

## Correlation Between Sleep Quality and Family Care in Patients with Coronary Heart Disease

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**Abstract: Objectives:** To understand the current status of sleep quality and family care in patients with coronary heart disease and discuss the correlation between the two. **Methods:** A questionnaire was conducted on 164 patients with coronary heart disease using the General data questionnaire, the Pittsburgh sleep quality index(PSQI) and the Family care index using a convenient sampling method. **Results:** The median of sleep quality of patients with coronary heart disease was 9 points, and 60.4% of patients with sleep quality problems; The median of family care was 6.5, and 50% with poor family functioning; The total score of sleep quality was negatively correlated with the total score of family care and various dimensions( $P<0.01$ ). That is, the higher the level of family care for patients with coronary heart disease, the better the quality of sleep. **Conclusions:** Patients with coronary heart disease have poor sleep quality and major patients with dysfunction in the family. It is recommended to improve sleep state and promote the prognosis of the disease by increasing the level of family care of the patient.

**Keywords:** Coronary Heart Disease; Sleep Quality; Family Care

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### Introduction

With the progressing of society and the accelerating of aging rate, the incidence of coronary heart disease(CHD) is increasing year by year. The Data of *China Cardiovascular Health and Disease Report 2020* displayed that, there are 330 million people suffering from cardiovascular disease, including 11.39 million patients with CHD, CHD has become one of the most leading diseases affecting human health. Most patients with CHD suffer from sleep disorders that not only affect their physical and mental condition and quality of life, but also lead to worsening of the disease<sup>[1]</sup>. Sleep is one of the important indicators of a patient's health, and good sleep can relieve brain fatigue and promote physical recovery. From 13 cohort studies that sleep disorders increase the prevalence or mortality of cardiovascular disease. Family care is an important indicator of family function and quality of life, and has an important impact on the prognosis of patients. Related studies have shown that increasing patients' family care is beneficial to alleviate negative emotions and improve patients' sleep and quality of life<sup>[2]</sup>. Previous studies have focused on insomnia in patients with CHD and the influence of family functional factors on sleep quality, and have not discussed sleep quality, family care status, and the relationship between the two. This paper explores the relationship between CHD patients by understanding the current status of sleep quality and family care, aiming to provide a reference for improving the sleep quality of CHD patients.

# 1. Objects and methods

## 1.1 Research Objects

A questionnaire survey was conducted by 170 CHD patients from a third-class hospital in a city. Inclusion criteria: (1) clinical diagnosis of CHD; (2) age  $\geq 18$  years; (3) communication barrier-free; (4) voluntary participation; Exclusion criteria: (1) have a mental illness; (2) there are serious organic diseases. In this study, 170 questionnaires were distributed and 164 questionnaires were effectively recovered, with an effective rate of 96.5%.

## 1.2 Research Method

### 1.2.1 Investigation Tools

(1) General information questionnaire.

(2) Pittsburgh sleep quality index<sup>[3]</sup>: A total of 18 self-assessment entries, divided into 7 dimensions. The total score of PSQI is the sum of the points for 7 dimensions, and the higher the score, the worse the sleep quality. A score of  $\leq 7$  points indicates no sleep quality problems, and  $> 7$  points indicates sleep quality problems. This scale Cronbach's  $\alpha$  coefficient is 0.842.

(3) Family Care Index<sup>[4]</sup>: This scale is composed of family adaptability, cooperation, growth, emotion and intimacy. Each entry is scored on a three-point scale: "rarely" is scored on 0 points, "sometimes this way" is counted as 1 point, "often this way" is scored on 2 points, and the higher the score, the better the family function. A score of 0 to 3 indicates severe dysfunction in the family, a score of 4 to 6 indicates a moderate dysfunction, and a score of 7 to 10 indicates that the family function is good. This scale Cronbach's  $\alpha$  coefficient is 0.813.

### 1.2.2 Statistical analysis methods

SPSS 25.0 software was used to analyze the data. Descriptive analysis was used to study the patient's general information, sleep quality and family care status; The relationship between sleep quality and family care in patients with CHD was studied using Spearman correlation analysis.

## 2. Results

### 2.1 General information of patients with CHD

General information on patients with CHD is detailed in Table 1.

Table 1 General data of patients with CHD (n=164)

Item	Grouping	Number of cases (n)	Composition ratio (%)
Gender	Female	80	48.8
	Male	84	51.2
Age	<60	72	47.6
	≥60	92	52.4
Number of visits from relatives and friends of children	< 1 time per week	53	32.3
	1 time per week	54	32.9
	> once a week	57	34.8
Marital status	Unmarried	18	11.0
	Married	124	75.6
	Divorce	5	3.0
	Widow	17	10.4
Mode of living	Living alone	106	64.6
	Live with children	58	35.4
	not attending school	12	7.3
Educational attainment	Elementary school	46	28.0
	Junior	35	21.3
	High school or secondary school	37	22.6
	Junior College and above	34	20.7
	Cadre/Civil servant	34	20.7
Occupational type	Technician	32	19.5
	Trader	24	14.6
	Farmer	55	33.5
	Other	19	11.6
Occupational Status	Retired	56	34.1
	Incumbent	69	42.1
	Other	39	23.8
Personal income	<2000 yuan	23	14.0
	2000~5000 yuan	99	60.4
	>5000 yuan	42	25.6
Smok	No	131	79.9
	Yes	33	20.1

Drink alcohol	No	114	69.5
	Yes	50	30.5
Drink coffee	No	130	79.3
	Yes	34	20.7
Medical expenses payment method	Medicare	108	65.9
	Rural cooperation medical	38	23.2
	Business insurance	7	4.3
	At own expense or other	11	6.7

## 2.2 Current status of sleep quality in patients with CHD

The current status of sleep quality in CHD patients is detailed in Tables 2 and 3.

Table 2 Total sleep quality scores and scores of CHD patients in various dimensions

Item	Entry	Score Range	Median	Quartile (P25, P75)
Total sleep quality score	19	1~18	9	(6,12)
Subjective sleep quality	1	0~3	2	(1,2)
Time required to fall asleep	2	0~3	2	(1,2)
Sleep time	1	0~3	1	(0,1)
Sleep efficiency	3	0~3	1	(0,1.75)
Sleep disorders	9	0~3	2	(1,2)
Hypnotherapy drugs	1	0~3	0	(0,2)
Daytime dysfunction	2	0~3	2	(1,2)

Table 3 Frequency distribution of sleep quality problems in CHD patients

	PSQI≤7(no sleep quality issues)	PSQI>7(sleep quality issues)
Number	65	99
Percentage (%)	39.6	60.4

## 2.3 Current status of family care in patients with CHD

The current status of family care for CHD patients is detailed in Tables 4 and 5.

Table 4 Total scores of family care for patients with CHD and scores in various dimensions

Item	Minimum	Maximum	Median	Quartile (P25, P75)
Total Family Care score	0	10	6.5	(4,8)
Adaptability	0	2	1	(1,2)
Degree of cooperation	0	2	1	(1,2)
Growth	0	2	1	(1,2)
Emotionality	0	2	1	(1,2)
Intimacy	0	2	1	(1,2)

Table 5 Family care of patients with CHD [n(%)]

Family Care	Score Range	Example (n)	PSQI≤7[n(%)]	PSQI>7[n(%)]
Severe disorders	0~3	24	1(4.2)	23(95.8)
Moderate disorder	4~6	58	7(12.1)	51(87.9)
good	7~10	82	57(69.5)	25(30.5)

## 2.4 Correlation analysis between sleep quality and family care in patients with CHD

After the normality test, both sleep quality and family care did not conform to the normal distribution (Sig=0.004<0.05, Sig=0.000<0.05), so the Spearman correlation analysis method was used to analyze the correlation between the two. The results showed that the sleep quality of patients with CHD and the total score of family care were negatively correlated (P<0.01), that is, the higher the degree of family care of patients with coronary heart disease, the better the sleep quality of patients. See Table 6 for details.

Table 6 Correlation between sleep quality and home care in patients with CHD

	Subjective sleep quality	Time required to fall asleep	Length of sleep	Sleep efficiency	Sleep disorders	Hypnother apy drugs	Daytime dysfunction	PSQI overall score
Adaptability	-0.338**	-0.324**	-0.164*	-0.158*	-0.394**	-0.323**	-0.318**	-0.449**
Degree of cooperation	-0.403**	-0.378**	-0.391**	-0.322**	-0.395**	-0.347**	-0.405**	-0.581**
Growth	-0.411**	-0.488**	-0.294*	-0.322**	-0.530**	-0.428**	-0.419**	-0.625**
Emotionality	-0.431**	-0.404**	-0.342**	-0.272*	-0.509**	-0.417**	-0.422**	-0.616**
Intimacy	-0.336**	-0.430**	-0.312**	-0.242*	-0.396**	-0.447**	-0.354**	-0.548**
Total family score	-0.545**	-0.569**	-0.416**	-0.349**	-0.626**	-0.556**	-0.541**	-0.793**

Note: \*P<0.05 \*\*P<0.01 is statistically significant

### **3. Discussion**

#### **3.1 Patients with CHD have poor sleep quality**

In this study, 99 people had sleep quality problems (PSQI>7), accounting for 60.4% of the total number of people, and 65 people did not have sleep quality problems (PSQI≤7), accounting for 39.6% . As a result, most patients with CHD have sleep quality problems, and the results are higher than the other studies. Among them, the median score of total sleep quality was 9 points, and the quartile (6, 12) score was at a moderate level, which was basically consistent with the results obtained<sup>[5]</sup>.

#### **3.2 The level of family care for patients with CHD is low**

This study showed that the median family care for patients with coronary heart disease was 6.5 points, and the quartile (4, 8) scores. Among them, 82 cases (50%) had good family function, 58 cases (35.4%) of moderately disabled patients, and 24 cases (14.6%) of severely disabled patients, indicating that the level of family care of patients with CHD was not good, lower than that of research conclusion of Riyong Hou et al<sup>[6]</sup>. Family functioning can have an impact on the health of members.

#### **3.3 Correlation between sleep quality and family care in patients with CHD**

Logistic regression analysis showed that home care had an effect on sleep quality. The results of The Spearman correlation analysis method showed that the sleep quality of patients with CHD and the five dimensions and the total score of family care were negatively correlated ( $P<0.01$ ), that is, the higher the level of family care in patients with CHD, the better the sleep quality. This result is similar to that of research conclusion of Weiling Lü<sup>[7]</sup>.

Overall, the sleep quality of patients with coronary heart disease is not optimistic, and the level of family care is low. Care and family members can improve the quality of sleep in patients with coronary heart disease by improving family function.

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