

# Hypertension: Psychological Fallout of Type A, Stress, Anxiety and Anger

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**Abstract:** The study was aimed at determining whether there are differences in type A, anger, stress and anxiety or between hypertensives and normotensives. From a large community sample of adults from Shimla, 100 individuals having hypertension and having clinic Blood Pressure (BP) > or 140/90 mm hg were selected and compared with a sex and age matched group of 100 individuals with normotensives (clinic or 120/80 mm hg) on measures of type A, anxiety, anger and psychological stress derived from standardized Questionnaire. Results of 2X2 ANOVAs revealed significant differences between hypertensives and normotensives and were in line with all the hypotheses on all the variables. Hypertensive patients reported not only higher type A personality but also higher frequency of stress, anxiety and anger. With regard to gender, the null hypotheses stand rejected as males were found to be significantly higher on type A and anger and females were found to be significantly higher on stress and anxiety.

**KeyWords:** Hypertension; Type A behavior; psychosocial stress; anxiety; anger ; gender

## 1 Introduction

Essential hypertension (EH) commonly known as high blood pressure (BP) is a psycho physiological disorder and the main problem linked with it is its risk potential. Since in most cases no symptoms are noticeable over long periods, the disease often is well established before treatment is initiated. It therefore, is also known as the silent killer as people may go on for years without knowing its presence organically; the elevation in (BP) is caused by a constriction of blood vessels and malfunction of a set of nerves called baroreceptors which ordinarily depress BP when a critical level is reached. BP may be elevated by increased cardiac output, the amount of blood leaving the left ventricle of heart per minute by vaso-constriction and by increase in volume of body fluids. The physiological mechanisms contributing to the regulation of BP are very complex. The central nervous system (CNS) and the sympathetic nervous system (SNS) along with the hormones, salt and water mechanisms are involved. Appropriate blood volume and BP is maintained in the body by the balances of sodium and water in the body. Sympathetic nervous system is claimed to play a permissive role in the maintenance of essential hypertension. Hypertension is defined as a condition in which BP readings fluctuate

above and below the normal levels (Julia & Esler, 1975).

Hypertension is classified as either primary or secondary, about 90-95% of cases are termed as "primary hypertension", which refers to high blood pressure for which no medical cause can be found (Carretero, 2000). The remaining 5-10% of cases that is secondary hypertension is caused by other condition that affect the kidney, arteries, heart or endocrine system (Mayo foundation for medical education & research, 2008). Persistent hypertension is one of the risk factors for stroke myocardial infarction, heart failure and arterial aneurysm and is a leading cause of chronic kidney failure (Pierdonico, et al, 2009). Moderate deviation of arterial blood pressure leads to shortened life expectancy. Dietary and life style change can improve blood pressure control and decreases the risk of associated health complication, although drug treatment may prove necessary in patients for whom style changes prove insufficient (Nelson, 2010).

Psychosocial stress forms an inseparable part of life and up to a degree may be essential for adequate personality growth. All individuals in the course of life experience a variety of events or life changes which may be considered potential stressors and often require significant social readjustment and adaption Canton, (1985) in a longitudinal study reported that some life

events, can be considered as a risk for hypertension (Hanfner and Miller, 1991, Hobfoll and Spielberger, 1992).

Type A behaviour pattern, one of the most promising coronary prone behaviour patterns, with its combination of rush, impatience and competition is the most closely studied of the various personality factors involved in coronary diseases. It is a behavioural syndrome that includes aggressiveness, competitiveness, impatience and a sense of urgency, in overcoming obstacles to task performance (Ivancevich and Matterson, 1984). Type A behaviour pattern individuals generally respond to stressful situations with marked increase in heart rate and blood pressure (Evans, Palsane and Carrers, 1987). The best prediction of heart disease can possibly be obtained by measuring hostility, anger, anxiety the most important feature of type A behaviour pattern.

Some findings have revealed that outward expression of anger (anger-out) is related to chronic heart disease CHD, where as suppression of anger (anger-in) more common to hypertension (Spielberger et al, 1985, Cottington et al, 1996); Suarez and Williams, 1990). A significant positive relationship between anxiety and blood pressure has been reported in several studies (Schneider Egan, Johnson, Drobny and Jullius 1986; Sharma et al., 1996). Hence, in view of the above studies the present problem endeavors to study the role of type A personality, anger, stress and anxiety in hypertension.

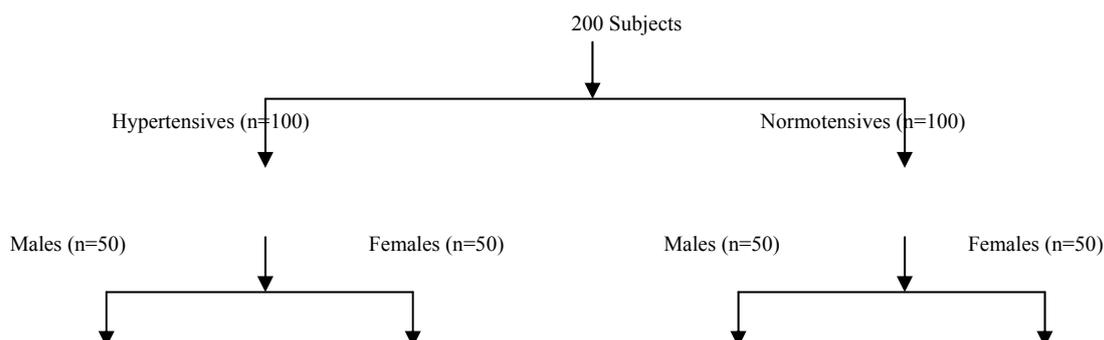
## 2 Hypotheses:

Following eight main hypotheses have been formulated for the study:

1. The hypertensives would report higher level of Type A behaviour pattern, as compared with their normotensive counterparts.
2. The hypertensives would not only report heightened elevation of stress but also its impact when compared with their normotensive counterparts.
3. The hypertensives would report heightened elevation of anxiety along with its impact, as compared to their normotensive counterparts.
4. The hypertensive would report higher level of anger and its impact as compared to their normotensive counterparts.
5. There would be no significant difference between the two genders on the variable of stress, hence null hypothesis would stand.
6. There would be no significant difference between males and females with regard to Type A personality, hence null hypothesis would stand.
7. There would be no significant difference between males and females with regard to anger, hence null hypothesis would stand.
8. There would be no significant difference with regard to anxiety between the two genders; hence the null hypothesis would stand.

## 3 Design of the Present Study

A factorial design of 2x2 (univariate analysis of variance) is employed in the present study. There are two conditions of hypertensives and normotensives and gender which include equal number of males and females. There are total four variables- stress, anxiety, Type A behaviour and anger. This made four conditions of males and females subset under each category of hypertensives and non-hypertensive s, thereby yielding a sample of 200. The data is drawn from selected area of the age group of 40 above.



## 4 Tools

- 1) Jenkins Activity Survey (Sharma & Sood, 2010).
- 2) ICMR, Psychosocial Stress Questionnaire (Srivastava, A.K., 1991-92).
- 3) Health Anxiety Questionnaire (Sharma & Sood, 2010).
- 4) Anger Expression scale (Ax/ Ex) (Krishna, 1988).

### 4.1 Jenkins Activity Survey (Jenkins, Zysanski & Rosenman, 1979):-

Type A was measured with Hindi Version (Sharma & Sood 2010) of Type A Scale one of the dimensions of Jenkins and Activity Survey. It consists of 21 items pertaining to routine life and work. The responses were gathered from Types A scale (one of the dimensions of JAS) of the questionnaire only. The test-

retest reliability of JAS and its Hindi translated version was found to be 0.87,  $p < .01$  on adult bilingual sample. Scoring was done with the help of the scoring table referred at the back of the scoring manual ( $N = 100$ ).

#### 4.2 ICMR, Psychosocial Stress Questionnaire (Srivastava, A.K, 1991- 92):-

The questionnaire was designed to assess psychological stress from various distressing or adverse social situations, and the subjects were instructed to give their ratings for the severity of the felt stress. The

Split- half (n=3063)	Methods of Reliability- Estimation		
	Cronbach Alpha (n=1403)	Retest (n=130)	Inter Rate (n=83)
r. 854	.841	.683	.615
P .01	.01	.01	.01

#### 4.3 The Health Anxiety Questionnaire (Sharma & Sood, 2010):-

Health Anxiety was measured with Hindi Form (Sharma & Sood, 2010) of Health Anxiety (Lucock & Morley, 1996). A self report questionnaire with 20 items (original 21 items) was developed to identify individuals with high level of concern about their health. Internal consistency demonstrated to be high with total sample of 284 in the Lucock and Morley study (Chronbach's  $\alpha = .92$ ). Test-retest reliability was measured with 39 subjects in the lay group  $r = .94$ . Split-half reliability was calculated with the Pearson product moment correlation using the Spearman brown correlation for males. Split-half reliabilities were calculated for the group ( $r = .90$ ,  $p < .01$ ). The test-retest reliability of the translated Hindi version came out to be .65,  $P < .01$ .

#### 4.4 Hindi Anger Expression (Ax/Ex) Scale (Krishna, 1988):-

Anger expression was measured with Hindi Form (Krishna, 1988) of Ax Scale (Spielberger, 1988). It consists of 24 items. The scale is comprised of three 8 items subscales for assessing various components of anger expression e.g. anger out, anger in and control. Anger out (Ax/out) measures anger directed outward; anger in (Ax/in) also known as suppressed anger which refers to how often anger is experienced but actively hold by the individual. Anger control (Ax/con) assesses the frequency with which an individual attempts to control the expression of anger. The items are endorsed on a four point rating scale and are summed up to yield a general index of the frequency that anger is expressed regardless of the frequency of the direction of expression. The test-retest reliability of English and the Hindi version was found to be .87  $p < .01$  on adult bilingual sample ( $n = 109$ ).

questionnaire altogether consisted of 40 items. Following standardized instructions were given to the respondents: "you have to indicate the magnitude or frequency of stress you actually feel from each of these stressful situations / events by putting tick mark ( $\checkmark$ ) on either of the four magnitudes of stress (i.e. not at all / mild or sometimes/ moderate or many time/ server or often). Do not leave any statement unresponded." Their corresponding numerical scores ranged from 0 to 3, respectively. The reliability indices of psychosocial stress questionnaire are represented in a table ahead:

The alpha reliability of Hindi Ax/ in Ax/out and Ax/con are 0.89, 0.88, 0.62, 0.82 (female) and 0.96, 0.92, 0.92 and 0.82 (males) respectively. The items on the anger expression scale are classified as under:

1. Anger out (Ax/out): 2,7,9,12,14,19,22,23,
2. Anger in (Ax/in): 3,5,6,10,13,16,17,21
3. Anger control (Ax/con): 1,4,8,11,15,18,20,24

Respondents rated each item on a four point scale 1) never or rarely, 2) Sometimes 3) often 4) most of the time. Total 24 items were to be rated. In the present study all the scores were added and final score was taken.

## 5 Procedure

All the four instruments were administered to all the 200 subjects individually in a face to face situation. Prior to administration of each test, appropriate rapport was formed and standard instructions given in the respective manuals were followed while administering and scoring the test.

## 6 Results

In the first place, means were calculated for the factor of stress, anxiety, anger expression and Type A behaviour pattern and the ANOVAs were computed for the same. The details of the values obtained are shown in table-1. The results of F-test are as follows:

Table: 1 Analysis of Variance for Type A Personality, Stress, Anxiety, and Anger

Personality (Type A):-

Source of Variance	Sum of squares	df	Mean square	F-ratio
G Group (A) Hypertensive/ Normotensive	197066.42	1	197066.42	88.09**
Gender (B) Males/ Females	23980.50	1	23980.50	10.72**
A AXB	2352.98	1	2352.98	1.05
E Error	438490.48	196	2237.20	

Total	661890.38	199		
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**Stress:**

Source of Variance	Sum of squares	df	Mean squares	F- ratio
Group (A) Hypertensive/ Normotensive	11385.41	1	11385.41	53.89**
Gender (B) Males/ Females	11689.21	1	11689.21	55.32**
AXB	0.41	1	0.41	0.002
Error	41411.78	196	211.285	
Total	64486.81	199		

**Anxiety:**

Source of Variance	Sum of Squares	df	Mean squares	F Ratio
Group (A) Hypertensives/ Normotensives	5030.05	1	5030.05	75.55**
G Gender (B) Males/ Females	3081.13	1	3081.13	46.28**
AXB	70.81	1	70.81	1.06
E Error	13049.78	196	66.581	
T Total	21231.77	199		

**Anger:**

Source of Variance	Sum of Squares	df	Mean squares	F Ratio
Group(A) Hypertensives/ Normotensives	1953.13	1	1953.13	40.757**
Gender (B) Males / Females	221.13	1	221.13	4.61*
AXB	163.81	1	163.81	3.42
E Error	9392.54	196	47.92	
Total	11630.61	199		

\* p < .05; \*\* p < .01

**6.1 Interpretation:** The results of F-test are as follows:

**6.1.1 Personality:** The F-ratio for the groups is 88.09\*\* p<.01 and F-ratio for the gender is 10.72\*\* p<.01. The means of groups are 229.98 for hypertensives and 164.95 for normotensives and for the gender, the means are 208.29 for males and 186.64 for females. The F-ratio for interaction effect has turned out to be non-significant.

**6.1.2 Stress:** The F-ratio for the group (hypertensives and normotensives) is 53.89\*\*, P<.01 and the F-ratio for the gender is 5.32\*\*, P<.01. The means of groups are 66.4 for hypertensives and 51.3 for normotensives and for the gender, the means are 66.5 for females and 51.2 for males. The F-ratio for the interaction effect has turned out to be non-significant.

**6.1.3 Anxiety:** The F-ratio for the groups (hypertensive and normotensives) is 75.55\*\* P<.01 and F- ratio for the gender is 46.28\*\* p<.01. The mean of groups are 69.66 for hypertensives and 38.72 for normotensives and for the gender, the means are 66.33 for females and 42.05 for males. The F- ratio for interaction effect has turned out to be non-significant.

**6.1.4 Anger:** The F-ratio for the groups is 40.76\*\* p<.01. The means of groups are 84.65 for hypertensives and 61.30 for normotensives. The means are 78.15 for males and 70.45 for females where as the F- ratio for the interaction is non-significant.

## 7 Discussion

The pathogenesis of essential hypertension is determined by various psycho-social and demographical variables psychological factors common to hypertensive patients are: Type A behaviour pattern, stress, anxiety, depression, hostility, dissatisfaction, tension etc. besides the psychological factors, other variable included in the etiology of essential hypertension are obesity, excessive alcohol intake, smoking, blood lipids, potassium deficiency, glucose, caffeine, genetic disposition, racial differences, age and gender. The relationship between hypertension and various demographical factors have been reported by researchers in Indian settings. Rise in blood pressure was directly proportionate to age, body weight, socio-economic status and smoking habits and inversely related to physical activity (Singh, Beegon and Naiz, 1996). The rational of results have been discussed variable wise.

### 7.1 Hypertension & Type A Personality:

Type A personality are more prone to high blood pressure, heart ailments and strokes than that of the Type B individuals. Although, this doesn't mean that Type B people will not get the same illnesses. From the results it can be said that hypertensive patients have scored significantly higher as compared to normotensives on Type A behaviour pattern. Similar findings have been also obtained by Harburg, E. Julius, S. McGinn, N. F.; Mcleod, J. & Hoobler, S.W. (1964) and Pittner & Houston (1980). They found that Type A subjects manifested higher pulse rate under all conditions and greater systolic blood pressure (SBP) and diastolic blood pressure (DBP) in response to self esteem than did Type B subjects. On the gender males have reported significantly greater level of

Type A on compared to females, the reason being that Type A is associated with masculinity (Baltis and Small, 1982) and is a result of social reinforcement for engaging in traditionally masculine activities (Cross, Copping and Campbell, 2011; DeGregorio, & Charles, 1980; Harrison, 1978). Many males reported that, one professional life demands work schedules to be compiled on time, our task makes us more achievement oriented, irritable, impatient with delays and hostile at times. Hence Type A men are more vulnerable to anger, aggression and hostility which in them makes them susceptible to cardiac ailments and hypertension (Miller et al., 1996). Thus the present results on gender rejected the null hypothesis (Ho) which states that there would be no difference between male and females with regard to Type A personality. Hence type A men are more vulnerable to hostility, which in turn makes them susceptible to hypertension and cardiac ailments.

### **7.2 Hypertension & Stress:**

Among the numerous medial diseases, syndromes and disorders that confront modern medicine, essential hypertension stand out as a disorder that is commonly associated with stress and living a stressful life. Even the term "hypertension" suggests a close linkage of this disorder to stress and tension rather than its more accurate description of elevated arterial pressure with the circulatory system (Davidyan, 2010). Stress does not directly cause hypertension but can have an effect on its development, Life stress plays an important and significant role in the onset and progression of cardiovascular disorders especially hypertension (Jorgenson and Houston, 1989; Fisher 1996). From the results it can be said that hypertensive patients suffer from higher level of stress. Similar findings have been also obtained by Fauvel (2002). In a study they found that stress was independently related to blood pressure especially in active people. The nothing of widespread gender differences in rates of stress dates back two decades, with women consistently reported as having twofold lifetime prevalence of stresses and gender likelihood of seeking help for anxiety than men (Wilhelm and Roy, 2003). Flower, (1990) pointed out that susceptibility of stress in women is high because of environmental factors. Which include gender stereography and identity roles? As reported by most of the women when they were personally interviewed in the present investigation, "Today's life is so hectic and demands of professional, house hold chores and children are so enormous, that we are hardly, able to participate in recreational activities. By the end of the day, we are totally

exhausted and stressed out and burden of responsibilities totally seem endless to us. Therefore, according to research studies and as reported by the most of the females, our hypothesis stands rejected that there would be no significant difference between the genders on the variable of stress i.e. null hypothesis Ho stands rejected.

### **7.3 Hypertension & Anxiety:**

Anxiety, anger and hostility are important in the study of psychological risk factors of essential hypertension. Anderson et al. (1992) contended that chronic socio-culture stressors are thought to interact with psychological risk factor (e.g. anxiety, tension, Type A behaviour pattern, anger, hostility, depression) in frequent triggering of the physiological stress reaction (e.g. SNS mediated sodium, retention and vasoconstriction) thought to contribute to the development of essential hypertension (Anderson et al 1989, 1993; Myers & McClure, 1993). From the results it can be said that hypertensive patients suffer from higher level of anxiety than the normotensives. The difference between the two groups with regard to their level of anxiety was so large that it was also found statistically significant beyond 0.01 level of confidence. Thus, hypothesis IV stating significant difference between hypertensive patients and normotensives with regard to their level of anxiety was also found to be confirmed. In a study Johnson (1984) also found similar results. Hence, males have reported significantly more anxiety as compared to their female counterparts. With regard to gender, null hypothesis stands rejected which stated that there would be no difference with regard to anxiety between the genders as females have reported more anxiety on compared to males, the reason being because females by virtue of their roles in society and their biological make-up are more prone to anxiety (Sharma, Verma & Malhotra, 2008).

### **7.4 Hypertension & Anger:**

Anger and hostility now regarded as core components of the type A construct (Davison and Neale, 1990). A combination of chronic socio-cultural stress and a psychological risk as suppressed anger may induce greater pathoophysiological activity related to essential hypertension than either factor alone. Suarez, Kuhn, Schonberg et.al (1998), reported similar findings with harassed subjects with high hostility scores exhibiting enhanced and prolonged blood pressure, physiological reactivity in high hostility subjects. It appeared that hypertensives were found to be higher on the level of anger. It simply indicated that anger among hypertensive patients was found to be higher than the normotensive. Howell, Roc, Carmon and Hauber (2007) found that trait anger is one of the psychological factors associated with

blood pressure elevation. In a study in Netherlands, Vander et al (1985) also found that male hypertensive's were more anger prone than their normotensives counterparts. Hence, the hypothesis-III stands proved hypertensive would report higher level of anger. With regard to gender on the variable of anger, male have reported significantly greater level of anger. The reason being that males' anger is usually ascribed to inherited biology i.e., testosterone (Simpson, 2001) and there is a societal tendency to think of anger as a masculine emotion. Moreover, anger is more widely accepted in men than women. Women have traditionally over the centuries been taught that displaying anger is undesirable. Women have therefore been conditioned that "good girl" don't show anger than men (Cox et al., 2000). Anger in males is a secondary emotion used to cover underlying emotions such as fear, hurt or frustration. Anger is a frequent powerful tool for boys and men to cover their inadequacies.

## 8 Conclusion

To conclude, this study highlights the association of negative affectivity (stress anger and anxiety) and impulsive personality to the etiology of hypertension. Further, the predisposing factors are precipitated by the current environmental situations. The net implication is that hypertension is becoming a part and parcel of life which could be altered either by medicines or by life style change.

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