Lifestyle, Socio-demographic and anthropometric profile of the hypertensive patients visiting urban health centre of North Delhi

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Abstract

Introduction: The prevalence of hypertension has been reported to be increasing in India due to changes in the lifestyle of people. The current prevalence of hypertension in India has been estimated to be 42.2% in urban areas and is supposed to increase in future requiring huge resources for management of hypertension cases and related cardiovascular co-morbidities. So in this study the lifestyle related factors causing hypertension was explored.

Materials and Methods: Diagnosed hypertensive patients visiting urban health centre were included as study subjects. The participants were asked information on life style, socio-demographic characteristics and physical activities levels in 24 hours in the form of walking, sitting and sleeping. History of hypertension in family, treatment history for hypertension, stress factors, clinical signs and symptoms were recorded. Simultaneously the anthropometric measurements including height, weight and waist circumference were measured. Information on diet intake to calculate total calorie and protein intake per day was collected.

Results: Total 44 patients participated in the study. The mean age of the participants was 59.77±13.3 years. Family history of hypertension was in 47.72% participants. History of stress was in 68.18% participants. Calorie intake and protein intake per day was 1109.66±33.64 Kcal and 55.73±25.29gms. Spending time for walking of < 1hr per day was reported by 61.36% participants. Sleeping time of ≤ 8hrs per day was in 77.27% participants. Sitting >2hrs per day was in 27.27% participants. BMI > 25 were in 65.9% participants. Waist circumference was > 95cm in 25% of males and > 85cm in 50% of females.

Conclusion: Majority of participants were found to be overweight and sedentary. Participants were spending less time in walking. So the study recommends increasing physical activity, limiting calorie and protein intake and eliminating stressors will restrict progression of hypertension in hypertensive patients.

Keywords: Calorie intake, Hhypertension, Life style, Physical activity, Protein intake, Stress, Waist circumference.

Introduction

Hypertension remains a major public health concern worldwide. The overall prevalence of hypertension worldwide has been estimated to be 26.4%.[1] The prevalence of hypertension has also been reported to be increasing in India due to changes in lifestyle of people favouring development of hypertension not only in urban but also in rural areas. The current prevalence of hypertension in India has been estimated to be 29.8 % [2] in urban areas and is supposed to increase in future requiring huge resources for management of hypertension cases and related cardiovascular co-morbidities. Therefore for any effective intervention it is essential to study the prevalence of life style related factors causing hypertension in a particular area.

With this background the current study was carried out among hypertensive patients visiting the urban health centre of North Delhi.

Objectives

To find out the lifestyle, socio-demographic and anthropometric related factors associated with hypertensive patients visiting urban health centre.

Materials and Materials

The patients aged above 15 years visiting urban health centre of North Delhi were selected as study subjects. After institute ethics committee approval, diagnosed hypertensive patients were included in the study. The hypertensive cases were selected by simple random method from all the patients visiting the clinic. Total 44 patients of diagnosed hypertension cases were studied. Then these patients were administered the questionnaire. All the study subjects were explained the purpose of study and written consent was taken. The participants, who gave written consent were included in the study and interviewed with the help of pre-designed and pretested questionnaire. The blood pressure of these patients was measured with the help of digital sphygmomanometer. Three consecutive blood pressure measurements were taken at the interval of 10 to 15 minutes. The average of these 3 measurements was noted. A person having BP > 140/90 mmHg was considered to be hypertensive.

The Questionnaire containing information on socio-demographic characteristics, history of hypertension in family, treatment history of hypertension in individuals, also includes stress factors, clinical signs and symptoms. Simultaneously the anthropometric measurements like height, weight and waist circumference were measured.

Weight was measured with the help of weighing machine, without shoe and minimum clothing. The height was measured with the help of stadiometer. The height was express in centimetre. Waist circumference was measured at the middle point between lower level of rib cage to iliac crest or at the level of umbilicus. Information on diet intake per day to calculate total calorie and protein intake per day

was also asked. Physical activity levels in 24 hrs of these populations were also asked. The physical activities levels include the total walking time, sitting time and sleeping time per day.

Data processing and Analysis

Data were verified for completion and entered in computer excel sheet and analysed with the help of SPSS software version 23. The data was described in descriptive forms including the frequency distribution and mean of the quantitative data. The qualitative data also described in sentences as the stress factors mention by the population. The data was presented as proportion and percentages.

Ethical Issues

The confidentiality had been maintained throughout the study. The written informed consent of the participants had taken. Those who were detected to have hypertension were included in the study. They were counselled and treated by the doctors in OPD and simultaneously referred to cardiac centre in the tertiary level hospital.

Results

Forty four patients completed the study. The participants of the study were from North Delhi. The mean age of the participants was 59.77±13.3 years. The mean family and household members of the participants was 4.75. The sociodemographic profiles of the participants are described in the **Table 1.**

Table 1: Socio demographic profile of the participants

Socio demographic profile	Number (%)
Male	20 (45.45%)
Female	24 (54.54%)
Illiterate	03 (6.81%)
Up to 8th class	03 (6.81%)
Up to 10th class	09 (20.45%)
Up to 12th class	03 (6.81%)
Graduation	22 (50%)
Post-graduation	04 (9.09%)
With job or occupation	32 (72.72%)
With no occupation	12 (27.27%)

The mean age at first diagnosis of all hypertensive cases was 56.21±13.17 years. The minimum age of the person was 22 years and maximum age was 80 years of the first diagnosis of hypertension of all the participants.

Disease manifestation

Forty two cases were under medication and 2 cases were not under medication. The mean systolic blood Pressure of the participants was 142.23±19.09 mm of Hg and the mean diastolic blood pressure was 81.39±14.81 mm of Hg. (Fig. 1,2)

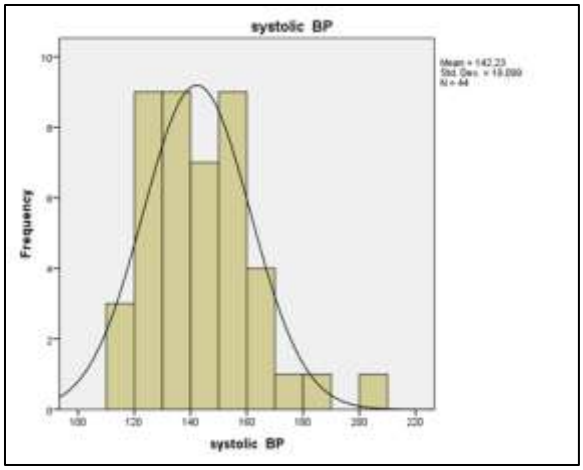

Fig. 1: Distribution of systolic BP of participants

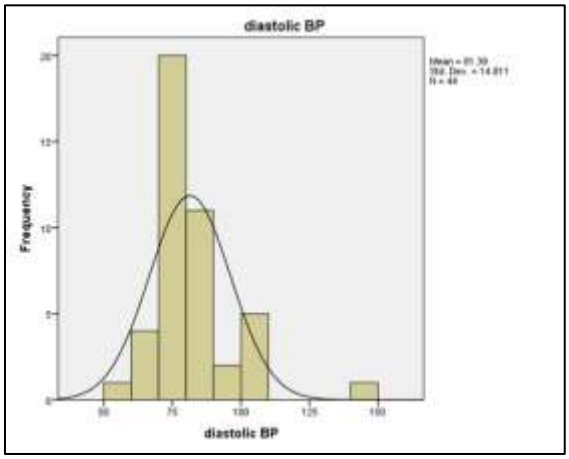

Fig. 2: Distribution of diastolic BP of participants

Initial or first sign and symptoms reported by the hypertensive patients were headache, angriness, heaviness in head, myalgia and tingling sensation. Shortness of breath and swelling of feet was reported by some patients. Some patients reported that they can't able to stand and have dry mouth and cough, incontinent of urine, reeling of head, feeling no life inside body.

Signs & Symptoms reported by the hypertensive patients

Head ache
Weakness
Gluten sensitivity enteropathy
Palpitation
Reeling of head
Sleeplessness
Nervousness
Weakness in both legs
Angriness
Sweating
Swelling of feet
Tiring
Heaviness of head
Breathlessness

Cough and cold
Fever
Difficult to stand from sitting position
Stiffness of shoulder
Pain in hand
Heaviness of head
Twitching of finger
Pain in the chest

Four hypertensive patients reported no sign and symptoms. Breathlessness, fluctuating BP and headache in the morning were reported by some patients. One patient found to be increased BP in one screening programme for eye check-up. The risk factors associated with development of hypertension is depicted in Table 2.

The stress factors mentioned by the participants were one divorce sister staying with her, caretaking of her children and children of sister-in -law, household problems, husband hemiplegic for 4 years, divorce of younger son, after death of husband, costly medicine, for children, stress for nothing, irresponsible husband, jobless of sons, to have good job of children, work, financial, caring of family, case file by daughter-in-law, one daughter is not coming, one son left the home, less income, because of daughter (having no good relation with husband), husband is not there, loneliness, pain in the body, for children, quarrelling with husband, household work, about daughter, income tax notice, only one income, household work stress, rented house, for sons, to stay alone, for children, mental tension for sleeplessness, due to property dealer work and study tension. Family history of hypertension was present in 21 participants.

Table 2: Risk factors for Hypertension

Risk factors	Yes (%)	No (%)
Family history of hypertension	21 (47.72%)	23 (52.27%)
History of stress	30 (68.18%)	14 (31.31%)
H/o smoking	06 (13.63%)	38 (86.36%)
H/o alcohol intake	03 (6.81%)	41(93.18%)
No intake of Fruits	07 (15.90%)	37 (84.09%)

Too much fatty diet and intake of refine carbohydrate increases the risk of hypertension. Nutritional intake of participants also analysed and the details are described in Table 3.

Table 3: Nutritional intake of the participants

Nutritional intake	Number (%)
Frequency of fruits intake	
Once in a day	21(47.72%)
Once in a week	09(20.45%)
Occasionally	07 (15.90%)
Not taking fruits	07 (15.90%)
Mean of total calorie intake/day	(1109.66 ±334.64) Kcal
Mean of total Protein intake/ day	(55.73±25.29) gm

Physical activities levels also act as a risk factor for the development of hypertension. So in this study the daily routine activities of the participants were asked and evaluated in **Table 4**.

Table 4: Daily routine physical activities level of participants

Physical activities level in 24 hrs	Mean ± SD value in hrs	Time spend	Number of participants (%)
Walking	1.16±0.99	≤ 1 hr	29 (61.36%)
		> 1 hr	15 (34.09%)
Sleeping	7.63±1.45	≤ 8hrs	34 (77.27%)
		> 8hrs	10 (22.72%)
Sitting	5.25±2.23	≤ 2hrs	12 (27.27%)
		> 2 hrs	32 (72.72%)

Increased weight, high BMI and morbid obese were at risk for the development of Hypertension. In **Table 5** the anthropometric risk factors for hypertensive participants was evaluated.

Table 5: Anthropometric measurement risk factor for hypertension of participants

Anthropometric measurement	Mean ±SD	Range	Number (%)
Weight in kg	68.64±14.69	(35-50) kg	03(6.81%)
		(51-75) kg	27 (61.36%)
		(76-100)kg	13 (29.54%)
		>(100-106) kg	01 (2.27%)
Height in cm	156.81±8.21	(140-150) cm	13 (29.54%)
		(151-160) cm	18 (40.90%)
		(161-170) cm	11 (25%)
		> 170 cm	02 (4.54%)
Body Mass Index in Kg/mt^2	28.06±6.24	< 18.5	02 (4.54%)
		18.5-24.99	13 (29.54%)
		25.00 - 29.99	12 (27.27%)
		30-35	12 (27.27%)
		> 35	05 (11.36%)
Waist circumference in cm	101.04±14.03 cm	Male ≤ 95 cm	09 (20.45%)
		Male > 95 cm	11(25%)
		Female ≤ 85 cm	02 (4.54%)
		Female > 85 cm	22 (50%)

Discussion

The present study detected the blood pressure of hypertensive participants was in variable range and mean value was near to hypertension value. Most of the patients were taking medicine for hypertension. The lifestyle related factors like less physical activity, smoking, alcohol intake, less fruit intake were persisting. The mean total calorie and protein intake was less to the recommended amount. The anthropometric parameters were above ideal standard in many participants. The stress factors in different forms were continuing with the participants.

One study by D.H. Stockwell in America on insured population it was found that of the 409 employees found to be hypertensive at screening, 289 (71%) were aware of their high blood pressure, 201(49%) had received treatment, and only 51 (12%) had achieved a blood pressure of less than 140/90 mm Hg.[3] Hypertension was significantly associated with obesity, physical inactivity, diabetes and stroke.[4] Our study showed that in spite of antihypertensive medications and treatment, the blood pressure was in higher range and not controlled to normal value. The life style of majority of the participants was not ideal and inappropriate to the recommended level.

A study by Bravata DM et al found that the accumulated daily step count goals of 10,000 steps per day effective in reducing blood pressure.[5] Reduction of systolic BP and diastolic BP of 3.8 mm Hg and 0.3 mmHg respectively by daily 10,000 steps.[8,5] Exercise is a key component of lifestyle therapy for the primary prevention and treatment of hypertension.[6] A number of studies consistently demonstrate beneficial effects of exercise on hypertension with reduction in both systolic and diastolic BP with as much as 5-7 mm of Hg.[7] The finding is from a systematic review and meta-analysis of 93 studies summarising the effects of exercise on resting blood pressure.[8]In one study, 20-25% of those with hypertension were non-responder with no reduction in BP with excercise.[9] The present study detected majority of participants (61.3%) had less physical activity in the form of walking < 1hr per day (Table 4).

High waist circumference in women of > 88cm and in men of > 102cm increases cardiovascular risks. Hypertension prevalence was 44% among those with low waist circumference, 55% with moderate waist circumference and 66% with high waist circumference. After adjustment moderate waist circumference was 1.31 times at risk for development of hypertension prevalence among persons with normal body mass index, 1.80 times in overweight body mass index individuals and 1.96 times in obese class I body mass index individuals.[10,11] Lack of physical activity increased with waist circumference.[9] Waist circumference is the most important anthropometric factor associated with the hypertension risk. Among males with waist circumference more than 102 cm are 3 times more at risk for development of hypertension than males with waist circumference less than 94 cm using casual blood pressure measurement. Females with waist circumference more than 88 cm have twice at risk for development of hypertension than females with waist circumference less than 80 cm, whatever BP measurement was taken casual or 24 hrs methods.[11] Waist circumference is positively and significantly correlated with hypertension (p-value < 0.001). In our study 75% of participants had higher waist circumference than the recommended value (Table 5).

There are lines of evidence from experimental sleep deprivation studies, population-based epidemiological studies, and an interventional study that point to the potential efficacy of adequate quality sleep to prevent and treat hypertension. Experimental sleep restriction has been shown to raise blood pressure and heart rate. Insufficient sleep on a chronic basis can raise average 24-hour blood pressure and lead to structural adaptations that entrain the cardiovascular system to operate at elevated blood pressure

equilibrium and increase the risk for hypertension. The observed association between sleep duration and hypertension raises the hypothesis that interventions to extend sleep and improve sleep quality could serve as effective primary, secondary, and tertiary preventive measures for hypertension.[12]

It was found that there was no association between short sleep duration and hypertension among Spanish, Finnish, Japanese and Brazilian population. Short duration sleep and hypertension is strongly associated in US, Korean, German and Australian population. Gangwisch JE et al in their study among female nurses found that the combination of short sleep duration with sleep disorders was associated with more hypertension prevalence.[13] In our study 77.27% of participants were having sleep deprivation in the form of having sleep of less than 8hrs per day.

It was found that the mean systolic blood pressure is less in sitting position in comparison to supine and then followed by fowler's position in the range of 1-2 mm of Hg. But diastolic blood pressure increased in sitting in comparison to supine and then followed by fowler's position.[14]

General stress was significantly related to increased hypertension having odds ratio of 1.247 with standard deviation of 1.076 and 1.446 on both sides. Women have more stress to develop hypertension in comparison to men, who don't develop hypertension if stress is there in home or work place. General stress contributed approx. 9.1% to the risk for hypertension. Thus psychological stress was associated with an increased risk for hypertension, although this increased risk was not consistent across gender.[15]Similarly in our study the population having increased stress due to lots of causes, had more prevalence of hypertension (Table 2).

The study by Soulemene Pessinaba et al found that the risk factors for hypertension was abdominal obesity, obesity whose BMI was > 30kg/m^2, tobacco smokers, physical inactivity, diabetes, raised cholesterol of more than 2g/litre, raised LDL cholesterol (> 1.6g/l), Low value of HDL cholesterol and associated metabolic syndrome.[4] In our study BMI >30kg/m^2 was present in 38.5% of participants.

In a study by LaxmaiahA et al, a total of 21141 men and 26260 women participated. Which was a community based cross-sectional study carried out by the National Nutrition Monitoring Bureau (NNMB) by adopting multi-stage random sampling procedure. The study was carried out in 120 Integrated Tribal Development Authority (ITDA) villages in nine States viz. Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Odisha, Tamil Nadu and West Bengal during 2007-2008.[16] Only <10 % of men and women were known hypertensives and more than half on treatment (55-68%). Men with general and abdominal obesity were at 1.69 and 2.42 times higher risk of hypertension respectively, while it was 2.03 and 2.35 times higher in women. Those using tobacco and consuming alcohol were at a higher risk of hypertension compared with the non-users.[16]

Hypertensive subjects with high calorie intake diet showed an increase in BP, serum lipids and BMI which might be the major contributor in precipitation of hypertension and also in increasing risk of cardiovascular morbidity and mortality.[17] But our study the total calorie intake is less than the recommended.

Generalized linear regression revealed no significant relation between systolic or diastolic blood pressure with daily total caloric intake irrespective of normal or abnormal blood pressure. This association remained non-significant even after adjustment for body mass index. Logistic regression analysis revealed that there is no significant relation between total caloric intake and existence of systolic or diastolic hypertension. After adjustment for body mass index also, there was no significant relation between these two parameters.[18]

Most observational studies showed no association or an inverse association between total dietary protein and blood pressure or incident hypertension. Results of biomarker studies and randomized controlled trials indicated a beneficial effect of protein on blood pressure. This beneficial effect may be mainly driven by plant protein, according to results in observational studies.[19]In our study the mean intake of protein per day was less than the recommended.

A study by Wang YF et al, in which 810 untreated pre- or mild hypertension aged 25 -79 years were included. The initial blood pressure was 135/85 mm of Hg. The dietary intake of plant protein in males was 101 gm/day and for females it was 65gm/day. Then it was found that reduction of blood pressure both systolic and diastolic with a follow up of 6 months period.[20]

A study by Umesawa M et al, in which 7585 Japanese men and women aged 40-69 years were included. In this study by Umesawa M et al found that a 25.5 g/day increase in total protein intake was associated with decrease in systolic blood pressure of 1.14 mm of Hg and diastolic blood pressure of 0.65 mm of Hg.[21] (Table 3).

Conclusion

The lifestyle, sociodemographic and anthropometric parameters of the hypertensive patients in urban population were not improved to the standard and recommended level of health care. The mean BP of the patients' was 142.23±19.09 mm Hg systolic and 81.39±14.81 mm of Hg diastolic in spite of antihypertensive medications. The study suggests more awareness and motivation to implement the lifestyle modification, reduction in risk factors and strict adherence to anti-hypertensive medication for effective control of BP.

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