-5
High risk	5-7
Very high risk	7-9

RESULTS

The distribution of respondents based on risk factors of hypertension are presented in table 3. It was observed that obesity both abdominal and general, being risk factors were higher among hypertensives (70 and 52, respectively) compared to normotensives (59 and 35, respectively). Higher per cent of hypertensives were smokers (28) and

alcohol consumers (9) compared to normotensives (12 and 5, respectively). Nearly equal percentage (70HT;71NT) of respondents had more than 35 g of fat intake per day. Higher percentage of hypertensives (85) had high sodium intake compared to normotensives (44). It was interesting to note that almost similar percentage of hypertensives and normotensives had low potassium, calcium and magnesium intake.

The respondents were distributed on the basis of risk scores obtained and information is presented in table 4.

All the respondents (HT and NT) were in one or the other risk category. Majority of normotensive (81%) and hypertensive (62%) respondents were having medium risk with the score between 3 and 5. The respondents having score between 5 to 7 (high risk) were more among hypertensives (27%) than normotensives (5%). Only six percent of hypertensives were having low risk with score of less than three, whereas almost double this number (12%) of normo-tensives were observed to fall in this category. Nearly five per cent of the hypertensives were having very high risk while only two per cent of normotensives were categorised under this group.

Table 3: Distribution of respondents based on risk factors N = 200

Risk factors	Hypertensives n = 100			Normotensives n = 100		
	Male	Female	Combined	Male	Female	Combined
Abdominal obesity	43 (86)	27 (54)	70 (70.0)	35 (70)	24 (48)	59 (59.0)
General obesity	41 (82.0)	11 (22.0)	52 (52.0)	30 (60.0)	05 (10.0)	35 (35.0)
Smoking	28 (56.0)	-	28 (28.0)	12 (24.0)	-	12 (12.0)
Alcohol consumption	09 (9.0)	-	09 (9.0)	05 (5.0)	-	05 (5.0)
High fat intake	29 (58.0)	41 (82.0)	70 (70.0)	30 (60.0)	41 (82.0)	71 (71.0)
High sodium intake	42 (84.0)	43 (86.0)	85 (85.0)	14 (28.0)	30 (60.0)	44 (44.0)
Low potassium intake	50 (100.0)	50 (100.0)	100 (100.0)	50 (100)	48 (10.0)	98 (98.00)
Low calcium intake	32 (64.0)	32 (64.0)	64 (64.0)	39 (78.0)	33 (66.0)	72 (72.00)
Low magnesium intake	-	09 (18.0)	09 (9.0)	02 (4.0)	03 (6.0)	05 (10.0)

Figures in parenthesis indicate percentage

Table 4: Distribution of respondents based on scores

Respondents	No risk (0)	Low risk (<3)	Medium risk (3-5)	High risk (5-7)	Very high risk (7-9)
<i>Hypertensives (n=100)</i>					
Male	-	01	23	22	04
Female	-	05	39	05	01
Combined	-	06 (6.0)	62 (62.0)	27 (27.0)	05 (5.0)
<i>Normotensives (n=100)</i>					
Male	-	03	40	05	2
Female	-	09	41	-	-
Combined	-	12 (12.0)	81 (81.0)	05 (5.0)	2 (2.0)

Figures in parenthesis indicate percentage

DISCUSSION

Abdominal obesity meaning high proportion of fat on the trunk and abdomen plays an important role in the risk of hypertension which is reported to have a strongest relation with blood pressure (Funke et al., 1990) and the results of the present study are on par. A significant rise in the blood pressure accompanies smoking of each cigarette. The gas in the smoke consists of carbon monoxide, hydrogen cyanide, formaldehyde along with nicotine, which are potent vasoconstrictor agents that contribute to hypertension (Rogers, 1961). Funke et al. (1990) also showed the strongest relation between blood pressure and smoking.

CONCLUSION

Hence, from the present study it can be concluded that abdominal and general obesity, smoking, alcohol consumption, high intake of fat and sodium, low intake of potassium, calcium and magnesium are risk factors for hypertension which needs to be managed through either pharmacological or non-pharmacological means.

KEYWORDS Dietary Patterns. Blood Pressure. Obesity.

ABSTRACT The investigation focussing on "Risk factors for hypertension" was carried out at Dharwad

city (Karnataka). One hundred hypertensive subjects along with equal number of age and sex matched normotensives were included for the study. The risk factors considered for hypertension were abdominal obesity, general obesity, smoking, alcohol consumption, high fat, high sodium, low potassium, low calcium and low magnesium intake. Scoring of the risk factors was done and based on the individual scores obtained, the respondents were categorised. Higher per cent of hypertensives were obese when both general and abdominal obesities were considered compared to normotensives. Majority of hypertensives were smokers and alcohol consumers along with higher intake of sodium. The respondents having score between 5 to 7 (high risk) were more among hypertensives (27%) than normotensives (5). Only six per cent of hypertensives were under the low risk category and five per cent of them were grouped as having high risk.

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