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A study on dietary habits and physical activity among hypertensive patients in Kashmir (With special reference to adults aged 45 years and above)

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Abstract
Increased life expectancy, urbanization, and its attendant life style changes the overall epidemiological transition and a prolonged political turbulence in Jammu and Kashmir has exposed the population to multiple risk factors. This has given rise to numerous non communicable diseases including hypertension resulting in morbidity and mortality of various degrees. Given the complexity of the hypertension among the population both in rural and urban areas, the aim of the present study was to assess the physical activity and dietary habits of hypertensive patients aged 45years and above in Kashmir. The study group comprised of 400 participants selected by purposive random sampling. Data was collected using a structured questionnaire and self-report technique. Results revealed that the majority of patients were leading sedentary lifestyles and consuming unhealthy diets. The study further revealed less physical activity among females than males. Lifestyle related risk factors particularly, excess body weight, low levels of physical activity, excess consumption of salt and fat were evident in hypertensive patients. Dried vegetables and salt tea (Traditional Kashmiri Tea) were consumed in higher proportions. The findings indicate that hypertension is a significant health problem in the study population. Modifiable factors identified to be associated with prevalence of hypertension such as obesity, overweight, physical activity level; could be used in educational programme aimed at the detection and treatment of the affected population. Therefore, concerted efforts should be made to promote health education with emphasis on associated risk factors. The present research emphasizes the need for intercession programs to promote blood pressure control through lifestyle measures such a sex excise, healthy diets (decreased consumption of salt and fat and increased consumption of fruit and vegetables), controlled body weight, reducing salted tea and dissemination of awareness among general public regarding prevention of hypertension. It also demonstrates the need for further research to explore the relationship between behavioral factors and hypertension more comprehensively.

Keywords: dietary habits, physical activity, hypertensive, patients

Introduction
Hypertension is an important public health challenge in both economically developing and developed countries and is one of the most important risk factor for cardiovascular and cerebrovascular morbidity and mortality accounting for an estimated 54% of all strokes and 47% of all ischemic heart disease events globally [1]. It is also one of the most frequent chronic conditions in medical consultation [2]. In developed world about 330 million people worldwide have hypertension as do around 640 million in the developing world. The WHO rates hypertension as one of the most preventable risk factor of premature deaths worldwide and the problem is growing [3, 4]. In 2025 it is estimated there will be 1.56 billion adults living with high blood pressure [1]. According to the WHO hypertension constitutes an important modifiable risk factor related to 4.5% the world wide disease burden and is associated with an approximately 40% reduction of stroke risk and 15% reduction of myocardial infarction when treated and controlled [1].

The disease is a silent threat to the health of people all over the world and is rarely accompanied by any symptoms. Usually it is identified through screening or when seeking healthcare for an unrelated problem. The World Hypertension League (WHL) an umbrella organization of 85 national hypertension societies and leagues recognized that more than 50% of the hypertensive population is unaware of their conditions [5]. Worldwide 7.6 million premature deaths (about 13.5% of the global total) are attributed to high blood pressure [6]. As per WHO report about 40% of people aged more than 25 years had hypertension in 2008 [7, 8]. Review of the epidemiological studies suggest that the prevalence of hypertension in India has over the last six decades increased in both urban and rural subjects and presently is 25% in urban adults and 15% among the rural adults [9]. According to Director General of Health Services Ministry of Health and Family Welfare, Government of India, the overall prevalence of hypertension in India by 2020 will be 159.46/1000 population [9]. The prevalence of high normal blood pressure also called pre hypertension has been recorded as high as 36 and 44% from south India and Delhi respectively [9]. Various factors might have contributed to this rising trend, attributable to several indicators of' economic progress such as increased life expectancy, urbanization and its attendant lifestyle changes including increasing salt intake and the overall epidemiological transition, India is experiencing currently [10]. These life style modifications have exposed even the adolescents to multiple risk factors and the prevalence of hypertension in younger age groups has assumed alarming proportions [11]. As a result of

improved longevity rates hypertension constitutes a major public health problem especially in older adults, affecting half of those aged 60 to 69 years, and around three quarters of those aged older than 70 years [12]. Another factor that may contribute is the increased awareness and detection. Kashmir valley situated in North Western Himalayan region of India has been experiencing large scale political turbulence since 1990, thus exposing the population to tremendous stress. This has given rise to numerous non communicable diseases, including hypertension, causing various degree of morbidity. Despite high prevalence of hypertension, reliable epidemiological data is scarce and prevention, detection, treatment and control are suboptimal in the state. The aim of the present work was to assess the extent of physical activity and to find the dietary habits of hypertensive patients aged 45years and above in Kashmir with following objectives:

Objectives

1. To find the socio demographic characteristics of hypertensive patients aged 45years and above in Kashmir.
2. To find the body mass index (BMI) of hypertensive patients
3. To find out the relation between physical activity and blood pressure.

Material and Methods

A cross sectional study design was suitable and appropriate, and was used to conduct this research. The sample was collected from the four district hospitals namely Govt District Hospital Baramulla, MMABM Govt District Hospital Anantnag, ASYM Govt District Hospital Budgam and SMHS Govt District Hospital Srinagar. Cases of hypertension were selected on the basis of blood pressure screening record. Only patients with a confirmed hypertension for at least one year or with current blood pressure ≥ 140/90 mmHg) and aged above 45 years were selected.

Patients below 45 years of age were excluded from the study. Hypertensive patients with other complications such as retinopathy, cardiomyopathy, nephropathy, encephalopathy CVA due to hypertension were also excluded.

Structured questionnaire was used as a tool for collection of data.

Socio Demographic Characteristics Socio demographic data of the participants including age, education, smoking habit, family history of hypertension were recorded using a structured questionnaire

Anthropometry

1. **Weight**: Weight of respondents was recorded in kg's, with help of weighing machine; the respondents were weighed without shoes, standing upright with arms hanging on sides. The weight was taken to the nearest 0.1kg.
2. **Height:** Height of respondents was recorded in centimeters using measuring tape. The height was measured against a flat vertical surface and the respondents were asked to stand up right on level ground without shoes and height was recorded to the nearest 0.1cm.BMI was calculated accordingly by using following formula.

$$BMI = \frac{Weight\ (kg)}{(Height)^2}$$

Body mass index was measured in accordance with WHO guidelines [24].

Statistical Analysis

Data was analyzed using statistical package SPSS Windows version 16.0. Unilabiate and multivariate analysis were done to determine the risk factors associated with hypertension. A p - value less than 0.05 were used as the definition of statistical significance.

Results

Table 1: Gender-wise Hypertension Levels

Hypertension Levels	Gender				Chi-square	p-value
	Male		Female			
	N	%age	N	%age		
Systolic						
Grade – I (Mild)	180	90.0%	178	89.0%	12.2	.93
Grade – II (Moderate)	16	8.0%	18	9.0%		
Grade – III (Severe)	4	2.0%	4	2.0%		
Total	200	100.0%	200	100.0%		
Diastolic						
Grade – I (Mild)	41	20.5%	63	31.5%	7.87	.019*
Grade – II (Moderate)	80	40.0%	79	39.5%		
Grade – III (Severe)	79	39.5%	58	29.0%		
Total	200	100.0%	200	100.0%		

*Significant at 0.01 level

400 hypertensive patients participated in the study: 90.0% of the male respondents had grade I (Mild) SBP, 8.0%had grade II (moderate) and 2.0% male respondents had grade III (severe) SBP. Similarly the DBP in (40.0%) males was in grade II (Moderate), 39.5% had grade III (severe) and 20.0% male respondents had grade I (Mild) diastolic blood pressure. 89.0% of the female respondents had grade I (Mild), 9.0% had grade II (moderate) and 2.0% female respondents had grade III (severe) SBP.

39.5% of the female respondents were having grade II (Moderate). 31.5% had grade I (mild) and 29.0%females had grade III (Severe) DBP.

Table 2: Physical activity pattern during past month

Levels	F	%age
Sedentary	224	56.0%
Mild	85	21.25%
Moderate	49	12.25%
Active	42	10.5%
Total	400	100.0%

Findings revealed that more than half (56.0%) of the respondents had a sedentary life style. 21.25% of them were involved in mild work. 12.25% of them were doing moderate work and only 10.5% resorted to active physical activity during past one month.

Table 3: Duration of Physical Activity (in Hours/day)

Hours/day	F	%age
0	0	0.0%
1-2hr	267	66.75%
3-5hr	91	22.75%
≥6hr	42	10.5%
Total	400	100.0%

Maximum (66.75%) respondents were engaged in physical activity for about less than an hour to2 hours/day. However, 10.5% respondents resorted to more than **6** hours of physical activity in a day.

Table 4: Respondents by BMI (Body Mass Index)

BMI Level	Range	F	%age
Obese	30 & above	29	7.3%
Overweight	25-30	229	57.3%
Normal	18.5-25	136	34.0%
Underweight	<18.5	6	1.5%

It can be clearly seen from the above table that more than half (57.3%) of the respondents were overweight as their BMI was within the range of 25-30. Very few (1.5%) were observed to be underweight. Thirty-five percent of them were found to be normal.

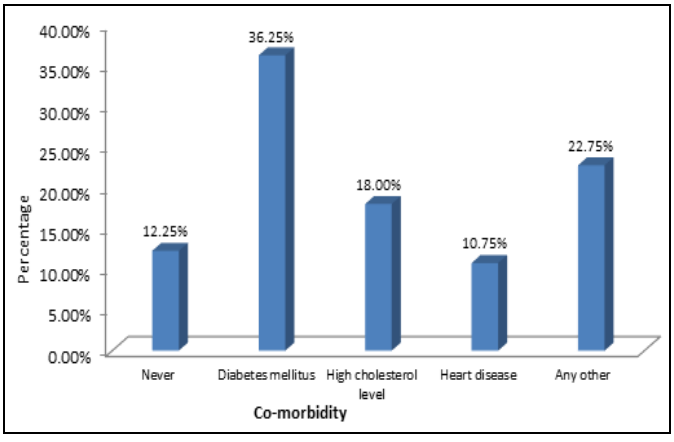

Fig 1: Respondents by co-morbidity

36.25% of respondents had diabetes mellitus. 18.0% had high cholesterol and 10.75% of them were suffering from heart disease.23.0% of the respondents were suffering from other problems like hypothyroidism and retinopathy.

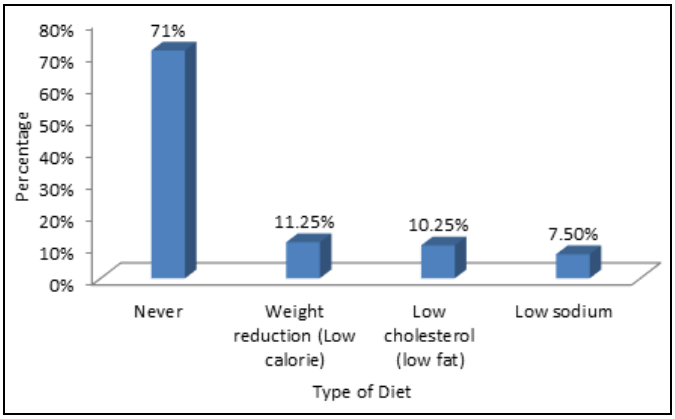

Fig 2: Type of Diet

Majority (71.0%) of the respondents were not taking any hypertension specific diet ,11.25% of the respondents were consuming low calorie diet and 10.25%respondents were consuming low fat diet and 7.5% were taking low sodium diet.

Discussion

Hypertension is quantitatively the most important determinant of premature cardiovascular diseases including ischemic heart disease and stroke causing high mortality and morbidity. The risk of both coronary disease and stroke increases progressively with incremental increase in blood pressure above 115/75 mmHg as shown in numerous epidemiological studies [25, 26]. The increase in cardiovascular risk has primarily been described in terms of elevated systolic pressure in those over age 60 years and elevation in diastolic pressure in younger individuals [27]. Present study depicted that there was significant difference in DBP among males and female respondents ($p<0.05$). Minh, *et al.* (2005) [22] studied gender difference in prevalence and a socio-economic determinant of hypertension in Vietnam and found the men were more hypertensive than women and age was positively associated with hypertension [22].

The majority of respondents (56.0%) had sedentary life style in the present study. Females were leading sedentary life style in greater numbers than male respondents. 66.75% of respondents were physically active only for 1-2 hours per day. Keily, *et al* (1994) [13], studied physical activity and observed that less active persons are 30% to 50% more likely to develop hypertension than active counter parts [13].

Alsairafi *et al* (2010) [21] conducted a study on "Effect of Physical Activity on Controlling Blood Pressure among Hypertensive Patients from Mishref Area of Kuwait'' and reported that prevalence of uncontrolled hypertension was more among patients who were not practicing physical activity compared to a quarter of those who were practicing physical activity. The multiple logistic regression analysis showed that age, Body Mass Index (BMI), diet, and physical activity were the independent significant risk factors on adjusting hypertension among study population [21].

57.3% of respondents were overweight in the present study. Obesity was also more prevalent in females than in males. Brown, *et al* (2000) [20] studied the body mass index and the prevalence of hypertension and dyslipidemia. The study observed that more than one half of the adult population were overweight (BMI of 25-29.9) or obese BMI of >or =30 [20]. The findings are similar to the present study.

Tesfaye *et al* (2007) [23] conducted study on Association between body mass index and blood pressure across three populations in Africa and Asia. The study concluded that the risk of hypertension was higher among population groups with overweight and obesity. The findings also revealed that BMI was significantly and positively correlated with both SBP and DBP in all the three Populations-Ethiopia, Indonesia and Vietnam. [23]. The National Health and Nutrition Examination survey reported linear association between increase in body mass index and systolic, diastolic and pulse pressure in the American population. It is reported that an increase of body mass index of 1.75 kg/m 2 in men and 1.25 kg/m 2 in women will cause 1 mm Hg rise in systolic blood pressure [26]. Obese patients are more prone to hypertension and hypertensive patients also appear prone to weight gain [27, 28, 30]. Findings from the Framingham and Tecumseh studies revealed that future weight gain is significantly higher in hypertensive than in normotensive subjects, which thus suggests that even hypertensive patients with normal weight are at increased risk of developing obesity [27]. The reports suggest that the relationship between obesity and hypertension can be considered a two-way street [28]. Obesity with hypertension but not obesity alone is associated with an increased risk of cardio vascular disease. In overweight and obese subjects, the cardiovascular risk is not significantly increased unless hypertension is present [29]. This emphasizes the influence of hypertension as a mediator of cardiovascular disease in obesity.

Unhealthy diet is a major modifiable risk factor of hypertension. Foods rich in calories and fat are risk factors of cardiovascular diseases. Diets low in saturated fat, trans-fat and cholesterol decrease the risk of cardiovascular disease by decreasing LDL cholesterol. The Multi Center Inter salt study has shown that there is a positive association between BP and salt intake. Increased salt intake can cause a significant increase in mean blood pressure [14, 15, 16, 17, 18, 19].

Increased consumption of vegetables can cause a decline in DBP. Previous studies have shown an inverse relationship between vegetable consumption and hypertension. A diet rich in fruits, vegetables, low-fat dairy products, fibre and minerals produces a potent antihypertensive effect [17].

Increased intake of fruits, vegetables & fish might be partly due to the fact that some patients might have changed their dietary habits after being diagnosed with hypertension in accordance with medical advice. Information relating to dietary habits was collected in the form of a diet history during the previous month, and frequency of food consumption, rather than the total energy intake. This might be an important limitation of this research.

More participants consumed low fruit and vegetables and also fatty and salty food were consumed by respondents. The reason might be their unawareness regarding dietary habits. The majority reported adding salt and fats to cooked food. Respondents were asked about their dietary habits in terms of types of food and frequency of consumption.

WHO and AHA have recommended fatty diets (cholesterol<300mg, trans fat <1% of total Calorie, saturated fat <7% of total k. Cal), sodium consumption not more than 2300 mg per day, and fruit and vegetable, 400 to 800 grams per day for heart or hypertensive patients. However, the participant's consumption of fat, salt, fruit and vegetables was not calculated in terms of amount or quantity as recommended by WHO and AHA. It was therefore very difficult to establish cut-off point to classify them according to amounts consumed. This causes difficulty in assessing the actual amount of food consumption. Moreover, the limited short duration of the current study was another important limitation.

Uncontrolled blood pressure may due to intake of high salty food, saturated fats, salted tea and high meat consumption. Participants having not their blood pressure under control, indicates that only pharmacological treatment or use of drugs is not sufficient to reduce and control blood pressure.

Study has highlighted the extent, nature and patterns of diet & physical activity. It emphasizes the need for the doctors to focus on blood pressure control through non pharmacological treatment (lifestyle measures) rather than pharmacological treatment alone. Physical inactivity is one of the major modifiable risk factors of hypertension. Physical exercise has been shown to be effective in reducing and controlling blood pressure in hypertensive as well as normotensive (non-hypertensive) individuals. Since the majority of hypertensive patients involved in the study were found to lead sedentary lifestyles, they need to be encouraged and motivated to change or modify their lifestyles. Programmes and campaigns relating to physical exercise should be promoted in both communities and clinical practice.

Conclusion

The study concluded that the majority of respondents led relatively inactive or sedentary life style and demonstrated high prevalence of unhealthy eating habits. Over weight participants were more than normal weight. A high number of participants were unaware about Hypertension diet. Health education and other interferences to stimulate healthy eating habits and lifestyle, especially among high risk groups are suggested. Further more research is needed to explore the relationship between behavioral factors and hypertension.

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