

ESTIMATION OF RISK FACTORS FOR HYPERTENSION-A COMMUNITY BASED STUDY



General Medicine

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ABSTRACT

Introduction: Hypertension is a worldwide health disaster. It is frequently referred to as silent killer and kills 35-40 thousands Americans a year. **Objective:** The purpose of the present study was to estimate prevalence of risk factors for hypertension in Kashmiri population. **Type of study:** A Community based cross sectional study. **Material and Methods:** A total of 3900 population was taken for study. Blood Pressure was measured 3-4 minutes after the subject was comfortable using correctly sized cuff. Blood pressure was measured twice within an interval of one hour and average of systolic and diastolic blood pressure was taken. Each reading was mean of three BP readings. **Results:** Our study showed a progressive rise in prevalence of hypertension with increase in the age of subjects and prevalence of hypertension was more common in females (26.67%) as compared to males (22.47%). In our study we found a strong relationship between place of residence and hypertension with prevalence more in urban than rural areas (60.02% versus 39.78%). The present study also showed strong correlation between BMI/obesity, dyslipidemia and impaired blood-glucose tolerance with hypertension. **Conclusion:** Our study revealed a significant association of various Cardiovascular disease risk factors (Dyslipidemia, obesity, impaired –glucose tolerance) and increasing age, female sex, increasing salt intake and family history of hypertension.

KEYWORDS

Hypertension, Blood Pressure, Prevalence, Dyslipidemia.

INTRODUCTION:

Hypertension is a worldwide health disaster. It is frequently referred to as silent killer and kills 35-40 thousands Americans a year.¹ Hypertension is an iceberg disease. On the basis of current evidence, it is reasonable to suggest that arterial hypertension and pre hypertension inheritance makes an individual more susceptible to develop hypertension while as environmental factors accelerate the increase in blood pressure and subsequent cardiovascular damage². The age related and progressive reduction in vascular compliance is directly associated with an increased in peripheral vascular resistance and increase in blood pressure³. The importance of genetic factors in the pathogenesis of essential hypertension is apparent in the similarity of blood pressure values between close relatives such as siblings and between parents and children³. Obese people are more likely to develop hypertension than non-obese individuals⁴.

AIMS AND OBJECTIVES:

To estimate the prevalence of risk factors for hypertension.

MATERIAL AND METHOD:

A community based cross sectional study was carried out in the Kashmir valley for a period of 3 years to estimate the prevalence of risk factors for hypertension in Kashmiri population.

The study group included subjects ≥ 19 years of age irrespective of gender. A multistage sampling procedure was adopted for the survey. Out of the ten districts of Kashmir, three districts were included in the survey. Srinagar, Budgam and Baramulla, representing the urban, semi-urban and the rural population.

The selected households were visited, the purpose of study was explained to them and consent was taken from them to participate in the study. A total of 3900 population was taken for study. Blood Pressure was measured 3-4 minutes after the subject was comfortable using correctly sized cuff. Blood pressure was measured twice within an interval of one hour and average of systolic and diastolic blood pressure was taken. Each reading was mean of three BP readings.

Blood pressure was estimated in non dominant arm in sitting position.⁵ Hypertension was diagnosed as per Joint National Committee 7 (JNC VII) criteria.⁶

Exclusion Criteria:

1. Subjects aged less than 19 years.

2. Pregnant females.
3. Subjects with Kidney disease.
4. Subjects on antihypertensive drugs or any other drugs that leads to change in blood pressure.

Diabetes:

Diagnosis of diabetes was based on WHO consulting group criteria i.e 2hour post load plasma glucose ≥ 200 mg/dl. Impaired glucose tolerance was diagnosed if the 2hrPG was ≥ 140 mg/dl and < 200 mg/dl and normal glucose tolerance if 2hrPG < 140 mg/dl⁷. Fasting blood glucose was measured with glucometer in all subjects who turned to be hypertensive. Subsequently subjects with impaired Fasting blood glucose were given 75gms of anhydrous glucose dissolved in 300ml of water to be drink over 3-5 minutes and reported two hours later when blood glucose was again measured.

Dyslipidemia was defined for metabolic syndrome as per National cholesterol education programme guidelines.⁸

Hypertriglyceridemia:

Serum triglyceride levels were ≥ 150 mg/dl or on specific medications.

Low HDL Cholesterol:

HDL cholesterol levels were < 40 mg/dl for men and < 50 mg/dl for women or specific medication.⁹ Estimation of LDL-C cholesterol, serum triglyceride and high density lipoprotein cholesterol was performed on the sample drawn after 12hours overnight fasting measured by enzymatic assay on a Hitachi 704 System Autoanalyser.¹⁰

Obesity:

Genrealised obesity was defined using the new who Asia pacific guidelines¹¹ i.e. BMI ≥ 25 Kg/m.

RESULTS:

Table 1: Hypertension in various age groups

Age group	Male	HTN	%	Female	HTN	%	Total	HTN	%
19-29	390	17	4.35	302	21	6.95	692	38	5.49
30-39	460	62	13.47	438	72	16.43	898	134	14.92
40-49	610	143	23.44	520	132	28.38	1130	275	24.33
50-59	370	165	44.59	300	158	52.66	670	323	48.20
60 and above	230	76	33.04	280	104	37.14	510	180	35.29
Total	2060	463	22.47	1840	487	26.46	3900	950	24.35

P value=0.001

Table 2: Relationship of Hypertension with BMI

BMI	TOTAL	HYPERTENSION	%
<18.52	200	54	2.7
18.6-22.92	1240	210	16.93
23-24.9	1458	337	23.11
25-29.9	946	301	31.81
30andabove	130	48	36.92
Total	3900	950	24.35

Table 3: Relationship of Dyslipidemia with Hypertension

TRIGLICERIDES(mg/dl)	Hypertension	%	p-value
<150	655	74.94	
>150	219	25.05	0.000
Total	874	100	
LDL-C			
<130	687	78.60	0.0000
>130	187	21.39	
Total	874	100	

HDL(mg/dl)Male	Hypertension	%	p-value
≥40	332	74.43	0.00
<40	114	25.56	
HDL(mg/dl)Female			
≥	302	70.53	
≤	126	29.43	0.00
Total	874	100	

Table 4: Fasting blood sugar relationship with Hypertension

Fasting blood sugar	N	%	p-value
<100	691	79.05	
>100-125	143	16.56	0.00
>126	40	4.56	
TOTAL	874	100	

Table 5: Relationship of Hypertension with respect to different Demographic parameters

Demographyparameters		N	%	p-value
Demography	Rural	378	39.78	
	urban	572	60.21	0.00
Smoker	yes	298	31.36	
	No	652	68.64	0.00
Saltintake	>10gm	614	64.63	
	>10gm	336	35.37	0.00
Familyhistory ofhypertension	Yes	207	21.79	
	No	743	78.21	0.00
Total		950	100	

DISCUSSION:

Hypertension is known to have strong association with CVD risk factors like increased BMI/Obesity dyslipidemia and impaired blood glucose tolerance. Age has a positive correlation with prevalence of pre-hypertension. Our study showed a progressive rise in prevalence of hypertension with increase in the age of subjects with prevalence of 5.49% in age group 19-29 and maximum prevalence of 48.20% aged between 50-59 and followed by 35.29% aged 60 years and above. Study by Trevor S. Fergusson et.al¹⁶ showed a similar age relationship with maximum prevalence of 36.39% in age group 45-64 years and this felt to 20% among those aged 65-74 years. Study by Deepa. M et.al¹⁵ showed a similar pattern of increase in prevalence with increasing age from the study from urban Indian city (Chennai). Study by Eliezer Kitai et.al¹⁴ showed a similar increase in prevalence of pre-hypertension with increase in age (13% aged 18-25 Vs 44.8% aged 66-75). Our study showed that the prevalence of pre-hypertension was more common in females (26.67%) as compared to males (22.47%). Eliezer Kitai et.al¹⁴ showed a similar trend with females (24.0%) compared to males (22.5%). Deepa M et.al¹⁵ showed a similar pattern of pre-hypertension from urban Indian city (Chennai) with females more than males.

In our study we found a strong relationship between place of residence and hypertension with prevalence more in urban than rural areas (60.02% versus 39.78%). Study by S.Yadav et.al¹² and Shyamal Kumar et.al¹³ showed overall higher prevalence of hypertension in either study from urban India. M.Janghorbani et.al¹⁷ in their study reported higher prevalence in urban than rural population in Iranian population. The present study showed strong correlation between

BMI/obesity and hypertension with maximum prevalence of hypertension (36.92%) in subjects with BMI >30 as compared to subjects with BMI <18.5(2.7%). Trevor S Fergusson et.al¹⁶ revealed in their study similar results with almost 46% of hypertensive subjects overweight and 19.7% obese. M. Janghorbani et.al¹⁷, Charles Agyemanga et.al¹⁸, Itama Grotto et.al¹⁹ have reported similar results in their study on hypertension with higher prevalence of hypertension in obese than people with normal weight. In our study there was significant family history in 21.71% of hypertensive subjects, also our study show significant affect added salt with increased prevalence of hypertension. Around 35.37% hypertension subjects were taking salts greater > 10 g studies by Deepa Met.al¹⁵ and Hari Haran et.al²⁰ should significant affect of family history of hypertension and diet (increased salt). We found in our study high prevalence of dyslipidemia in hypertensive subjects as compare to normal population with increased triglycerides levels in 25.05% of hypertensive subjects and increased LDL in 21.39% of hypertensive subjects. These observations are in accordance with higher level of obesity in hypertensive patients (36.73%) than in general population (24.34). In our study around 24.55% hypertensive subjects had impaired fasting blood sugar (>100mg/dl). Also prevalence of newly detected Diabetes mellitus was 6.27%. Trevor S. Ferguson et.al¹⁶ in their study reported prevalence of type II Diabetes mellitus was 7.2% in hypertensive subjects. S. Yadav et.al¹² in north urban India shows abnormal glucose in 41.6% of hypertensive subjects.

CONCLUSION:

Our study revealed a significant association of various Cardiovascular disease risk factors (Dyslipidemia, obesity, impaired-glucose tolerance) and increasing age, female sex, increasing salt intake and family history of hypertension.

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