

Lifestyle patterns and the prevalence of hypertension among the teachers of Kashmir University (Age 35 to 60 years)

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■ **ABSTRACT : Background:** Lifestyle factors are critical determinants of blood pressure levels. With urbanisation and increasing prosperity, prevalence of hypertension is on rise, about 60 per cent population of Kashmir is hypertensive and lifestyle is an important risk factor for it. Hypertension thus, becomes an increasingly important clinical problem. **Objectives :** To study the prevalence of high blood pressure among the teachers of Kashmir University (age group 35+), to observe the relationship between the different parameters of lifestyle and hypertension. **Methods:** 106 participants (age 35+ to 60 years) from Kashmir University undertaken for the study were examined using both questionnaires as well as monitored twice a day (before and after work) for their blood pressures to check the diurnal variations. This study was a case-control study. The analysis of the data was done using t-test, χ^2 -test, p-value, and odd ratios, respectively. **Results:** The prevalence was 31 per cent and more in males. A strong relationship was found between workload and diurnal variations in blood pressure (p-value <0.01). Physical inactivity, skipping of meals, type of the salt was found to have a direct relationship in the development of hypertension (p-value <0.05). However other parameters like high socio-economic status, stress, waistline obesity, high body mass index (BMI), sleeping patterns, work hours, smoking, and intake of fat, salt and dietary patterns were important risk factors which could be the contributors in the development of hypertension. **Conclusion :** It was thus concluded that a healthy lifestyle helps in preventing hypertension. And lifestyle modifications like physical activity, reduction of weight, reducing dietary sodium, stress free life and a good diet can surely help in maintain controlled blood pressure.

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Hypertension is the elevated of blood pressure above normal (Robinson, 1986) and now it is ranked as third as a cause of disability-

adjusted life years (Ezzati *et al.*, 2002). Blood pressure elevations are seen across the life span and with aging the prevalence increase (Krause, 2010). According to

an Urban Indian Health survey, thirty one percent of urban Indians have high blood pressure (Kennedy, 1999) and according to a survey through integrated diseases surveillance projects (IDSP) it is the most important health problem in Kashmir found in sixty percent of the population (Wani, 2011).

Changing four modifiable factors has documented efficiency in primary prevention and control of hypertension. These four factors are overweight, high salt intake, alcohol consumption, and physical inability (JNC, 1997). An understanding of the relationship between diet and blood pressure has important implications for the prevention and treatment of hypertension. With appropriate dietary modification, it may be possible to treat hypertensive patients with fewer drugs and with lower doses. In a significant percentage of hypertensives, particularly patients with mild hypertension, dietary modifications may totally obviate the need for drug therapy (Shills *et al.*, 1994). Several lifestyle modifications can lower, prevent and control hypertension (Krause, 2010).

With urbanization and increasing prosperity, prevalence of hypertension is on rise, and age is an important risk factor for it. Hypertension thus becomes an increasingly important clinical problem. Thus the scope of the study is clear to its importance in the identifying the hypertensives in middle aged teachers of Kashmir University and assessment of their lifestyle, as healthy lifestyle is the cornerstone of treatment for hypertension.

The present study was with the main objectives of finding out the prevalence of hypertension among teachers of Kashmir university (age 35 - 60 yrs) and to observe the relationship between lifestyle and hypertension.

■ RESEARCH METHODS

The procedure adopted is as follows:

The ground work for the present study was done for a couple of weeks before the start of collection of data and structuring of questionnaire cum interview schedule. Various published papers from journals and websites, recommendations and stress scales were obtained so to frame an authentic and a standard questionnaire.

Data collection:

In the present study, the data was collected from

two sources; primary (Questionnaire, Sphygmomanometer) and secondary (Books, Unpublished dissertation, Published journals, Local newspapers, Internet).

The information regarding the faculty details was collected prior to the study, from DIQA (Directorate of Internal Quality Assurance, University of Kashmir). The total number of teachers working in University of Kashmir was 291. Out of this the teachers who were below 35 yrs of age were excluded from the study. The total number of the study population (faculty above age of 35 yrs) in Kashmir University was found out to be 263. Out of this, 106 teachers (40%) were randomly and purposively selected for the present study from different departments of the University.

Tools used :

During the study, a questionnaire cum interview schedule was used to collect information from the respondents. The questions were based on many scales, classifications and recommendations from various sources like psychological scale (perceived stress scale) by Cohen *et al.* (1983), physical activity classified as per WHO global recommendations (18-64 yrs), (2001), sleeping disorders and patterns by Williams *et al.* (1974), normal work classification by Harrington (2001), smokers classifications as per a study done by Becher (2000) and alcohol intakes as per guidelines by Hand (2012). The food frequency list was prepared thoroughly by the standard methodology (Bharathi *et al.*, 2008). The questionnaire was framed in simple and understandable form, which comprised of questions pertaining to general information, social economic status, history of disease, family history, symptoms. Anthropometry like weight, height, BMI, WHR was measured. Various parameters of lifestyle were assessed like stress, sleep and work hours, smoking and alcohol intake, and physical activity. The dietary pattern of the subjects was also assessed using food frequency list along with their attitude towards health.

Data analysis :

The data so obtained was first organized in a master chart, then tabulated and presented with the help of tables and figures. The analysis of the data was done using t-test, χ^2 -test, p-value, and odd ratios, respectively. Manual interpretations as well as the software were used

{SPSS (version 16.0)} for the analysis of data.

■ RESEARCH FINDINGS AND DISCUSSION

As the study was a case control, both hypertensives and normotensives were included. The following results were obtained.

Prevalence :

Out of the total population selected, 31 per cent were having hypertension. The majority among the hypertensives were males (64%) from urban areas (97%) living in nuclear families (67%) (Table 1).

Total	No. of hypertensives	No. of normotensives
106	33	73
Prevalence	31.13%	68.86%

Socio-economical status :

The most common indicators of socio-economic status used in epidemiological surveys are education, occupation and income (Kalpan and Koil, 1993). Out of the hypertensive respondents majority (85%) was having doctorates, followed by 12 per cent that were post graduates and the rest 3 per cent were master in philosophy.

Majority of the hypertensives were assistant professors (39.3%) followed by associate professors (33.3%) and the rest 27.2 per cent were designated as professors. Majority of the hypertensives were having an monthly family income between 1-2 lakhs (48.4%) and followed by 27.2 per cent having income between 40,000- 1 lakh, while the rest 24.2 per cent having more than 2 lakhs. Statistically, there was an insignificant association between different parameters of socio-economic status and hypertension.

History of disease :

24 per cent of the respondents had the onset of hypertension in the age group of 40-45 yrs and 50-54 yrs out of whom 45 per cent of the hypertensives had a family history, 54 per cent were suffering from other diseases other than hypertension among which diabetes and obesity was the most common. Headache (44%) and fatigue (36%) was the most common presenting symptom. Eighty five per cent of hypertensives were on medication as well as dietary modification and the system of medication was allopath (80%).

Anthropometry :

According to BMI classification among the hypertensives, the majority (61%) was classified as overweight, followed by 36 per cent as normal, and the small group was having grade I obesity (3%), however none were having grade II obesity (Table 2).

Table 2 : Distribution of respondents as per BMI classification (body mass index)

BMI(class)*	Hypertensives (%)	Normotensives (%)
Underweight	0(0)	1(1.36)
Normal	12(36.36)	29(39.72)
Overweight	20(60.6)	43(58.90)
Obese I	1(3.03)	0(0)
Obese II	0(0)	0(0)
Total	33	73

BMI Classifications* (Krause, 2010).

According to WHR classification among the hypertensives, the majority (55%) was “not at risk” and the rest (45%) were “at risk”. Among the normotensives, the majority (71%) was “not at risk” while the rest (29%) were “at risk”. Statistically (p value>0.05) there was an insignificant association between WHR and hypertension. The odd ratio calculated from the given data is 2.06.

Lifestyle assessment :

Mental stress and work :

Some parameters of good lifestyle are moderate intensity exercise at least three to four days a week, 6-7 hours of sleep per night, 6-7 hours of work per day, and three meals a day at regular timing without missing meals, minimum use of alcohol, avoiding smoking and maintaining ideal weight.

Among the hypertensives, the majority (70%) were physically inactive (classified as per WHO global recommendations), (Table 3) and the rest 30 per cent were physically active. Statistically (p- value <0.05) there is a significant association between the physical inactivity and hypertension (Odd ratio 2.36). The main observed reason behind being physically inactive was lack of time, as managing home as well as workplace was a double effort job.

Among hypertensives, the majority (61%) used to sleep for normal sleep hours, and the rest (39%) had a disturbed sleeping pattern according to the classification given by Williams *et al.* (1974). The odd ratio calculated is 1.1.

Among the hypertensives majority (54%) used to work for 7 hours/day and the rest either for more hours or for less than 7 hours/day. Majority of the respondents (86%) worked for extra hours occasionally (66%) other the official work hours. Statistically there was an insignificant association between the hypertension and work hours. About 88 per cent of the hypertensives used to work at desk, so their lifestyle was considered sedentary.

Among the hypertensives, majority (84.8%) of the respondents were suffering from stress while the rest 15.2 per cent were not stressed. Statistically there is an insignificant association ($p\text{-value} > 0.05$) between stress and hypertension, but the odd ratio calculated is 1.9 (Table 4).

Smoking and alcohol :

Among the hypertensives 18 per cent were smokers, while the majority was not. The odd ratio calculated was 1.1. Among the respondents none was alcoholic.

Dietary assessment :

About 60 per cent of the hypertensives used to skip meals, mainly lunches (75%), and there was a significant association ($p\text{-value} < 0.05$) found between hypertension and skipping of meals. The odd ratio calculated was 1.8 (Table 5).

The diet consumed was non-vegetarian (91%). Majority of the hypertensives (38.5%) consumed snacks

between the meals occasionally. Tea was the most consumable beverage (63%), mostly tea with sugar and milk (27%) and about 2-3 cups/day (57.5%) were consumed, but there was an insignificant association found between the two.

About 45.4 per cent of hypertensives consumed milk (60% skimmed milk), and there was an insignificant association between the hypertension and the consumption of milk.

About 88 per cent of hypertensives consumed fats and oils (80% refined oil), but there was an insignificant association between the two.

Among the hypertensives, the majority consumed eggs (44%), and chicken (33%) daily, chicken (46%) and meat (31%) alternately, meat (29%) and cheese (25%) weekly, fish (44%) and pulses (36%) monthly, fish (31%) and beef (19%) yearly.

Among the hypertensives, the majority consumed onion (28%) and kale (20%) daily, spinach (8%), knoll khol (7%) and tomato (6%) weekly, turnip (11%), ladies finger (11%), and bitter gourd (10%) monthly, and tinda (19%) yearly.

Among hypertensives, the majority consumed orange (31%) and apple (13%) daily, grapes (11%), apple (11%) and mango (10%) weekly, dates (12%) and raisins (10%) monthly, musk melon (9%) and water melon (9%) yearly.

Among the hypertensives, the majority (39%) consumed rice (23%) and wheat refined daily and 22

Table 3: Distribution of the respondents as per 30 minutes of moderate intensity physical activity

Days	Hypertensives (%)	Normotensives (%)	χ^2 -test	P value
Physically inactive*	23(69.6)	36(49.3)	3.825	<0.05
Physically active* (≥ 5 days/week)	10(30.30)	37(50.68)		
Total	33	73		

* Physical activity/day/week (WHO, 2001)

Table 4 : Distribution of hypertensive respondents as per stress levels

Stress level in hypertensives	Percentage
No stress	15
Mild stress	3
Moderate stress	21
Severe stress	61

Table 5 : Distribution of the respondents as per the habit of skipping of meals

Response	Hypertensives (%)	Normotensives (%)	χ^2 -test	P value
Yes	20(60.60)	33(45.2)	2.156	<0.05
No	13(39.4)	40(54.7)		
Total	33	73		

per cent consumed refined wheat, (22%) whole wheat and (16%) cornflakes weekly, 29 per cent consumed semolina and (20%) wheat (brown bread) monthly, and 47 per cent consumed pasta/noodles/macaroni and (27%) maize yearly.

Among the hypertensives 97 per cent used to take salt, and there was an insignificant association found between salt consumption and hypertension. However the odd ratio calculated was 0.4.

The majority of the hypertensives (70%) used to take common table salt while the rest 30 per cent used to take low sodium salt. A significant association was found between the type of the salt and hypertension. The odd ratio calculated is 0.36. Majority (81%) of hypertensives used to take sugar. Majority (46%) of the hypertensives used to drink 3-4 glasses of water/day.

Knowledge and attitude :

100 per cent of the hypertensives said that good health is a priority and among the hypertensives, the majority (33%) considered the stress free life as important for good health, followed by 32 per cent who said its physical activity, and 30 per cent said that its good diet and the rest 5 per cent said that medication is important.

Among the hypertensives the majority (67%) said that they were taking care of their health, followed by 21 per cent did not take care of their health, and the rest 12 per cent partially took care of their health. About 98 per cent of the respondents said the investigation was worth considering.

Summary and conclusion :

From the above findings and analysis it was observed that among 31 per cent of the hypertensives, the majority were males from urban areas living in nuclear families, having high educational qualifications (Ph. D.) and belonged to high income group.

Majority had the onset of the hypertension in middle age and was not having any family history of high blood pressure. In addition they were having other diseases/disorders as well. The high job demands and workload had a positive influence on the diurnal variations in blood pressure. The mean increase in the systolic blood pressure was about 4- 7 mm Hg above normal (120/80mm Hg) and the diastolic blood pressure was about 1-2 mm Hg above normal levels. The blood pressure

analysis showed the increase in blood pressure after the peak hours of work.

A sedentary lifestyle was a common factor associated with hypertension. Besides being overweight, having central obesity, smoking habits, extra work and severe stress were also observed to be the related risk factors. Mostly lunch was skipped and the same was replaced by high consumption of tea. The dietary patterns varied and the consumption of variety of foods was observed. Among the hypertensives a busy schedule and lack of time along with high job status and high responsibilities was the main reason because of which they were unable to follow a healthy lifestyle. However majority managed to work towards good health.

It was concluded that there is a significant relationship between different parameters (like workload, physical inactivity, skipping of meals, type of salt) of lifestyle and hypertension. However, high socio-economic status, stress, disturbed sleep patterns, intake of fat, salt, and high waist hip ratio may be the other contributors (risk factors) in the development of hypertension.

Based on the above results, it can be concluded that a sedentary lifestyle, low physical activity, skipping of meals, and high work pressure are the chief causes of hypertension among the teachers of University of Kashmir.

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