



HYPERTENSION; DOES PSYCHOLOGICAL STATE OF AN INDIVIDUAL CAUSE TO DEVELOP?

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ABSTRACT.... Hypertension is a condition of the person in which blood pressure is chronically high. Hypertension is a leading factor to damage health and turn out many chronic conditions in human body¹. **Objectives:** To study the relationship of hypertension with psychological states of anger, stress and anxiety and do they predict hypertension? **Study Design:** A correlational study. **Methodology:** Outdoor hypertensive patients (N = 200, men = 110, women = 90) between ages 30-65, and control group (N = 170, men = 90, women = 80), matched with age, gender and monthly income were taken from the public hospitals. STAXI (Spielberger, 1988) and DASS (Lovibond & Lovibond, 1995) were used for data collection. **Data analysis:** Descriptive statistics, chi-square, logistic regression analyses were used. **Results:** Significant positive correlation of hypertension with anger, stress and anxiety was found. Anger-control, anger-in, stress and anxiety emerged as strongest predictors of hypertension.

Key words: Hypertension, Depression, Anxiety, Stress, Anger.

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INTRODUCTION

Hypertension is a condition of the person in which blood pressure is chronically high. Hypertension is a leading factor to damage health and turn out many chronic conditions in human body¹. There is an empirical evidence that hypertension is a principal risk factor of strokes, cardiac arrest and kidney failures².

Research evidence suggests that biological factors potentially affect the individual's physique but the importance of environmental and psychological factors cannot be over looked. Psychological state of an individual creates the clinical symptoms of hypertension. Research evidence has also established that psychological factors are equally important in the onset of hypertension disease as biological or social factors are³. Therefore, hypertension is often called an emotional disease. Anger has been reported a potential risk factor in increasing blood pressure level and as a significant predictor of hypertension. Straub⁴ (2002) tells that anger is a negative emotional state with varying duration and intensity. It is a state of emotional arousal and is associated with an aggressively reactive temperament and is a strong predictor of heart

disease. Anger has multiple dimensions like state anger, trait anger, anger-in, anger-out and anger-control. State anger is the present activation of autonomous nervous system and is subjective feelings of anger. It is often expressed verbally in the environment. Trait anger is a permanent feature of a person's disposition and varies in frequency among people. Anger-in can also be called anger-suppression. As the name indicates it is the frequency of suppressing or holding in the angry feelings. Anger-out is displayed in the form of expressing angry feeling outside in the environment towards objects or people. Anger-control is the effort to control anger expression outwardly and it prevents the person to express anger even passing through provoking circumstances⁵. But the question is whether expressing anger is related to hypertension or anger suppression causes hypertension to develop? Alexander⁶ (1939), in an early finding suggests that angry and hostile impulses in an individual cause hypertension to develop. It is reported that if the hypertensive patients express their angry feelings, it will bring their blood pressure at normal point. Hypertensive patients feel themselves very insecure, irritated and tense, and during the state of anger and anxiety their

blood pressure increases a great deal³. Anger expression is strongly related to increase in blood pressure reactivity in men, whereas suppressing anger is related to higher blood pressure reactivity in women⁷.

Majority of the studies carried out in this area concluded the combine effect of both depression and anxiety in growing hypertension. It is reported that anxiety is the most commonly displayed feature of hypertensive patients⁸. Increased blood pressure rate is found to be positively correlated with profound anxiety among people with hypertension⁹. It is reported that participants reporting high levels of anxiety at the start of study were 3 times more liable to become hypertensive after 5 years. Therefore, anxiety is considered a potential risk factor of hypertension¹⁰. The correlation of hypertension with increased negative effect (anxiety, anger or hostility) has been found^{11,12}.

Stress is an established fundamental factor in the etiology of hypertension. It was concluded that stressful thoughts decelerate the progress in curing hypertension¹³. Individuals who are in the habit of thinking about past anger arousing actions are at higher risk of increase in blood pressure. It is reported that young adults who show a high blood pressure response to psychological stress may be at risk of hypertension as they grow up. Thus it can be derived from the above that stress taking individuals are prone to hypertension¹⁴.

It is reported that in Pakistan there are estimated 12 million hypertensives¹⁵. Hypertension is rapidly prevalent in men after 35 years of age than women of that age. Gravity of the situation is that it affects one in every 3 individuals over the age of 45 years¹⁶. In a country like Pakistan where prevalence rate of hypertension among men is 34% and among women is 24% and overall hypertension prevalence is 26%, and 58% of the patients are ignorant about their disease of hypertension¹⁷, it is pertinent to dig out the factors causing hypertension among generations. Literature depicts grim picture of its prevalence in different areas of Pakistan. Treatment of hypertension is

very long and expensive¹⁸. Moreover, hypertension is an established risk factor of coronary heart disease and renal disease¹⁹. Early detection of risk factors of hypertension has done some promising outcomes in Europe and America in curing hypertension. Physical and biological aspects of hypertension have been over emphasized by physicians and medical professionals but the psychological state of a person has always been ignored. So, the current study was carried out to focus upon the psychological states in the development of hypertension.

Hypotheses

1. Hypertension has positive correlation with anger, depression, anxiety and stress.
2. Anger, depression, anxiety and stress are the strongest predictors of hypertension.

METHOD

Sampling strategy and research design

Participants were taken from outdoor departments of 2 public hospital of Lahore by using non-probability purposive sampling technique.

Sample

Hypertensive patients and control group (normotensives) were taken from the same hospitals and normotensives were visitors or non-blood relatives of the hypertensive patients. The criterion to include hypertensive patients in the sample was that (a) both genders (b) age range between 35-65 years (c) diagnosed hypertensive patients who have been taking medicines (d) able to read and write Urdu language. Control group had no past, present or parental history of hypertension. Rest of the inclusion criteria for control group was same as for hypertensive patients.

The criterion to exclude hypertensive patients from the sample was that (a) who were also suffering from some chronic or terminal disease like heart coronary heart disease, renal or liver disease and pregnant women having blood pressure rising complaints. The criteria to exclude control group was that people who were diagnosed as hypertensive patients in the past. Rest of the

exclusion criteria for control group was same as for hypertensive patients.

Sample Characteristics

Total 370 participants, hypertensive patients (N = 200, men = 110, women = 90), and control group (N = 170, men = 90, women = 80), were employed in the study. The age range of the participants (hypertensive and normotensive) was from 30 to 65 years (M = 44.34; SD = 8.32). The monthly income of respondents was from Rs.17550 to Rs.72330 (M = 30543; SD = 16454.12). The number of dependents were ranged from 0 to 9, and weight from 65 to 95 kg (M = 73; SD = 8.02). The working hours of participants ranged from 5 to 15 hours (M = 7.91; SD = 4.10).

Variables Defined: Hypertension was considered as dependent variable of study and was categorized into 2 groups which were coded as normotensive = 0; hypertensive = 1.

Anger, anxiety and stress were used as independent variables and were considered as ordinal scale variables.

MEASURES

1. Demographic Information: Information regarding age, education, occupation, number of children, number of dependents, weight, parental history of hypertension and working hours of the research participants was collected by using a demographic information form.

2. Depression, Anxiety and Stress Scale (DASS). DASS was originated by Lovibond and Lovibond (1995) and consists of 42 items. It is a self report inventory which assesses 3 negative states of depression, anxiety and stress. Only 2 measures of anxiety and stress were assessed by using this scale. Total score is achieved by calculating individual scores on all items. Items are constructed upon Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much). Cronbach’s α = .84 for anxiety scale and .90 for stress scale is reported by authors. Urdu translation of DASS by Potangaroa (2006) was used in the present

study with due permission of authors (English & Urdu).

2. State Trait Anger expression Inventory (STAXI).

STAXI was constructed by Spielberger (1988) and contains 44 items. There are six subscales which are State-Anger, Trait-Anger, Anger-In, Anger-Out, Anger-Control and Anger- Expression. Each item has four optional responses scored on 4-point Likert scale, range from 1 (never) to 4 (very often), with reliability α = .95. STAXI. Urdu version of STAXI was prepared and used in the present research.

PROCEDURE

Initially permission was obtained from hospital administration for data collection and consent was also taken from the hypertensive patients and normotensive controls. Before administration of Urdu versions of DASS and STAXI participants were told about the purpose of research. They were assured about the privacy of their personal information. A consent form, DASS and STAXI were separately administered to all participants.

RESULTS

Chi-square was run to explore the relationship of hypertension with psychological states of anger, anxiety and stress.

Psychological states	M	SD	χ^2	p
State anger	16.44	6.66	86.48	.00***
Trait anger	22.20	8.76	93.98	.00***
Anger-in	18.53	8.13	158.52	.00***
Anger-out	14.67	5.12	51.65	.00***
Anger-control	21.38	8.17	152.40	.00***
Anger-expression	25.56	8.16	77.43	.00***
Anger	114.27	38.12	190.43	.00***
Anxiety	23.83	12.66	121.93	.00***
Stress	32.62	15.12	157.71	.00***

Table-I. Relationship of hypertension with anger dimensions, depression, anxiety and stress (N = 370)

*Note. M = Mean scores; SD = Standard Deviation; χ^2 = Chi-square; ***= p < .001*

As shown in Table-I that hypertension has significant relationship with all dimensions of anger, anxiety and stress. Thus state-anger (χ^2 86.48, $p < .001$), trait-anger (χ^2 93.98, $p < .001$), anger-in (χ^2 158.52, $p < .001$), anger-out (χ^2 51.65, $p < .001$), anger-control (χ^2 152.80, $p < .001$), anger-expression (χ^2 77.43, $p < .001$), anger (χ^2 190.43, $p < .001$), anxiety (χ^2 121.93, $p < .001$), and stress (χ^2 157.71, $p < .001$) are significantly related with hypertension.

Effect of psychological states on hypertension

A logistic regression analysis was used to determine the psychological factors as predictors of hypertension. The results shown in Table-II indicate that anger-expression, anxiety and stress turned out to be predictors of hypertension.

Variable	B	S.E	Lower	OR	Upper
Constant	-30.79	16.71			
Anger-control	.45**	.21	.63	1.20	1.97
Anger-in	.73***	.34	1.64	1.73	2.44
Anxiety	.31*	.20	.72	1.44	2.19
Stress	.67**	.25	.86	1.64	2.13

Table-II. Effect of anger, anxiety and stress on hypertension (N = 370)

*Note. R² = .64 (Hosmer & Lemeshow); .47 (Cox & Snell); .62 (Nagelkerke); Model χ^2 (8) = 23.80; OR = odds ratio; * $p < .01$, ** $p < .01$.*

Explanation of coefficients

As shown in Table II the coefficient for anger-control is .45 and OR = 1.20. The coefficient is positive, therefore as the depression increases by one scale unit, chances of hypertension in a person is increased 1.20 times. The odds ratio for anger-in is 1.73 and B = .73. Thus as anger-in would increase by one scale unit chances of hypertension is increased 1.73 times. Similarly, anxiety and stress (B = .31, OR = 1.44, $p < .05$, B = .67, OR = 1.64, $p < .01$), respectively are found to be the strongest predictors of hypertension.

DISCUSSION

The current research was conducted to explore the correlation of hypertension with anger, depression, anxiety and stress. It also investigated

the predictors of hypertension. The findings show that hypertension has significant relationship with psychological factors of anger, anxiety and stress. Similarly anger, anxiety and stress come out as strongest predictors of hypertension.

Main finding that all dimensions of anger have significant correlation with hypertension may be explained that elucidate that people with hypertension often experience irrational judgment of reality, low level of frustration tolerance, unrealistic expectations and face disappointment and helplessness²⁰. The present finding is consistent with previous literature with reports that hypertensive people experience state anger and want to bang on table and yell at others²¹. The next finding also sustains the 1st hypothesis that trait anger has significant positive correlation with hypertension. It is extreme anger with powerful frequency of expressing it outside. Spielberger (1988)²² elucidate that hypertensive people pass through trait anger frequently and possess argumentative personality disposition. Additionally anger-in is significantly correlated with hypertension. Actually hypertensive people do not release their angry impulses in a normal and healthy way and suppress them. The finding is consistent with previous researches which concluded the same results^{12, 23}.

State and trait theory given by Spielberger, (2005)²⁴ explains that hypertensive people have the trait of anger-out and they want to yell at others or break things but in the presence of some authority they cannot express their angry impulses and try to forcefully hold them in. This controlling of anger starts reactivity in their nervous system which eventually originates different diseases like hypertension.

Findings based on 2nd hypothesis indicate that anxiety is statistically significantly in hypertensive patients. The finding is corroborative with those the finding of early researches who have reported significant correlation of anxiety with hypertension and also as a predictor of hypertension⁸. Individual in anxious condition feels insecure and remains alert and fearful. This activates the autonomous

nervous system and this repetition leads them to suffering from hypertension.

Moreover, stress was found to be statistically significant and a strong predictor of hypertension. These findings are in line with findings which have reported that stress has significant correlation with hypertension. Job strain model of occupational stress predicts hypertension on the grounds of an individual's control over his job and circumstances. In the presence of uncontrollable job demands and pressures from the superiors often lead the individual insurmountable stress and ultimately becomes hypertensive²⁵.

LIMITATIONS

The main limitation of the current research was the use of only self report measures which may have resulted in over reporting or under reporting due to hypertension. Other method of data collection might have given more comprehensive results.

CONCLUSIONS

It is concluded that there is positive correlation of hypertension with anger, anxiety and stress and these states emerged as the predictors for hypertension.

IMPLICATIONS

The findings of this research have implications for understanding the role of emotional and psychological condition of individual in developing hypertension and in introducing effective preventive measures for the pervasiveness of hypertension.

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“In any contest between power and patience, bet on patience.”

W.B. Prescott



AUTHORSHIP DECLARATION

Sr. N.	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Mamoona Mushtaq	Conceived, designed, collected data, analysed data, results, discussion and prepared manuscript.	
2	Dr. Najma Najam	Guided each step to prepare manuscript and edited manuscript	