



## ASSOCIATION BETWEEN SLEEP QUALITY INDEX AND CARDIOVASCULAR RISK FACTORS IN ADULTS.

<b>Dr. Ronak A. Chaudhary</b>	3 <sup>rd</sup> Year Resident Doctor, Department of Physiology, B. J. Medical College, Ahmedabad.
<b>Dr. Piyush B. Sisara</b>	3 <sup>rd</sup> Year Resident Doctor, Department of Physiology, B. J. Medical College, Ahmedabad.
<b>Dr. Dipak M. Pandya</b>	3 <sup>rd</sup> Year Resident Doctor, Department of Physiology, B. J. Medical College, Ahmedabad.
<b>Dr. Anju Mehta*</b>	Associate Professor, Department of Physiology, B. J. Medical College, Ahmedabad. *Corresponding Author

**ABSTRACT** Sleep quality plays a crucial role in cardiovascular health, yet it is often overlooked. This study investigates the association between sleep quality and cardiovascular health (CVH) in individuals aged 30 to 70 years using the Pittsburgh Sleep Quality Index (PSQI) and key cardiovascular risk parameters. A cross-sectional analysis revealed a significant correlation between poor sleep quality and adverse CVH metrics, including inadequate physical activity (OR 4.35; 95% CI, 2.05–9.25;  $p = 0.013$ ), elevated blood glucose levels (OR 1.59; 95% CI, 1.09–2.31;  $p = 0.015$ ), and smoking status (OR 3.87; 95% CI, 2.12–11.87;  $p = 0.032$ ) and certain other metrics. The relationship between sleep and CVH is complex and likely bidirectional, with poor sleep potentially exacerbating cardiovascular risk factors through hormonal dysregulation and sympathetic nervous system activation. Conversely, unhealthy lifestyle behaviours negatively impact sleep quality, creating a reinforcing cycle of poor health. These findings emphasize the need for integrating sleep quality assessment into cardiovascular disease prevention strategies.

**KEYWORDS :** Stroke, Hypertension, Diabetes mellitus, Cigarette smoking, Alcoholic, Sedentary life style.

### INTRODUCTION

In today's fast-paced world, sleep often takes a backseat to daily demands, yet its quality has profound implications for overall and cardiovascular health. Poor sleep is increasingly recognized as a significant risk factor for cardiovascular diseases (CVD), which remain the leading cause of morbidity and mortality worldwide. Traditional CVD risk factors, such as hypertension, obesity, diabetes, and smoking, are well-documented, but recent studies underscore how poor sleep can exacerbate these conditions and independently increase cardiovascular risk. The Sleep Quality Index is a comprehensive tool that evaluates various aspects of sleep, such as duration, disturbances, and daytime dysfunction, offering a holistic view of an individual's sleep patterns. Studies have shown that short sleep duration (less than 6 hours) and poor sleep quality are associated with an increased risk of CVD and coronary heart disease (CHD). Sleep-disordered breathing, such as apnoea and hypopnea, further heightens the risk for heart failure and stroke. This paper explores how poor sleep quality influences blood pressure, inflammatory markers, and metabolic health, highlighting its role in cardiovascular disease. By emphasizing the importance of good sleep hygiene, we can adopt more integrated approaches to CVD prevention and management. Understanding and improving sleep quality is not just a lifestyle adjustment but a critical step toward safeguarding cardiovascular health.

**Table – 1 Multivariate Analysis For The Association Between Poor Sleep Quality And Cardiovascular Metrics.**

	Odds ratio	95% CI	p-value
Poor smoking status	3.87	2.12–11.87	0.032
Poor body mass index	0.82	0.66-1.31	0.552
Poor physical activity	4.35	2.05–9.25	0.013
Poor diet	0.64	0.63-1.44	0.600
Poor blood pressure	0.90	0.60-1.33	0.606
Poor blood glucose	1.59	1.09–2.31	0.015
Poor total cholesterol	0.67	0.41-1.32	0.392

impact on cardiovascular health. Each component of the Pittsburgh Sleep Quality Index (PSQI) is scored from 0 to 3, with scores >1 indicating a problem in that aspect of sleep quality. A global score, calculated as the sum of all 10 component scores, ranges from 0 to 21. Higher scores reflect poorer sleep quality, while a score <5 indicates good sleep quality. A global score  $\geq 6$  is categorized as poor sleep quality. Cardiovascular health (CVH) was assessed using seven parameters: BMI, physical activity, diet, blood pressure, total cholesterol, smoking status, and fasting glucose. CVH status was

classified as ideal, intermediate, or poor based on the observed values for each parameter. Data were analysed using appropriate statistical methods. Continuous variables were summarized as means with standard deviations, and categorical variables were presented as percentages. A  $p$ -value <0.05 was considered statistically significant. Multivariate logistic regression analysis was performed to examine the relationship between PSQI scores and cardiovascular health status.

### RESULTS:

Multivariate analysis revealed a significant positive correlation between poor sleep quality and certain cardiovascular health (CVH) metrics in the poor range. These included physical activity (OR 4.35; 95% CI, 2.05–9.25;  $p = 0.013$ ), body mass index (OR 0.82; 95% CI, 0.66-1.31;  $p = 0.552$ ), diet (OR 0.64; 95% CI, 0.63-1.44;  $p = 0.600$ ), blood pressure (OR 0.90, 95% CI, 0.60-1.33;  $p = 0.606$ ) blood glucose levels (OR 1.59; 95% CI, 1.09–2.31;  $p = 0.015$ ), total cholesterol (OR 0.67; 95% CI, 0.41-1.32;  $p = 0.392$ ) and smoking status (OR 3.87; 95% CI, 2.12–11.87;  $p = 0.032$ ). The relationship between sleep quality and CVH is complex and likely bidirectional. Poor sleep patterns can disrupt cortisol release and activate the sympathetic nervous system, potentially increasing cardiovascular risk factors. Conversely, unhealthy behaviours such as smoking and physical inactivity can negatively impact sleep quality, further exacerbating cardiovascular risk.

### CONCLUSIONS

The study highlights a significant increase in the prevalence of certain poor cardiovascular health (CVH) metrics, including smoking, inadequate physical activity, and elevated blood glucose levels, among individuals with poor sleep quality. The relationship between sleep quality and CVH appears to be complex and likely bidirectional. Disrupted sleep patterns can alter cortisol release and activate the sympathetic nervous system, contributing to an increase in cardiovascular risk factors. Conversely, unhealthy behaviours such as smoking and physical inactivity can negatively impact sleep quality, creating a reinforcing cycle of poor health outcomes.

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