A COMPARATIVE RESEARCH ANALYSIS ON THE ASSOCIATION OF ANXIETY, DEPRESSION, DEMOGRAPHIC DETERMINANTS AND STRESS WITH HYPERTENSION

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Abstract:
Objective: *To discover the psychological and socio-economic factors (Dejection, Restlessness and Stress) responsible for high blood pressure (hypertension).*
Method: *The study was a comparative analysis for a sample of 237 people. The sample consisted of 100 controls and 137 hypertensive patients. DASS (Depression, Anxiety and Stress Scale) was used for the measurement of these parameters.*
Results: *The study delivered that the depression, anxiety and stress are directly related to the high blood pressure (p < 0.001). Other factors such as job status, family size (dependents), body weight and job timings also effected the patients' blood pressure.*
Conclusion: *High blood pressure is strongly associated with dejection, restlessness and mental pressure. The demographic variables were also seen connected with hypertension. The study in hand will surely enhance the knowledge and awareness of the concerned about hypertension and associated risk factors.*
Key Words: *Anxiety, Depression, Stress, Demographic and DASS.*

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INTRODUCTION:

Hypertension is emerging as one of the most common health issue across the globe. In 2000, the prevalence of high blood pressure patients was 26% in American population [1]. The number of hypertensive patients around the world is approx. 1 billion and tends to reach 1.56 billion till the end of 2025 [2]. The BP is affecting both males and females and half of them are even unaware of the prevalence of disease.

In our country, males (34%) and females (24%) are suffering from hypertension. It was estimated that 12 million people in Pakistan were hypertensive. The number of males of 35 years or more were seen with increasing incidences of high BP as compared with the females of the same age group. The speed of growth of the disease in adults' population renders the hypertension as the most common and critical health related issue [7].

The associated risk factors involve mental, social and biological variables. Mental health is also strongly related to the physical health of the individual. Hypertensive patients are seen with anxiety, stress and dejection [8]. The prevalence of depression among hypertensive patients has been founded by many studies [9]. The patients with depression are three times more likely to develop high BP in future [10]. Similarly, anxiety is another cause for high BP and associated with the presence of hypertension in later stages [11, 12].

The role of stress is obvious in the development of hypertension and related heart problems [13]. The stress in BP patients cause the heart rate to increase. The risk of morbidity of hypertension in such patients increases with the increase in ages [14].

The demographic characteristics also effect hypertension. Environmental, cultural and social differences among the population are seen everywhere in the world. The people from lower socio-economic status are at a greater risk of developing and inducing diseases as seen against the population belonging to higher socio-economic status [15]. Some other risk predictors for hypertension include obesity and long desk jobs which can be controlled by health awareness and education. {16, 17]. The current study delivered that the tension, mental pressure and hopelessness is strongly associated with the hypertension. The relationship between mental health and hypertension was neglected in the past but now after the advancement in medical field, the relationship of hypertension with psychological aspects is verified. Some work has

been produced by some researchers on this topic from a lower class of society [17]. The research in hand was a concerted effort to consider the association of various demographic and psychological variables to hypertension.

METHODS:

The sample was composed of 100 controls (50 males and 50 females) and 137 hypertensive patients (77 males and 60 females). The total sample was 237 selected from OPD of Mayo Hospital, Lahore (August, 2016 to September, 2017). The purposive sampling technique was used for this purpose. Patients were selected according to inclusion and exclusion criteria. The controls (50 males and 50 females) were referred as non-hypertensive group and all the attributes of the cases were matched with the controls to judge the difference.

The sample's age ranged from 30 years to 65 years (Mean = 43; Standard Deviation =8.24). Family size was ranged from 0 to 11. The mean values for their weight and job timings were calculated to be (Mean = 73; Standard Deviation = 8.02), and (Mean = 8.80; Standard Deviation = 4.08) respectively.

The permission for the conduct of the study was attained from hospital authorities. All the subjects were informed about the study objectives prior to the start of research. Three forms (consent form, DASS questionnaire and demographic characteristics form) were filled for each patient for initial analysis.

The form containing the socio-economic information of the patients included the factors such as qualifications, age, gender, spousal status, household income, family size, number of dependents, job timings and spouse job status etc. DASS [19] is a globally recognized protocol used for the measurement of anxiety, depression and stress. The DASS consisted of 42 items and Urdu version of this scale was utilized in this research for better understanding of participants [20].

RESULTS:

Hypertension relation with stress, depression and anxiety was analyzed by conducted Chi-square test. The Pearson Chi-Square test is not able to distinguish between different categories [21]. In current research the hypertension risk factors are categorized into three levels such as low, high and medium. The table includes high as it is the most relevant level for the association of these factors with hypertension.

Table-II represent the statistically significant relationship between DASS and the high BP

(p<0.001). The findings are valid for the current sample.

Binary logistic regression model showed the association among depression, anxiety and stress with the hypertension. The odds ratio (OR) and coefficient analysis for these parameters are given in Table-III.

Logistic regression analysis was used to evaluate the factors effecting high BP. The analysis of coefficients founded that the factors are a leading cause of high BP in 62.43% cases. The odds ratio with respect to coefficient effects the predictor of hypertension in positive or negative way. The chances of hypertension increase if the coefficient is positive and vice versa. The OR and coefficients for different variables such as office job, monthly income, weight, working hours and spouse job is significantly associated with the incidence of hypertension.

The sample is investigated and the results were presented in mean and SD for each gender of the hypertensive population having depression. The values calculated to be were depression (For males, Mean and SD were respectively 19.82 and 4.65; whereas, for females, 43.53 & 10.58, P-value < 0.001), anxiety (for males, Mean and SD were respectively 33.27 & 11.92; whereas, for females 19.40 & 6.58, P-value < 0.001) and stress (for males, Mean and SD respectively 47.33 & 8.53; whereas, for females 24.50 & 6.52, P-value < 0.001).

Table – I: Demographic characteristic of the research participants

Variables		Hypertension (137)		Controls (100)	
		No	Percentage	No	Percentage
Gender	Male	77	56	50	50
	Female	60	44	50	50
Occupation	No job	50	36	42	42
	Office job	62	45	36	36
	Business	17	13	18	18
	Both	8	6	4	4
Family history of hypertension	No	7	5	94	94
	Yes	130	95	6	6
Spouse job	No	88	64	53	53
	Yes	49	36	47	47

Demographics
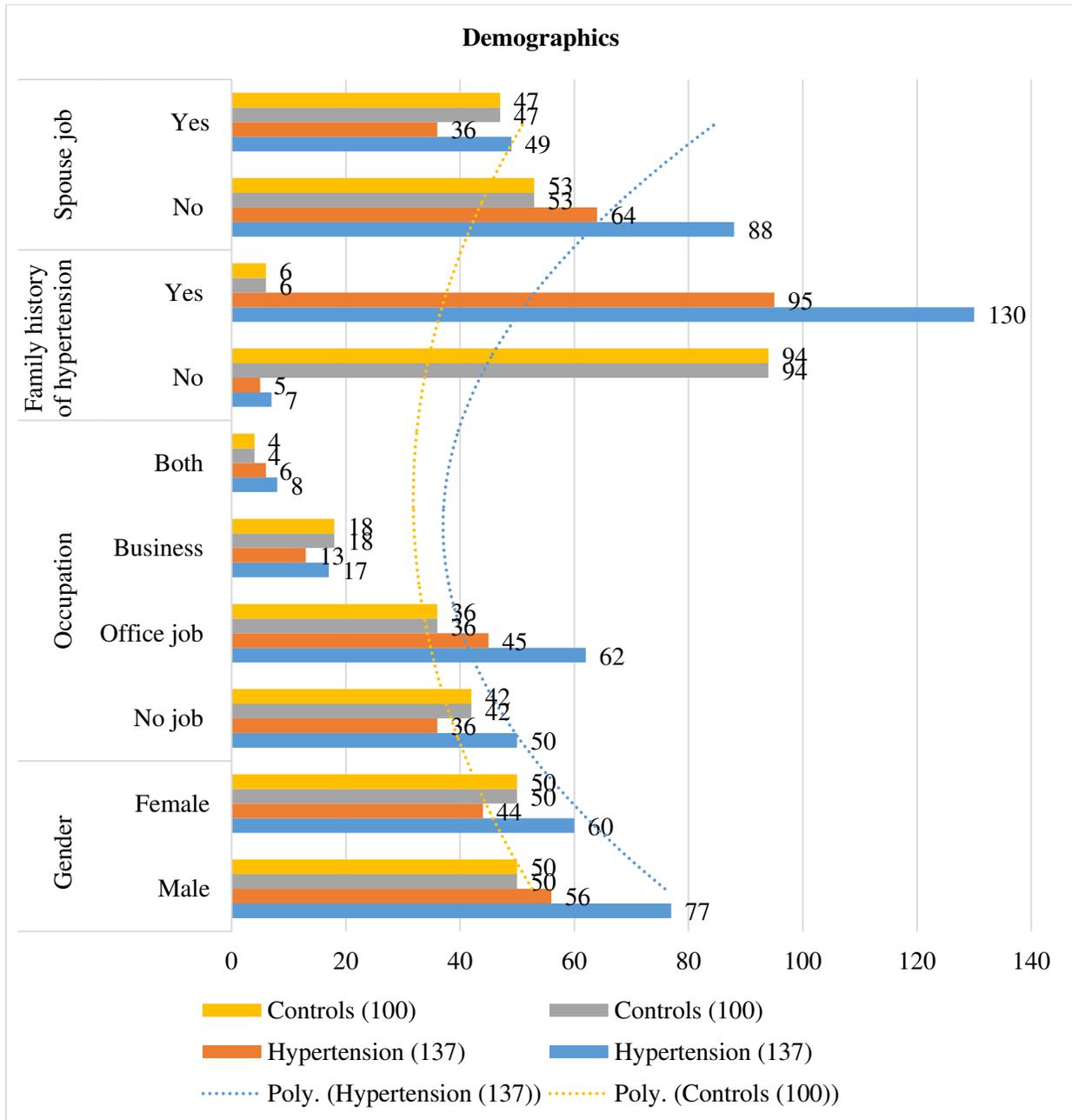
Table – II: Relationship between depression, anxiety, stress and hypertension

Variable	M	SD	α	χ2 MH (df = 1)
Depression	15.78	11.49	0.91	104.18
Anxiety	20.62	13.94	0.84	78.48
Stress	21.42	11.1	0.9	110.95
DASS	57.62	32.91	0.91	97.43

**DASS, depression, Stress and Anxiety Relationship**
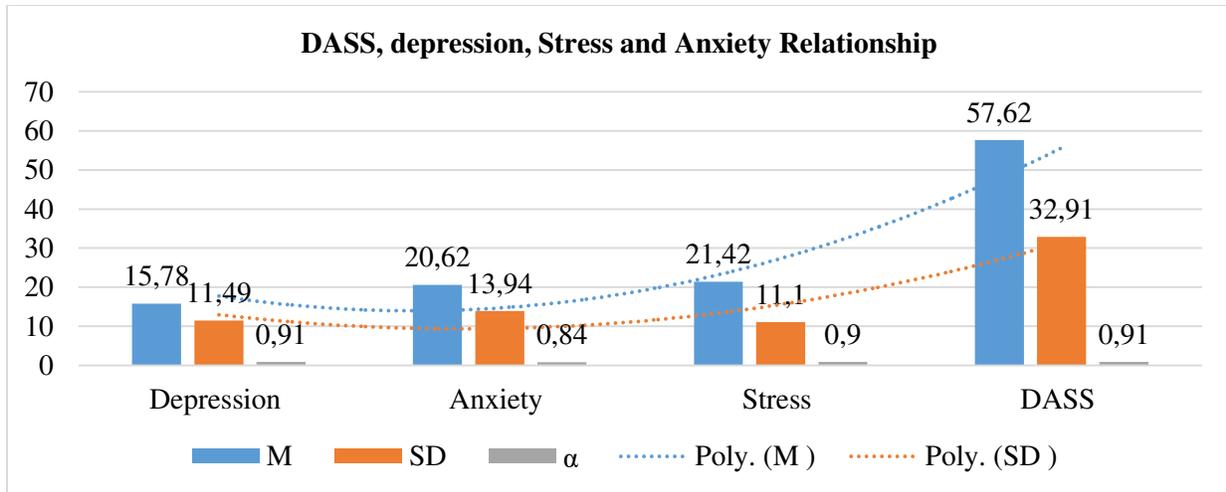
Table – III: Depression, anxiety and stress independently associated with hypertension in hypertensive cases and controls

Variable	B	S.E	LL	OR	UL
Constant	-13.45	4.9			
Depression	0.36	0.13	1.1	1.44	1.88
Anxiety	0.56	0.24	1.09	1.76	2.85
Stress	0.31	0.15	1.01	1.37	1.85
DASS	0.75	0.21	1.45	1.85	3.05

X- Y Scatter Chart
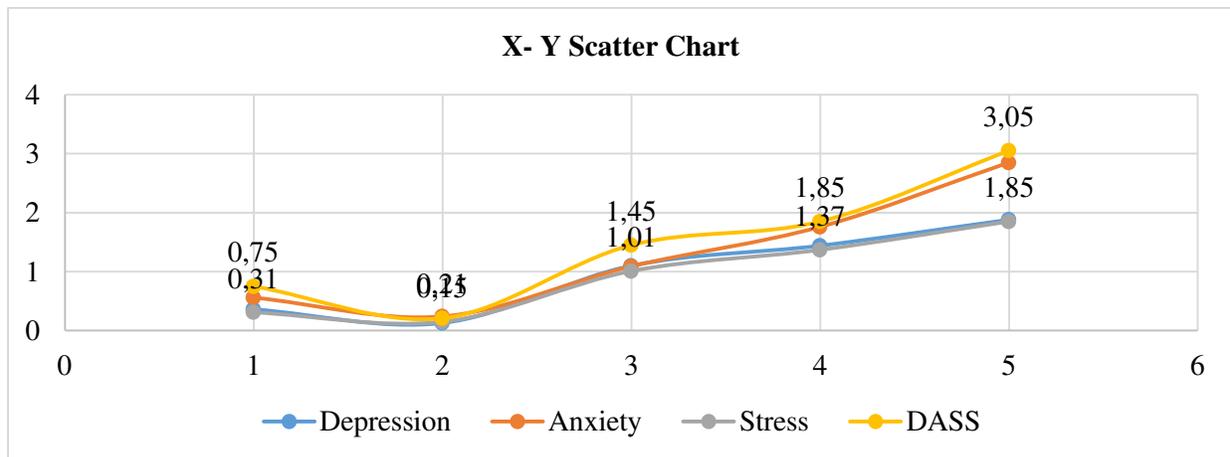
Table – IV: Demographic factors predicting hypertension

Variables	B	S.L	LL (95%)	OR (CI)	UL
Constant	-4.13	0.97	-	-	-
Office job	0.31	0.17	0.91	1.14	1.72
Monthly income	-0.45	0.18	1.74	1.23	1.97
Spouse's job	-0.42	0.23	1.05	1.64	1.83
Number of dependents	0.34	0.15	0.74	1.42	1.85
Weight	0.28	0.12	0.7	1.1	1.71
Working hours	0.4	0.17	1.03	1.56	2.27

Demographic factors predicting hypertension

Legend: B, S.L, LL (95%), OR (CI), UL
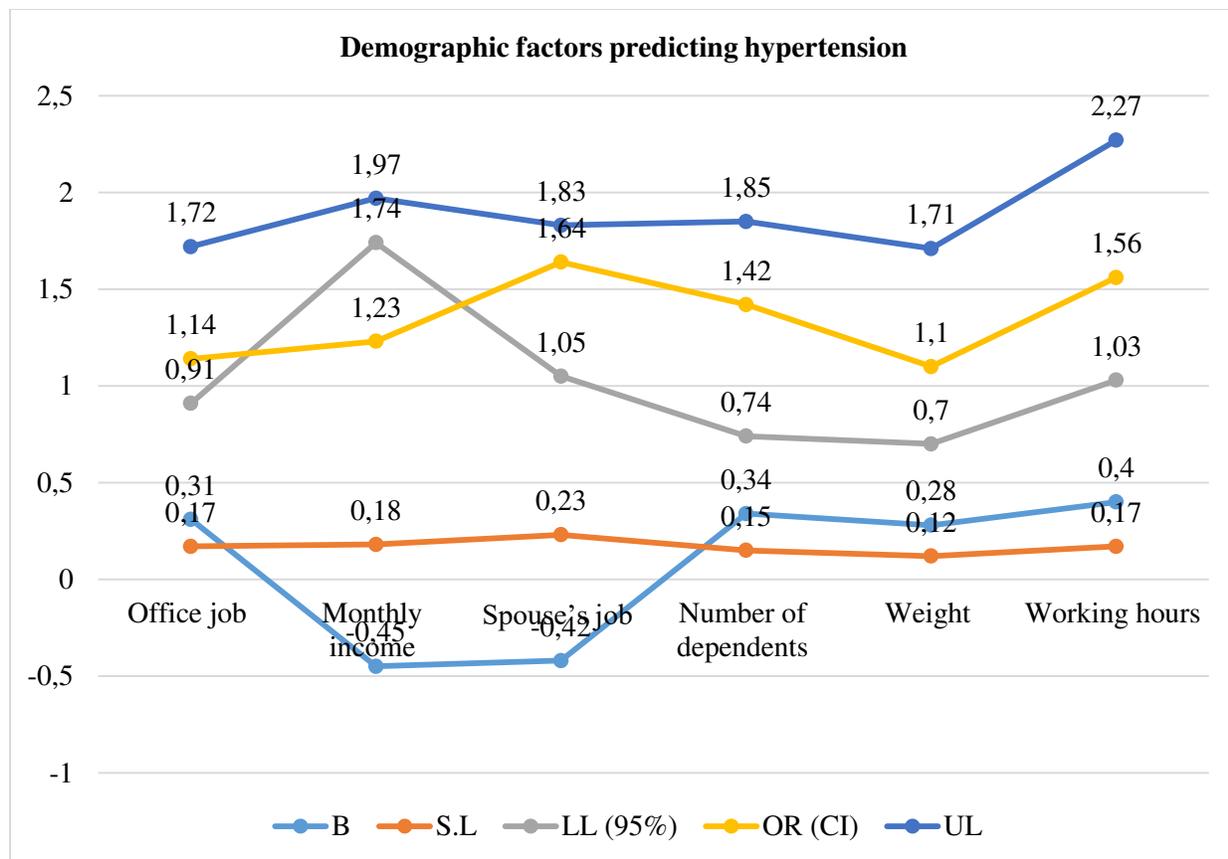
DISCUSSION:

The current study was designed to evaluate the mental attributes in connection with hypertension and associated risk factors. The controls were included to verify the findings. The study delivered that psychological features (Stress, Anxiety and Depression) have a direct association with high blood pressure. Moreover, dejection, mental pressure, restlessness and other demographic factors such as income, family size, spousal job status and job timings were critical factors effecting high blood pressure.

The association of depression with hypertension was observed in our study. This finding is also supported by an earlier study where depression was responsible for high blood pressure [18]. It was observed that patients suffering from dejection and despair were three times more likely to develop high blood pressure in coming years [10]. Nonetheless, scholars have studied an equal and opposite relationship between depression and high blood pressure i.e. depression causes the hypertension to increase [22] and high blood pressure raise the depression level [12].

The theory of association between anxiety and

hypertension was found to be significant in our set up. Restlessness is considered as a disease often neglected and having severe adverse effects on human body [22]. Many researches have come up with the same results [23]. The patients who develop high BP at a later stage in life were seen with high anxiety levels as compared to controls [24]. Hence, the link between anxiety, depression and high blood pressure seems strong in light of the findings of this study [10].

Furthermore, mental pressure (Stress) was also closely related to the hypertension [13]. A study concluded that the hypertension tends to increase in people who were stressed as compared to controls [13]. The findings of our study are comparable with the findings of earlier studies on the topic [25].

Some demographic factors are considered as strong predictors of hypertension. These include work environment, income, family size, No of dependents, body weight and partner's job status and timings. The increased level of hypertension was observed in patients who had a prolonged job timing or negative working environment [18]. In our society, men are responsible for earning and feeding the whole family members. The associated demographic factors play a

vital role in fighting hypertension in such cases. Nowadays, the female workers have not only reduced the financial burdens from the shoulders of their men but also helping to fight the hypertension in a better way. The BP patients avoid gyms and do not exercise. This situation leads to increase their weight which in turn adds to the morbidity of the disease.

CONCLUSION:

High blood pressure is strongly associated with dejection, restlessness and mental pressure. The demographic variables were also seen connected with hypertension. The study in hand will surely enhance the knowledge and awareness of the concerned about hypertension and associated risk factors.

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