The effect of workload on the diurnal variations of blood pressure among teachers (Age 35-60 yrs) of Kashmir University, India

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Abstract

Lifestyle factors are crucial determinants of hypertension. With the growing concept of modern lifestyles and increasing prosperity, prevalence of high blood pressures is on rise, studies have shown that about 60% population of Kashmir is hypertensive and lifestyle is an important risk factor for it. Hypertension thus becomes an increasingly important clinical problem. To study the prevalence of high blood pressure among the teachers of Kashmir University (age group 35+). And to check the diurnal variations in blood pressure due to workload. 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, χ2-test and p-value respectively. Results: The prevalence was 31% and more in males. A strong relationship was found between workload and diurnal variations in blood pressure (p-value <0.01). Conclusion:- It was thus concluded that workload was significantly related to the diurnal variations in the respondents having hypertension.

Keywords: Hypertension, workload, diurnal variations, prevalence, lifestyle.

Introduction

Hypertension is the elevated of blood pressure above normal[1], and now it is ranked as third as a cause of disability-adjusted life years[2]. It is a chronic condition of concern due to its role in the causation of coronary heart disease, stroke, and other vascular complications[3].

Although no cure is available, prevention and management decreases the incidence of hypertension and disease sequel[4]. Diet, low salt intake, physical activity and less stressed life may prevent hypertension. Contribution of work strain and high status jobs have shown to elevate systolic blood pressure, especially among females[5].

With urbanisation and increasing prosperity, our lifestyle has completely changed, with erratic diet schedules, and meeting of high work pressures has lead to increase of many lifestyle disorders, including hypertension which becomes a clinical health problem. So the scope of the study is clear to its importance of studying the effect of workload on the diurnal variation of blood pressure among the hypertensive respondents who were the teachers of Kashmir University in age group of 35-60 years.

Objectives of the study: i. To study the prevalence of high blood pressure among the teachers of Kashmir University (age group 35+). ii. To check the diurnal variation in the blood pressures due to workload.

Materials and methods

The procedure adopted is as follows:

Ground work: 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 &websites, recommendations and stress scales were obtained so to frame an authentic and a standard questionnaire.

Data source: In the present study, the data was collected from two sources: i. Primary, ii. Secondary.

Primary source: The primary data was collected from the sample selected, using a structured questionnaire cum interview schedule. A sphygmomanometer was used to monitor the blood pressure of the respondents who were already diagnosed of having hypertension, so as to check the diurnal variation from morning (before work) to evening (after work).

Secondary source: Collection of data through secondary source, included information obtained from books, unpublished dissertations and journals from Iqbal library, local newspapers, and different websites on internet, etc. The secondary data helped in structuring the questionnaire well.

Selection of sample: 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. This population was proportionally divided into a ratio of 26:14:13, which was doubled so as to get the approximate 40 % of the total population (52:28:26).

Analysis of data: The data so obtained was first organised 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, $\chi2$-test and p-value respectively. Manual interpretations as well as the software were used {SPSS (version 16.0)} for the analysis of data.

Results and discussion

As the study was a case-control, both hypertensive and normotensive were included; the following results were obtained.

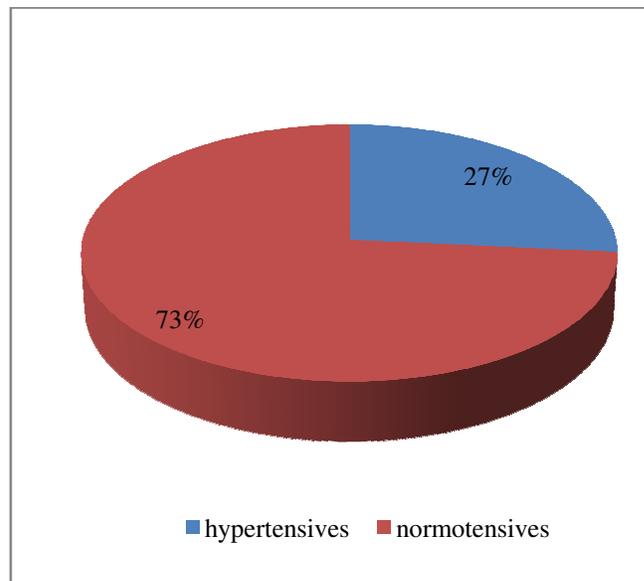**Table-1:** Distribution of respondents as per the prevalence.

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

Table-1 shows the prevalence of hypertension among the teachers of Kashmir University. Out of the 106 respondents, that were 40% of total population, 31.13% were having hypertension, and majority (68.86%) however were normotensive.
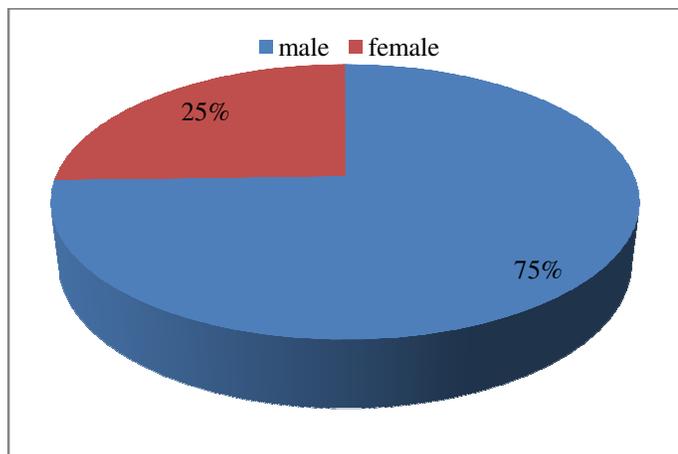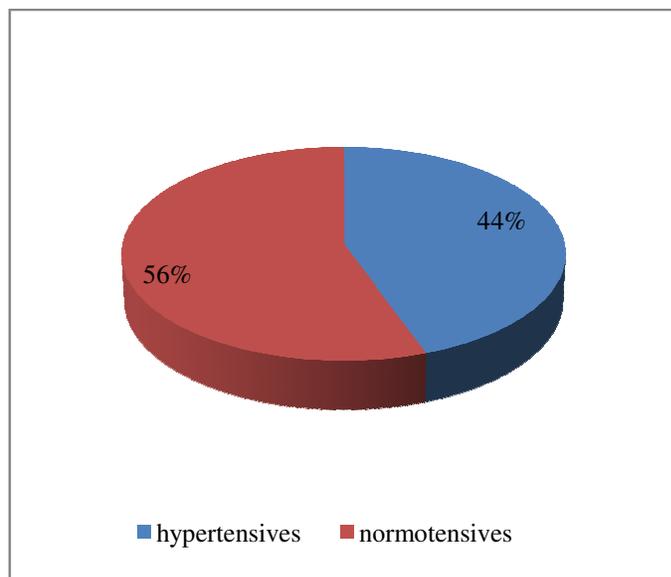

Figure-1: Distribution of the respondents as per sex.

Figure-1 shows the distribution of the total population on the basis of sex, and reveals that majority of the population were males (74.52%), and rest of the population were females (25.47%).

Figure-2: Distribution of the male respondents as per condition.

Figure-2 indicates that among the total male population, the majority of the male respondents were normotensives (73.4%), and rest (26.5%) were having hypertension.

Figure-3: Distribution of the female respondents as per the condition.

Figure-3 reveals that among the total female population, the majority of the respondents were normotensive (55.55%) and rest (44.44%) were hypertensive respectively.

Table-2: Comparison of diurnal variation in blood pressure of the hypertensive.

Days	Ambulatory blood pressure before work		Ambulatory blood pressure after work		t- value		p- value	
	Mean standard deviation (systolic)	Mean standard deviation (diastolic)	Mean standard deviation (systolic)	Mean standard deviation (diastolic)	Systolic	Diastolic	Systolic	Diastolic
Day 1	134.97	81.87	138.76	83.76	-3.87	-2.34	0.001	0.026
Day 2	133.82	81.15	138.79	83.03	-5.78	-2.67	0.000	0.012
Day 3	128.27	80.54	135.73	81.60	-5.28	-1.49	0.000	0.147

Table-2 shows that the mean value of standard deviation (SD) of systolic blood pressure in morning of Day 1 is 134.97 at SD of 8.74. The mean value of standard deviation of systolic blood pressure in the evening of Day 1 is 138.76 at SD of 10.17. Such deviation in mean is statistically found to be highly significant (p-value <0.001). The mean value of standard deviation of diastolic blood pressure in morning of Day 1 is 81.87 at SD of 3.41. The mean value of standard deviation of diastolic blood pressure in the evening of Day 1 is 83.76 at SD of 4.16. Such deviation in mean is statistically found to be significant (p-value<0.05). The mean value of standard deviation of systolic blood pressure in the morning of Day 2 is 133.82 at SD 10.79. The mean value of standard deviation of systolic blood pressure in the evening of Day 2 is 138.79 at SD of 13.30. Such deviation in mean is statistically found to be highly significant (p-value< 0.001). The mean value of standard deviation in the diastolic blood pressure in the morning of Day 2 is 81.15 at SD 5.56. The mean value of standard deviation in the diastolic blood pressure in the evening of Day 2 is 83.03 at SD of 6.03. Such deviation in mean is statistically significant (p-value<0.05). The mean value of standard deviation of systolic blood pressure in the morning of Day 3 is 128.27 at SD 11.59. The mean value of systolic blood pressure in the evening of Day 3 is 135.73 at SD of 12.20. Such deviation in mean is statistically found to be highly significant (p-value <0.001). The mean value of standard deviation of diastolic blood pressure in the morning of Day 3 is 80.54 at SD 4.82. The mean value of standard deviation of diastolic blood pressure in the evening of Day 3 is 81.60 at SD 2.66. Such deviation in mean is statistically insignificant (p-value> 0.05).

It was observed in the present study that the hypertensive were already having elevated systolic and diastolic blood pressures, so after peak hours of work there was an increase in the systolic (4-7mm/Hg) and diastolic (1-2 mm/Hg) blood pressures respectively.

Conclusion

From the above findings and analysis it was observed that among 31% of the hypertensive, the majority were males from urban areas living in nuclear families, having high educational qualifications (doctorates) and belonged to high income group. Majority had the onset of the hypertension in middle age and were 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.

References

1. Robinson Corinne and Corinne Robinson H. (1986). Normal and Therapeutic Nutrition, Macmillan. New York, 547.

2. Ezzati Majid, Lopez Alan D., Rodgers Anthony, Vander Hoorn Stephen, Murray Christopher J.L., Comparative Risk Assessment Collaborating Group (2002). Selected major risk factors and global regional burden of disease. *Lancet,* 360(9343), 1347-1360.

3. Park K. and Park K. (2011). Epidemiology of communicable diseases. *Textbook of Preventive and Social Medicine,* 21, 244-250.

4. Kathleen Mahan L. and Escott-Stump Sylvia (2004). Krause's Food, Nutrition, & Diet Therapy. W.B. Saunders, Philadelphia, 11, 900-916

5. Blumenthal J.A., Thyrum E.T. and Siegel W.C. (1995). Contribution of job strain, job status and marital status to laboratory and ambulatory blood pressure in patient with mild hypertension. *Journal of Psychosocial Research*, 39(2), 133-144.

6. Becher H. (2001). Classification of smoking behaviour In: Boreham R and Shaw A (eds). Smoking, drinking and drug use among young people in England in 2000 Department of Health on behalf of the Controller of Her Majesty's Stationery Office, UK. Sections 2.1-2.2. [Cited 27 November 2001]. Available from: www.archive.official-documents.co.uk/document/ doh/sddyp/sddyp03.htm

7. Bharathi A.V., Kurpad A.V., Thomas T., Yusuf S., Saraswathi G. and Vaz M. (2008). Development of food frequency questionnaires and a nutrient database for the Prospective Urban and Rural Epidemiological (PURE) pilot study in South India: Methodological issues. *Asia Pacific Journal of Clinical Nutrition*, 17, 178-185.

8. Bhat N.A., Kamili M.A. and Allaqband G.Q. (2002). Hypertension in south Kashmir. Indian Practitioner, 55, 209-215.

9. Brandy K.D., Jennifer B. and Ihab H. (2006). The impact of lifestyle behaviour on hypertension awareness, treatment and control in a south eastern population. *The American Journal of Medicine*, 332(4), 211-215.

10. Cohen S., Kamarck T. and Mermelstein R. (1983). A global measure of perceived stress. *J. Health Soc. Behav*, 24(4), 385-396.

11. Ferrara L.A., Raimondi A. Sonia, d'Episcopo Lucia, Guida Lucio, Russo Dello Antonio and Marotta Teodoro (2000). Olive oil and reduced need for antihypertensive medication. *Arch Intern Med*, 160(6), 837-842.

12. Haddy F.J. (2006). Role of dietary salt in hypertension. *Life Sci*, 79(17), 1585-1592.

13. Hand Becky (2012). Healthy Beverage Guudelines: Drink Up But Drink The Right Stuff. *Spark people* 2012. http://www.sparkpeople.com/resource/nutrition_articles.asp?id=605. 20 Dec. 2015.

14. Harrington J.M. (2001). Health effects of shift work and extended hours of work. *Occup. Environ. Med*, 58, 68-72.

15. Kalpan G.A. and Keil J.E. (1993). Socio economic factors and cardiovascular disease- a review of literature. *Circulation*, 88(4), 1973-1998.

16. Kennedy A. (1999). The urban Indian health survey. *J Health and Nutr*, 52, 55-62.

17. Kulkarni A.T. (1998). Hypertension a silent killer. *Ind Med Gaz*, 82, 73-75.

18. Shills M.E., Olson J.E. and Shike M. (1994). Modern Nutrition in Health and Disease (8th ed). Williams and Wilkins, Baltimore, 1287.