

Correlation of Sleep with Hypertension in Selected Rural Areas of Nellore: A Cross Sectional Study

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ABSTRACT

Background: Hypertension is a significant risk factor for cardiovascular disease (CVD). The majority of patients, however, cannot easily maintain a healthy blood pressure. Therefore, lifestyle modifications are important and may include getting enough sleep. The purpose of this study was to determine the relationship between sleep and hypertension.

Objective: The objective was to assess the sleep with hypertension among rural adults.

Methods: The participants in this cross-sectional study came from nine rural areas of Nellore. A total of 292 adults were randomly selected. Trained investigators administered a standard questionnaire to each participant during a face-to-face interview and carried out blood pressure monitoring.

Results: The results show that, out of 292 adults with regard to the category of the blood pressure 89 (30.47%) had optimal blood pressure, 54 (18.43%) had normal blood pressure, 68 (23.28%) had high normal blood pressure and 81(27.79%) had hypertension. The correlation coefficient value for sleep pattern and hypertension is 0.25 which states that there is a positive correlation between sleep pattern and hypertension. The correlation coefficient value for sleeping hours and hypertension is - 0.81 which states that there is a negative correlation between sleeping hours and hypertension. The correlation coefficient value for exercise and hypertension is - 0.41 which states that there is a negative correlation between exercise and hypertension. The correlation coefficient value for amount of vegetables per day per person and hypertension is -0.70 which states that there is a negative correlation between amount of vegetables per day per person and hypertension. The correlation coefficient value for use of fast food and hypertension is 0.22 which states that there is a positive correlation between use of fast

food and hypertension. The correlation coefficient value for hotel food and hypertension is 0.30 which states that there is a positive correlation between hotel food and hypertension.

Conclusion: The hypertension is showing a positive correlation with the sleep pattern, use of fast food, hotel food and negative correlation with the sleeping hours, Exercise and amount of vegetables per day per person. But socioeconomic factors are also important.

Keywords: Adults, Hypertension, Sleep, Food, Exercise Nellore.

1. INTRODUCTION

Hypertension is a well-known risk factor of the cardiovascular system that increases the risk of cardiovascular disease and places serious burdens on society and the economy¹. The previous research work shows a high prevalence of Hypertension in the Nellore population².

The most effective way to prevent hypertension-related mortality or morbidity is preventing and treating hypertension³. Although hypertension treatment methods have improved over the last few decades, there are still many patients that fail to reach their treatment goals. The research of Dr. Indira. A et al.⁴ shows that Nellore people are no exception. Treating hypertension is difficult and complex; therefore, to reduce the risks of developing hypertension-related disease, it is important to make lifestyle changes such as adopting a low-salt diet, maintaining appropriate weight, drinking in moderation, exercising regularly, not smoking, and dietary therapy⁵. In addition, the patient's lifestyle should be reviewed for necessary modifications.

In terms of lifestyle, recent epidemiological studies suggest a minimum sleep duration to be obtained to maintain health. Research argues that short sleep duration is related to the prevalence of

hypertension. Sleep deprivation significantly increases blood pressure in both control and hypertension groups⁶. Similarly, research suggests that an appropriate sleep duration can help to lower the prevalence of hypertension, cardiovascular-related mortality, obesity, and metabolic syndrome. If sleep duration is too short or too long, cardiovascular disease-related mortality increases⁷. Obtaining the proper amount of sleep may help prevent or treat hypertension.

The aim of the current study is to understand correlation between sleep pattern, sleeping hours, exercise, amount of vegetables per day per person, fast food and hotel food with hypertension.

2. Detailed Research Plan

2.1 Research Approach: Quantitative Approach.

2.2 Research Design: Descriptive design.

2.3 Research Setting: The study was conducted at Papi Reddy Palem, KakuPalli, Allipuram, Enamadugu, Kovuru, Kothakoduru, Mahalakshmi Puram, Varakavipudi, Korutur, and Leguntapadu.

2.4 Sampling Technique: Convenience sampling technique.

2.5 Sample Size: A total of 292 samples were included in this study. Among this, 59 samples belongs to Papi Reddy Palem, 23 samples belongs to KakuPalli, Allipuram, 28 samples belongs to Enamadugu, 38 samples belongs to Kovuru, 35 samples belongs to Kothakoduru, 35 samples belongs to Mahalakshmi Puram, 28 samples belongs to Varakavipudi, 23 samples belongs to Korutur, and 36 samples belongs to Leguntapadu.

3. RESULTS AND DISCUSSION:

The findings of the study are discussed under the following tables.

Table 1. Correlation between sleeping pattern and hypertension. (N=292)

SLEEPING PATTERN	F	%	Blood Pressure category	F	%	Pearson correlation
a. Without dream	150	51.40%	Optimal	89	30.47%	0.25
b. With dream	97	33.20%	Normal	54	18.43%	
c. Disturbed for urination	15	5.10%	High Normal	68	23.28%	
d. Disturbed by other causes	30	10.30%	HTN	81	27.73%	

The above table shows the correlation between sleeping pattern and hypertension. The Pearson correlation coefficient is 0.25 which shows a positive correlation between sleeping pattern and hypertension.

The present study results are consistent with the findings of the previous studies conducted in Nellore region^{8,9}.

Table 2. Correlation between sleeping hours and hypertension. (N=292)

SLEEPING HOURS	F	%	Blood Pressure category	F	%	Pearson correlation
a. < 6 hrs	25	8.60%	Optimal	89	30.47%	-0.81
b. 6 – 8 hrs	248	84.90%	Normal	54	18.43%	
c. 8 – 10 hrs	18	6.20%	High Normal	68	23.28%	
d. >10 hrs	1	3%	HTN	81	27.73%	

The above table shows the correlation between sleeping hours and hypertension. The Pearson correlation coefficient is -0.81 which shows a

negative correlation between sleeping hours and hypertension.

The present study results are consistent with the findings of the previous studies conducted in Nellore region^{10&11}.

Table 3. Correlation between exercise and hypertension.

(N=292)

EXERCISE	F	%	Blood Pressure category	F	%	Pearson correlation
a. b. Anaerobic	27	9.20%	Optimal	89	30.47%	-0.41
b. c. Walking	139	47.60%	Normal	54	18.43%	
c. d. Yoga	5	1.70%	High Normal	68	23.28%	
d. e. No	121	41.40%	HTN	81	27.73%	

The above table shows the correlation between Exercise and hypertension. The Pearson correlation coefficient is -0.41 which shows a negative correlation between amount of Exercise and hypertension.

The present study results are consistent with the findings of the previous studies conducted in Nellore region^{12,13,14,15,&16}.

Table 4. Correlation between amount of vegetables per day per person and hypertension.

(N=292)

AMOUNT OF VEGETABLES PER DAY PER PERSON	F	%	Blood Pressure category	F	%	Pearson correlation
a. 30 gm	58	19.90%	Optimal	89	30.47%	-0.7
b. 40 gm	91	31.20%	Normal	54	18.43%	
c. 50 gm	108	37%	High Normal	68	23.28%	
d. 60 gm	35	12%	HTN	81	27.73%	

The above table shows the correlation between sleeping hours and hypertension. The Pearson correlation coefficient is -0.70 which shows a negative correlation between amount of vegetables per day per person and hypertension.

The present study results are consistent with the findings of the previous studies conducted in Nellore region^{17,18,19,20&21}.

Table 5. Correlation between use of fast food and hypertension.

(N=292)

USE OF FAST FOOD	F	%	Blood Pressure category	F	%	Pearson correlation
a. Daily	16	5.50%	Optimal	89	30.47%	0.22
b. Weekly	44	15.10%	Normal	54	18.43%	
c. Bi-weekly	25	8.60%	High Normal	68	23.28%	
d. Monthly	207	70.90%	HTN	81	27.73%	

The above table shows the correlation between sleeping hours and hypertension. The Pearson correlation coefficient is 0.22 which shows a

positive correlation between use of fast food and hypertension.

The present study results are consistent with the findings of the previous studies conducted

in Nellore region^{22,23,24,25&26}.

Table 6. Correlation between hotel food and hypertension. (N=292)

HOTEL FOOD	F	%	Blood Pressure category	F	%	Pearson correlation
a. Daily	16	5.50%	Optimal	89	30.47%	0.30
b. Weekly	29	9.90%	Normal	54	18.43%	
c. Bi-weekly	16	5.50%	High Normal	68	23.28%	
d. Monthly	231	79.20%	HTN	81	27.73%	

The above table shows the correlation between **hotel food** and hypertension. The Pearson correlation coefficient is 0.30 which shows a positive correlation between use of **hotel food** and hypertension.

The present study results are consistent with the findings of the previous studies conducted in Nellore region^{27,28,29,30&31}.

- Conclusion:** The hypertension is showing a positive correlation with the sleep pattern, use of fast food, hotel food and negative correlation with the sleeping hours, Exercise and amount of vegetables per day per person. But socioeconomic factors are also important.

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