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Study to Assess the Association Between Lifestyle Factors and Stress Levels in the Prevalence of Hypertension Among Adults from the Rural Community– A Cross Sectional Study

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A B S T R A C T

Background: Hypertension and diabetes mellitus are considered the major non-communicable diseases that are contributing to significant morbidity & mortality. In India, Hypertension is considered a leading cause for premature deaths, the burden of which is gradually progressing in the rural community. Gradual shift among life style factors like altered diet, diminished physical activity, disturbed sleep from urban to rural communities has contributed significantly to increased burden of hypertension in the rural population.

Aim: 1.To assess the association between life style factors and stress levels in causing hypertension among adults of the rural community.

Material & Methods: This is a cross sectional study done among one hundred and fifty adults aged 18 years and above diagnosed with blood pressure above 130/90 mm Hg. Stress levels were measured by using a stress scale . Self structured pre-validated questionnaire was used to assess the life style factors. . Descriptive statistics was used to summarize the sample characteristics and statistical tests like chi-square and logistic regression analysis were used to identify the independent predictors of hypertension.

Results: The mean age of the study participants is 41.2± 12.6 years. The prevalence of hypertension in the study was found to be 38.6%. A strong association was found between high blood pressure and various factors such as high stress level, having slept less than 6 hours, those who exercise rarely, who consume high coffee and spend more than 7 hours as screen time.

Conclusion: In this study, it was found that prevalence of hypertension is gradually increased among people residing in rural areas. Unhealthy life style factors like improper diet, physical inactivity, inadequate sleep and high stress levels play a significant role in causing hypertension among people from rural areas.

Keywords: Life style factors, Hypertension, Stress levels, rural community, prevalence.

INTRODUCTION

In India hypertension is a leading cause for many deaths among the different age groups contributing directly or indirectly as a factor for mortality. Our country has seen a significant shift in disease burden from communicable to non-communicable diseases over the past two decades with a prediction that the burden of hypertension in India will almost double from 118 million in 2000 to 213.5 million by 2025.[1]

Various factors like the environment in which the person lives, occupation, income, education, life style, living standards have a significant impact in causation of non-communicable diseases such as diabetes and hypertension. Various studies that are conducted in the communities in the last 20-30 years have shown a rise in the prevalence of hypertension by 30 times among urban dwellers and 10 times among rural inhabitants.[2] Initially there was a notion that hypertension is a disease of the well−off population of urban areas but in the recent times Technological up gradation leading to physical

inactivity, rising affluence leading to modified dietary pattern, lack of proper sleep hygiene has resulted in rise in the prevalence of hypertension even in the rural population. [3]

It has been found that mental stress is a significant contributor for hypertension due to various unique stressors & psychosocial factors prevailing in rural areas such as unpredictable climate and market conditions, financial strains, social isolation, and limited access to healthcare. [4]The ability of the body to fight this mental stress triggering the fight or fight response triggers the release of stress hormones leading to increased heart rate and blood pressure which can lead to chronic hypertension and increase in the incidence of non-communicable diseases such as cardiovascular disease and stroke within the rural population.

Therefore, this study was carried out as an attempt to find the association between the life style factors and stress levels in causing hypertension among the rural population.

Objectives: 1. To assess the association between stress levels and life style factors (sleep, physical activity, caffeine intake and screen time with the prevalence of hypertension among adults in rural community.

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METHODOLOGY

By taking 58.8% prevalence of hypertension in the rural population as per the study done by Kearney PM et al [1]and allowable error of 14% the sample size calculated was 143 which was made 150. This was a cross sectional study done among 150 adults aged between 18 to 65 years residing in the rural community that comes under the rural health training center of BGS Medical college & hospital. A structured pre-validated questionnaire was used to collect the demographic details, life style pattern of the study participants. A stress level perceived by the study participants was measured by using the study tool perceived stress scale.[5] Data collection was started after taking approval from Institutional Ethical committee. All the individuals belonging to the study age group who visited to the rural health center during the study period and whose blood pressure after recording using mercury sphygmomanometer was above 130/90 mm of Hg were included in the study randomly after taking the informed consent. The study participant was allowed to relax for a period of 30 minutes before recording the blood pressure. Study period was for 6 months from 01-06-2024 to 30-10-2024. Study participants were those residing in the village for more than one year. Those diagnosed with other chronic health problems other than hypertension were excluded from the study.

Statistics

Descriptive statistics was used to summarize the sample characteristics. Various Statistical tests such as chi-square test and logistic regression analysis were used to identify the independent predictors of hypertension.

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RESULTS

The mean age of the study participants is 41.2± 12.6 years. The prevalence of hypertension in the study was found to be 38.6%. Among the study participants males were 69(46%) and females were 81 (54%). Up to 40% of the study participants had undergraduate level of education. In this study in most of the study subjects who participated it was found that there was a strong association between high blood pressure and various factors such as high stress level with odds ratio of 2.8 (CI-1.4 to 5.7, P value -0.003) , having slept less than 6 hours with odds ratio of 2.1 (CI-1.1 to 4.2, P value -0.030), those who exercise rarely with odds ratio of 1.9 (CI-1.0 to 3.8, P value -0.048), who consume high caffeine with odds ratio of 2.5 (CI-1.2 to 5.3, P value -0.015) and those who spend for more than 7 hours as screen time with odds ratio of 2.2 (CI-1.1 to 4.4, P value -0.027).

Table -1: Socio demographic details of the Study participants

Variable	Category	Frequency	Percentage
Age	< 20 years	11	7.3
	21-40 yeras	60	40.0
	41-60 yeras	64	42.7
	>60 yeras	15	10,0
Gender	Male	69	46.0
	Female	81	54.0
Education	High School	43	28.7
	Undergraduate	61	40.7
	Post graduate	33	22.0
	Phd	13	8.7

Table 2: Distribution of the study participants as per Life style factors

Variable	Category	**Frequency**	**Percentage**
Sleep Hours	Less than 5 hours	31	20.7
	6 – 8 hours	105	70.0
	More than 8 Hours	14	9.3
Physical Activity	Daily	24	16.0
	Often	34	22.7
	Rarely	33	22.0
	Some times	59	39.3
Stress Levels	Moderate	91	60.7
	Normal	19	12.7
	Excess	40	26.7
Primary Stress Cause	Academic	19	12.7
	Family Issues	22	14.7
	Financial	23	15.3
	Health	14	9.3
	Social causes	24	16.0
	Working Environment	23	15.3
	None	25	16.7

Table 3 : Association between Life style Factors and prevalence of Hypertension

Life style Factors	**Hypertension (%)**	**p-value**
Stress Level ≥7	62.1%	<0.01*
Sleep <6 hours	57.3%	0.03*
Rare/Never Exercise	54.8%	0.04*
High Caffeine Intake	61.5%	0.02*
Screen Time >7 hrs	58.3%	0.01*

Chi-square Test, 5% level of significance (P value <0.05)

Table -4: Multivariate Logistic regression showing independent factors associated with Hypertension

Predictor	**Adjusted Odds Ratio (aOR)**	**95% CI**	**p-value**
Stress Level ≥7	2.8	1.4–5.7	0.003*
Sleep <6 hrs	2.1	1.1–4.2	0.03*
Rare Exercise	1.9	1.0–3.8	0.048*
High Caffeine	2.5	1.2–5.3	0.015*
Screen Time >7 hrs	2.2	1.1–4.4	0.027*

Significance at 5 % (P value <0.05)

DISCUSSION

In our study, it was found that, the prevalence hypertension among the adults from rural community was 38.6%. But in a study done by Mandeep Singh et al in a semi-rural population of southern India the prevalence of hypertension was found to be 27%.[6] In one more similar study done by Lt Col VK Agrawal et al in a rural community it was found that the prevalence of systolic & diastolic hypertension was 18.5% & 15% respectively. [2] In our study it was found that there was a strong association between high blood pressure and those who had high score on the stress scale. In one more study done by Sachin BJ et al on mental stress in hypertension in a rural background also had a similar finding of statistically significant association between mental stress and hypertension in males.[7] Similar significant association was obtained between psychological stress and hypertension in a study done by Sneha yadav et al on evaluation of association between Psychosocial Stress and Hypertension in Adults >30 Years of Age[8] In this study there found to be a strong association between inadequate sleep and hypertension among adults from the rural community. One more study done by Aishwarya venkatesh et al on quality of sleep among hypertensive patients in a rural health training centre where majority had poor quality of sleep. [9] One more significant finding obtained in our study was a strong association was found between high blood pressure among study participants who consume more caffeinated drinks. A similar finding was found in one more study done by Aparna Ajay et al in Ernakulum district of kerala where consumption of caffeinated drinks was significant risk factor for hypertension. [10]

CONCLUSION

The present study showed that the prevalence of hypertension is gradually increasing in the rural population contributing to high incidence and prevalence of deaths due to CVD, stroke. Various factors prevalent in the urban communities such as sedentary life style, lack of sleep hygiene, high psychological stress, and advanced technology has shifted to the rural community contributing to high prevalence of non-communicable diseases. Hence there is a need to create awareness among the rural population regarding the hypertension and diabetes through effective health education activities.

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