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## Assess the quality of sleep among patient with myocardial infarction

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### Abstract

**Background:** Sleep composes one third of human life and is an essential part of the normal human circadian rhythm. Irregular or insufficient sleep can ultimately endanger heart health. Sleep loss, chronic sleep deprivation, and alterations in sleep quality are increasing problems in modern society. Hence the study aimed to assess the quality of sleep among myocardial infarction patient.

**Methodology:** Cross-sectional research design was employed with 30 samples who matched the inclusion criteria were selected by convenience sampling technique. Data were collected by Pittsburgh Sleep Quality Index (PSQI) and analysed by descriptive statistics.

**Results:** The results of the study findings reveal that among 30 MI patient that majority of the participants 21(70%) had the PQSI score interval of 5-21 which indicating poor quality of sleep where as 9(30%) had the PQSI scored of 0-4 which indicating good quality of sleep.

**Conclusion:** The study findings concluded that the nurses must assess their patients' sleep quality so that they may use some interventions and give instructions to improve sleep quality and reduce the effects of poor sleep quality.

**Keywords:** Quality of sleep, Myocardial infarction

### Introduction

Sleep is one of the basic human behavior and needs required for health and energy conservation, appearance and physical well-being. At the time of sleeping, certain hormones such as serotonin and the growth hormone are released and chemical changes and increased cellular nutrition take place so as to make the body ready for the activities of the next day. Furthermore, sleep causes reduction in stress, anxiety and neurological pressures and helps the individual in recovering energy for better focus, adaptability, adjustment and enjoying daily activities<sup>[1]</sup>.

Sleep represents a daily process of physiological restitution and recovery, and lack of or impaired sleep may have far reaching effects on endocrinology, immunology, metabolism, and eventually disease risk<sup>[2,3]</sup>. Sleep loss, chronic sleep deprivation, and alterations in sleep quality are increasing problems in modern society<sup>[4]</sup>. Sleep is essential for a healthy heart. Irregular or insufficient sleep can ultimately endanger heart health<sup>[5]</sup>. Studies suggest that impaired sleep may be both a risk factor for the development of primary cardiovascular disease as well as a mediator of prognosis in chronic cardiovascular disease<sup>[6]</sup>.

Cardiovascular disease (CVD) is the leading cause of mortality in the United States and elsewhere<sup>[7]</sup>. Cardiovascular disease is a leading cause of death and disability worldwide. The number of cardiovascular deaths is projected to increase to more than 24 million by 2030, resulting in a huge disease burden<sup>[8]</sup>. Poor sleep affects not only our daily functioning and quality of life, but also disease risk and possibly prognosis following cardiovascular events such as AMI. It suggested that disturbed sleep in women and impaired awakening in men might be related to a moderately higher risk of a poor cardiac prognosis in patients following a first-time AMI<sup>[9]</sup>.

Globally, in 2015, there were estimated 422.7 million prevalent cases of CVD which is recorded. Countries with the lowest age-standardized prevalence of CVD in 2015, all with 9000 cases per 100,000 persons, included most countries in West Africa, Morocco, Iran, Oman, Zambia, Mozambique, and Madagascar<sup>[10]</sup>. The incidence of myocardial infarction (MI) in the world varies greatly. According to a Spanish study, the crude coronary heart disease (CHD) incidence rate was 300.6/100,000 person-years for men and 47.9/100,000 person-years for women. The incidence of MI in India is 64.37/1000 people in men aged 29-69 years<sup>[11]</sup>. In 2011, there were 82,771 deaths by acute myocardial infarction (MI) in Brazil,

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46.7% in the Southeast. Data from the USA estimate that there are approximately 525,000 new cases and 190,000 recurring cases of AMI yearly, with a mean age of 64.7 and 72.2 years for men and women, respectively, which shows the magnitude of the disease.

Poor sleep quality and disorders are considered additional risk factors for CVD and AMI. Many authors point out that changes in the duration of sleep (9h) are related to an increased risk of developing and/ or dying of coronary disease and AMI. Other studies shows that <6h of sleep per night, or <7½ h for diabetic patients, represent a higher risk for AMI [12]. It was reported that there were significant regional variations, with high CVD mortality in Goa, Tamil Nadu, Andhra Pradesh and Punjab, and low mortality in the central Indian states of Uttar Pradesh, Madhya Pradesh and Rajasthan [13]. As the incidence of MI is high, with this background, the investigator was interested in assessing the sleeping pattern among MI patient.

Many studies have shown the relationship between sleep apnea and cerebrovascular disease. It was identified and found that over an 8-year period, men with severe sleep apnea were 58% more likely to develop congestive heart failure than men without the nighttime breathing disorder. Poor sleeping as a result of changing work schedules or poor sleep habits can put at risk as well. (Tamargo J *et al.* 2015)

**Material and Method**

The research approach adopted in the study was quantitative approach by using non experimental cross-sectional research design. After obtaining formal permission from authority the study was conducted at Saveetha Medical College and Hospital with 30 samples. Samples who matched the inclusion criteria were selected by using convenience sampling technique. Investigator explained the purpose of the study and informed consent was obtained after assuring the confidence. Demographic variables and clinical variables were collected by using self structured multiple choice questionnaires. After that, sleep quality was assessed by Pittsburgh Sleep Quality Index (PSQI). Confidentiality and anonymity was maintained throughout the procedure. Collected data were analysed by using descriptive statistics.

**Results**

**Distribution of socio demographic Variables**

The data present in Table 1 is regarding socio demographic variables, out of 30 participants 12 (40%) were in the age group of 51-60 years and majority 18 (60%) of participant were male. With regard to marital status 27 (90%) were married and 3 (10%) were unmarried. Among 30 participants 15 (50%) were having monthly income of 10001 – 15000 and 22 (73%) were physically active.

**Distribution of clinical Variables**

The clinical variable includes previous MI, family history of cardiac disorder and presence of co-morbidity.

The data presented in Table 2 is regarding clinical variables, out of 30 participants 5 (17%) were having history of MI previously and 25 (83%) were not having the previous history of MI and only 6(20%) had family history of cardiac disease. Majority 15 (50%) were non smoker and 16 (53%) were alcoholic. Regard to diabetics mellitus 18 (60%) were known case of DM and 12 (40%) were no history of diabetics mellitus.

**Quality of sleep among MI patient**

The data depicted in table 3 is regarding quality of sleep among MI shows that approximately 14(47%) had fairly good quality of sleep whereas 7(23%) had fairly bad; 13(43%) participant were reported 16-30mins sleep latency period whereas 8(27%) took 31-60mins for fall asleep. Most of the participant 16(53%) had reported 6-7hrs of sleep whereas 9(30%) had 5-6hrs. The habitual sleep efficacy was 75-84% for 17(57%) participants whereas in sleep efficacy in >85% and 65-74% was 8(27%) and 3(10%) respectively. 21(70%) participants were reported for having mild sleep disturbance and 3(10%) had moderate sleep disturbance. Majority of participant 22(73%) were not used to sleeping medication whereas only 6(20) were used to take sleeping medication less than once a week. Among 30 participants, 15(50%) were not having any day time dysfunction whereas 11(37%) complained slight daytime dysfunction.

Table 4 shows that the mean value of PQSI score is 6.02. The data present in Fig 1 revealed that majority of the participants 21(70%) had the PQSI score interval of 5-21 which indicating poor quality of sleep where as 9(30%) had the PQSI scored of 0-4 which indicating good quality of sleep.

**Table 1:** Frequency and percentage distribution of socio demographic variables among MI patient.

Sl. No	Demographic variables	Frequency	Percentage
1	<b>Age</b>		
	a) 30 -40 Years	6	20%
	b) 41 -50 Years	5	17%
	c) 51 -60 Years	12	40%
2	d) >60 Years	7	23%
	<b>Gender</b>		
2	a) Male	18	60%
	b) Female	12	40%
3	<b>Marital status</b>		
	a) Married	27	90%
4	b) Unmarried	3	10%
	<b>Monthly income</b>		
	a) 5001 – 10000	2	7%
	b) 10,001-15,000	15	50%
5	c) 15,001-20,000	9	30%
	d) > 20,001	4	13%
5	<b>Physically active</b>		
	a) Yes	22	73%
	b) No	8	27%

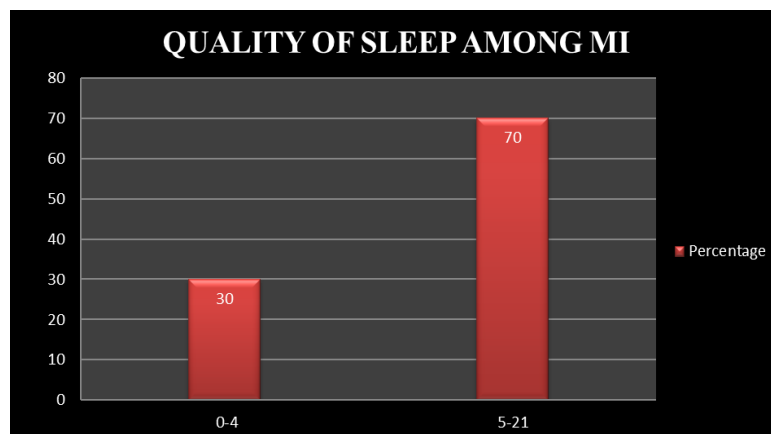
**Table 2:** Frequency and percentage distribution of clinical variables among MI patient.

Sl. No	Clinical variables	Frequency	Percentage
1	<b>Previous history of MI</b>		
	a) Yes	5	17%
2	b) No	25	83%
	<b>Family history of cardiac disease</b>		
	a) Yes	6	20%
	b) No	24	80%

3	<b>Smoking habit</b>		
	a) Smoker	12	40%
	b) Nonsmoker	15	50%
	c) Ex-smoker	3	10%
4	<b>Alcohol habit</b>		
	a) Yes	16	53%
	b) No	14	47%
5	<b>Diabetics mellitus</b>		
	a) Yes	18	60%
	b) No	12	40%

**Table 3:** Frequency and percentage distribution based on quality of sleep

Sl. No.	Sleep quality	Frequency	Percentages
1	<b>Subjective sleep quality</b>		
	a) Very good	4	13%
	b) Fairly good	14	47%
	c) Fairly bad	7	23%
	d) Very bad	5	17%
2	<b>Sleep latency</b>		
	a) 0 (<15 min)	3	10%
	b) 1-2 (16-30 min)	13	43%
	c) 3-4 (31-60 min)	8	27%
	d) 5-6 (>60 min)	6	20%
3	<b>Sleep duration</b>		
	a) >7 h	5	17%
	b) 6-7 h	16	53%
	c) 5-6 h	8	27%
	d) <5hr	3	10%
4	<b>Habitual sleep efficacy (%)</b>		
	a) >85	8	27%
	b) 75-84	17	57%
	c) 65-74	3	10%
	d) <65	2	6%
5	<b>Sleep disturbances</b>		
	a) 0	4	13%
	b) 1-9	21	70%
	c) 10-18	2	7%
	d) 19-27	3	10%
6	<b>Use of sleep medications</b>		
	a) Not during the past month	22	73%
	b) Less than once a week	6	20%
	c) Once or twice a week	2	7%
	d) Three or more times a week	-	-
7	<b>Daytime dysfunction</b>		
	a) 0	15	50%
	b) 1-2	11	37%
	c) 3-4	3	10%
	d) 5-6	1	3%



**Fig 1:** Bar diagram showing the Pittsburgh sleep quality index global score of patients with MI

**Discussion**

The finding of the present study reveals that majority of the participant 12 (40%) were age group of 51-60 years, with regard to marital status 27 (90%) were married and 3 (10%) were unmarried. Among 30 participants 15 (50%) were

having monthly income of 10001 – 15000 and 22 (73%) were physically active. The present study findings supported by *neenu merin*, who reported that 59 (59%) patients with CVDs were in the age group of 56–65 years, followed by 27

(27%) between 46 and 55 years, and 71 (71%) were males, 97 (97%) were married<sup>[16]</sup>.

Similarly present study is supported by *Da Costa et al.* found that overall 36% of the sample reported clinical symptoms of insomnia. Among the patients after MI, 62.7% subjects which was a higher proportion were experiencing insomnia with depressed mood when compared to good sleepers (13.4%)<sup>[17]</sup>.

The result of the study revealed that majority of the participants 21(70%) had the PQSI score interval of 5-21 which indicating poor quality of sleep where as 9(30%) had the PQSI scored of 0-4 which indicating good quality of sleep with the mean score of 6.02. However the study by *Carla Renata Silva Andrechuk* found that 71.7% of patients with AMI had poor quality of sleep. PSQI-BR score was significantly higher in female patients, in those with diabetes mellitus, depression, increased waist circumference and who did not engage in physical activity when compared to male patients, those without diabetes mellitus, depression, increased waist circumference and who engaged in physical activities, respectively<sup>[18]</sup>. Similar to another study by *Erikson et al.*<sup>[19]</sup>, results of *Zeighami et al.*<sup>[20]</sup>, in 2013, showed that patients whom suffer from heart disease, may have many problems in sleeping. They also reported that factors such as weight loss, smoking cessation, control and treatment of chronic diseases and control of drugs side effects could decrease sleep problems in this group of patients.

### Conclusion

Results suggest sleep plays a crucial role in disease prevention and recovery. Sleep complaints are frequent, easily recognizable, and potentially manageable. Evaluation of sleep complaints may, even if they represent prognostic markers rather than risk factors, provide additional information in clinical risk assessment that could benefit secondary cardiovascular prevention. Therefore, the nurses must assess their patients' sleep quality so that they may use some interventions and give instructions to improve sleep quality and/or reduce the effects of poor sleep quality.

**Conflict of Interest:** Authors declares no conflict of interest

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