



## Stress and Locus of Control in Elderly With Hypertension

### KEYWORDS

Elderly, locus of control, stress, hypertensive

### M.Padmavathamma

Sri Padmavathi Women's Polytechnic, Tirupati – 517502

### A. Hemalatha

Centre for Research on Aging, Department of Psychology, Sri Venkateswara University, Tirupati – 517502.

### A. Gayathri

Centre for Research on Aging, Department of Psychology, Sri Venkateswara University, Tirupati – 517502.

### Prof. D. Jamuna

Centre for Research on Aging, Department of Psychology, Sri Venkateswara University, Tirupati – 517502.

### ABSTRACT

*The present study was contemplated to study the socio-demographic profiles and role of psychological variables in a sample of hypertensive elderly. The study was carried out on a sample of 80 male and female elderly hypertensives who were visiting outpatient clinic of TTD Central Hospital, Tirupati A.P. The sample was randomly enrolled for the present study in the age group of 60 to 65 years (Mean age = 64.2). The results showed significant association between psychological variables and levels of blood pressure in the elderly. Based on the results, role of psychological variables and the significance of psychological intervention were discussed. The implication of the finding is highlighted.*

One of the frequently acknowledged public health problems on a global level is hypertension and it is particularly so in developing countries like India. As the blood pressure condition is asymptomatic many people with hypertension do not seek medical assistance and consequently lead to congestive heart failure, renal failure, myocardial infarction, stroke and other considerable health complications (Chobanian, Bakris, Black, Cushman, Green, Izzo, Jones, Materson, Oparil, Wright & Roccella, 2003; Plouin et al., 2014).

A series of developments like urbanization, industrialization, socio- technological advances and growing affluency in the recent years brought visible changes in the life styles (eg., consumption of ready foods rich in fat, sugars and salt). As a consequence, individuals in their young age are at health risks like hypertension and diabetes (Grundy, Burke, Chait, Eckel, Howard, Mitch, Smith & Sowers, 2000).

Studies on hypertension especially in the early middle age and in late middle age suggest that stress is one of the major risk factors apart from obesity, sedentary life styles, positive family history, dietary practices and health habits (Kornitzer, Houtman, Smet & Koyuncu, 1999). Experimental studies have demonstrated that subjects with stressful life situations reported elevated blood pressure, particularly in persons who suppress their anger (Hodapp, Heiligtag & Stormer, 1990). Hostility, anger, emotional distress, frustration, anxiety, nervousness, negative mood and stress have also been implicated as necessary concomitants of 'workaholic' individuals to become susceptible to coronary heart disease, hypertension (Schneider, Egan, Johnson, Drobny & Julius, 1986; Thoressen & Low, 1990).

Plenty of research evidence is available to support that physical activity is inversely associated with morbidity and mortality. After coming across many cross-sectional studies it is reported that hypertension is associated with low

physical fitness. The mechanism of lowering blood pressure by exercise physical are chiefly due to the reduction of both cardiac output and the sympathetic tone (eg., Engler, Erickson & Paul, 1995). Studies on locus of control provides evidence that internals have been found to learn and behave in a number of ways which inform continue to facilitate personal control, and leads to adaptive behavior in them. It is found that extreme externals are vulnerable to stress because they are likely to bother taking positive action (Kaiser, Hylander, Eliasson & Lennart 1985). The review of studies on hypertension suggests that there is a paucity of Indian studies on psychological correlates of hypertensives. In view of this, the present study is contemplated to study the socio-demographic variables and role of psychological variables in a sample of hypertensive elderly.

### Methodology: Sample, Measures, Procedure of Testing

From a total sample of 260 diabetics, who were visiting outpatient clinic of TTD Central Hospital, Tirupati for the last two to three years, 80 male and female hypertensives were randomly enrolled for the present study in the age group of 60 to 65 years (Mean age = 64.2). Informed consent was obtained from each participant of the study to ensure their participation. Ambulatory blood pressure of each subject was recorded thrice in the sitting position with five minutes of rest (with a 60 second interval between each) to screen stage I hypertensives i.e., when systolic blood pressure was 140mmHg to 159mmHg and diastolic blood pressure was 90 mmHg to 99 mmHg (American Hypertensive Association, 2014). Thus subjects with mild blood pressure level (140-159mmHg/90-99mmHg) were identified. Apart from personal data details on age, gender, education, income, educational status, physical activity (average hours of walking in a week), dietary practices (vegetarian or non-vegetarian), a stress check list based on (Folkman & Lazarus, 1986) which was standardized on Indian adult population (Ramamuti & Jamuna, 1992), short form of locus of control (Ramamurti

& Jamuna, 1992) adapted from Rotter's original I-E locus of Control Scale (Rotter, 1975) were administered. The interviews were conducted in the premises of TTD Central Hospital to record the data. The correlation analysis (point-biserial) was applied to identify the significant correlates of levels of hypertension in the elderly sample.

## RESULTS AND DISCUSSION:

**Table – 1. The Sample Characteristics of Hypertensive elderly**

S.No.	Characteristics	N	Percent
1.	Age	80	100
	60-65 years		
2.	Gender	30	37
	Male		
3.	Female	50	63
	Income		
4.	Lower middle	27	34
	Upper middle		
5.	Residence	72	90
	Urban		
6.	Rural	8	10
	Educational status		
7.	College education	47	59
	High school education		
	No education		
8.	Occupational status	47	59
	Formal employment		
9.	Non formal employment	33	41
	Family history		
10.	Positive family history(both mother & father)	46	58
	No positive family history (either mother or father)		
11.	Sleeping habits	21	26
	Regular time		
12.	Irregular time	59	74
	Dietary habits		
13.	Irregular	63	79
	Regular (as per the guidelines)		
14.	Physical Activity	67	84
	No walking		
15.	Walking	13	16

Details of sample characteristics (Table-1) suggest that in the total sample of 80 hypertensive subjects majority (63%) were women, 66% of subjects belong to upper middle income and hail from urban areas (90%). The educational status indicates nearly 59% of the sample studied up to college education, 27.5% had no education, 51% of subjects had formal employment and had positive family history of hypertension (i.e., reported whose parents (both) were diabetics), 74% reported to have irregular sleep and when enquired about their life style before the diagnosis of hypertension, majority (84%) stated they never had regular walking (as every day activity) and only 16% of the sample had a habit of regular walking (morning & evening) as one of the self-management methods of hypertension. Thus, the above profile of hypertensives indicate that those in 60 years and above, female, those who come from upper middle, hailed from urban locality, had higher educational status, had formal employment with positive

family history (both parents were hypertensives), irregular sleep timings and no physical activity (poor self-management) were in majority among the hypertensives elderly. As the participants of present sample had no marked comorbid conditions, the above socio demographic details exemplify the profile of hypertensives. As reported in researches higher levels of blood pressure in post-menopausal women could be related to a combination of low physical activity and hormonal alterations.

**Table - 2: The Correlational Analysis between Socio Demographic and Psychological Variables and Levels of Blood Pressure**

Level of Blood Pressure (mm Hg)	In- come	Posi- tive family history	Retired from Formal employ- ment	Sleep time regular- ity	No physi- cal activity	Locus of con- trol	Stress
140 to 159 mm Hg (n=200)	0.54**	0.63**	0.56**	0.022@	-0.37*	0.64**	0.55**
**P<0.01; *P<0.05; @Not significant							

Further the data were analysed through correlational analysis (point biserial) to identify significant socio psychological correlates of these hypertensive subjects (Table 2). It is evident that higher levels of blood pressure is significantly correlated to income level ( $r=0.54$ ), positive family history ( $r=0.63$ ), locus of control ( $r=0.64$ ), absence of routine physical activity like walking, regular exercise ( $-0.37$ ), persons who were retired from formal employment ( $r=0.56$ ) and high stress ( $r=0.55$ ). The results demonstrates that (Table 2) the hypertensive elderly with upper middle income, having positive family history i.e., (both parents were diabetics), who have no regular physical activity (eg., walking for 2 kms per day, exercising for an hour), higher levels of stress in daily hassels and those who were external locus of control reported higher levels of blood pressure (Mean =155 mmHg) compared to those subjects with lower levels (Mean =144 mmHg) of hypertension. Thus stress, and locus of control did emerge as significant psychological correlates of hypertensives.

Advances in medical field and awareness in the public on treatment methods either by anti-hypertensive medicines or by modification of life style factors and self-management methods, there is a significant decrease in the levels of blood pressure associated with cardiovascular morbidities and mortality. Patients with hypertension frequently report symptoms that are similar to those reported by patients without the diagnosis. Although hypertension is often thought to be asymptomatic, cognitive changes, mood alterations, and general symptoms, such as dizziness and headache are attributable to hypertension (Erickson, Williams, Larry & Gruppen, (2004).

Hypertension, being asymptomatic condition, unaware of its presence, prior to the onset of cardiovascular health risks in many adults. Review on psychological factors of hypertension states that the psychological stress is one of the significant pathogenic factors. The present study results support the above observation. Stress causes early onset of chronic blood pressure elevation in persons who exposed to continuous psychogenic stressors and hence found to be a major contributor to a temporary or continu-

ous increase in hypertension.

Hypertension depends on other factors such as obesity, physical inactivity and psychological stress. These factors show a relation with socioeconomic position in middle age, but in the elderly population this relation is less well known and, in some cases, there is evidence that its magnitude is smaller (Makela, Valkonen, & Martelin 1997; Gutierrez, Regidor & Banegas, 2002). The results of present study demonstrated that lack of physical activity and psychological stress are associated with higher levels of blood pressure among elderly (60 -65 yrs).

The earlier studies reveal that lower levels of physical activity were associated with a increased risk of developing hypertension when compared to highly physically active individuals (Blair et al., 2006). It is evident that in both younger and older persons with hypertension, regular aerobic exercise reportedly reduced blood pressure (Vaitkevicius et al., 1993; Christopher et al., 2000).

Studies on role of stress in the development and maintenance of hypertension needs further investigation on a prospective research. Major upheavals in our lives lead to symptoms of distress through the mediating step of daily hassles, which are threatening and harmful to one's well being (Lazarus, 1984). The "symptom specificity theory"

(Smith et al., 2006) suggest that inflexible behaviors, stereotyped responding increases the risk to develop hypertension. As per "hyperactivity theory" individual differences in autonomic nervous system reactivity as the patho-physiological mechanism behind hypertension. A neurogenically mediated hyperactivity to stress appears as a precursor and not an effect of hypertension. The presence of both hyperactivity and symptom specificity in a single individual may multiply the risk of essential hypertension. Based on the observations during interviews, the need for use of behavior modification techniques to reduce stress among the incumbents is important. Use of yoga and a regimen of physical and mental exercises which are indigenous to Indian culture can be of immense help in the reduction of blood pressure levels and reduce the negative impact on health. The outcome of research could be generalized if the sample size is large. Therefore, need further analysis to understand the direct and indirect influence of these psychological factors on the levels of blood pressure.

## REFERENCE

- American Society of Hypertension Preventing and Treating Hypertension and its Consequences, 2012. Annual Scientific Meeting & Exposition, Saturday, May, 19 – Tuesday, May 22, 2012. Hiltner Newyork. | | Beto, J.A., & Bansal, V.K., (1992). Quality of life in the treatment of hypertension: A meta-analysis of clinical trials. *American Journal of Hypertension*, 5, 125-133. | Chobanian, A.V., Bakris, G.L., Black, H.R., Cushman, W.C., Green, L.A., Izzo, J.L., Jones, D.W., Materson, B.J., Oparil, S., Wright, J.T. & Roccella, E.J. (2003). Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. National heart, lung, and blood institute; National High Blood Pressure Education Program Coordinating Committee. Seventh report of the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure. *Hypertension* 42:1206–1252. | Christopher, A., DeSouza, J., Linda, F., Shapiro, M.; Christopher, M., Cleveenger, Frank, A., Dinunno, Kevin, D., Monahan, M.S.; Hirofumi Tanaka, Douglas, & R., Seals, (2000). Regular aerobic exercise prevents and restores. Age-Related Declines in Endothelium-Dependent Vasodilation in Healthy Men. *102:1351-1357*. | Engler, M.M., Engler, M.B., Erickson, S.K., Paul, S.M., (1992) Dietary gamma-linolenic acid lowers blood pressure and alters aortic reactivity and cholesterol metabolism in hypertension. *Journal of Hypertension* .10(10):1197-204. | Folkman, Susan; Lazarus, Richard S. (1986). Stress processes and depressive symptomatology. *Journal of Abnormal Psychology*, 95(2), 107-113. | | Grundy SM, Benjamin IJ, Burke GL, Chait A, Eckel RH, Howard BV, Mitch W, Smith SC Jr, Sowers JR. (2000). Diabetes and cardiovascular disease: A statement for healthcare professionals. *American Heart Association*, 101(13):1629-31 | Gutiérrez Fisac, J.L., Regidor, E., & Banegas, J. R., (2002). The size of obesity differences associated with educational level in Spain. *Journal of Epidemiology Community Health*, 5(6): 457–460. | Hodapp V, Helligtag U, & Stormer SW (1990). Cardiovascular reactivity, anxiety and anger during perceived controllability. *Biological Psychology*. 30(2):161-70. | | Kornitzer, M., Houtman, J., De Smet, P., & Koyuncu, R., (1999). Job stress, absenteeism and coronary heart disease European cooperative study (the JACE study): Design of a multicentre prospective study. *European Journal of Public Health* 9(1):52-7. | Lazarus, Richard S.; DeLongis, A.; Folkman, S.; Gruen, A & Rand, (1985). Stress and adaptational outcomes: The Problem of confounded measures. *American Psychologist*, 40(7), 770-779. | Makela, P., Valkonen, T., & Martelin, T., (1997). Contribution of deaths related to alcohol use to socioeconomic variation in mortality: Register based follow up study, *British Medical Journal*, 3(15), 211–216. | Peter Kaiser, Britta Hylander, Keith Eliasson, Lennart Kaijser, (1985) Effect of beta1-selective and nonselective beta blockade on blood pressure relative to physical performance in men with systemic hypertension, *The American Journal of Cardiology*, 55(10), D79–D84. | Plouin, P.F., & Amar, L., Azizi, M., (2014). Angioplasty for atherosclerotic renal artery stenosis: The end of the story? *Rev Med Interne*, 3(14) 248-866. | Ramamurti, P.V., & Jamuna, D., (1992). Markers of Successful Aging, Sandoz Project, SFGDR, BASLE, Switzerland. | Rotter, J. B., (1975). Some problems and misconceptions related to the construct of internal vs. external control of reinforcement. *Journal of Consulting and Clinical Psychology*, 43, 56-67. | Schneider, R H; Egan, B. M; Johnson, E. H; Drobný, H & Julius, S., (1986). Anger and anxiety in borderline hypertension. *Psychosomatic Medicine*, 156-160. | Scott, M., Grundy, Ivor, J., Benjamin, Gregory, L., Burke, Alan Chait, Robert, H., Eckel, Barbara, V., Howard, William M. James & Sowers, R. (1999) Diabetes and cardiovascular disease : A statement for healthcare professionals. *American Heart Association* 100:1134-1146. | Smith, S.C., Allen, J., Blair, S.N., Bonow, R.O., Brass, L.M., Fonarow, G.C., Grundy, S.M., Hiratzka, L., Jones, D., Krumholz, Mosca, L., Pearson, T., Pfeffer, M.A., & Taubert, K.A. (2006). AHA/ACC guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease. *National Heart, Lung, and Blood Institute*. *Journal of American College of Cardiology*. 16; 47(10):21-30. | Steven R. Erickson, Pharm.D., Brent C. Williams, M.D., & Larry D. Gruppen . (2004). Relationship between symptoms and health-related quality of life in patients treated for hypertension, *Pharmacotherapy*. 24(3), 135-146. | Thoresen, H. & Low, A. (2005). Volunteering is associated with delayed mortality in older people: Analysis of the longitudinal study of aging. *Journal of Health Psychology*, 10: 739-752. |