ORIGINAL RESEARCH

Influence of Family-centered Health Intervention on Perioperative Mental Health of Patients Receiving Coronary Interventional Therapy

Xianjie Hao, BD; Dongjing Wang, BD; Xiuping Xiao, BD

ABSTRACT

Introduction • Cardiovascular ailments threaten human health. In China, the primary cardiovascular diseases include stroke and coronary heart disease, resulting in rising morbidity and mortality rates. Coronary heart disease accounts for 10%–20% of all deaths from cardiovascular diseases. These diseases increasingly affect younger individuals, with the disparity in incidence between urban and rural areas gradually diminishing. Experts predict that cardiovascular diseases will continue to increase through the end of this century and into the next in China. Therefore, it is imperative to implement preventive measures to treat coronary heart disease. This paper explores how family-centered health intervention affects anxiety levels, depression symptoms, and sleep quality among perioperative patients receiving coronary interventional therapy.

Methods • The participants for this study received coronary intervention therapy in the researchers' hospital from August 2020 to April 2021. Study participants comprised control and observation groups based on a random number table. Both groups received routine care. However, the observation group received family-centered health interventions. Researchers observed the differences in anxiety and depression scores, self-care ability, sleep quality, and incidence of complications between the two groups before and after the intervention.

Results • Following the intervention, the sleep quality of the observation group was better than that of the control group, and the difference was statistically significant. There was no difference in activities of daily living (ADL) scores between the two groups before the intervention. Moreover, there was no significant difference in ADL scores on the first, second, and third postoperative days. The incidence of postoperative arrhythmia and coronary artery restenosis between the two groups showed a statistically significant difference.

Conclusions • Family-centered health intervention benefited perioperative patients receiving coronary intervention therapy. It improved patients' mood and sleep quality and demonstrated positive application value. (*Altern Ther Health Med.* 2023;29(8):401-405).

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INTRODUCTION

Coronary heart disease is a myocardial ischemic and hypoxic heart disease caused by stenosis and obstruction of the vascular lumen. The disease affects approximately 197 million patients worldwide, resulting in 9.14 million deaths yearly and a mortality rate of 30%. Coronary heart disease can cause sudden cardiac death if not treated in time.

Coronary artery interventional surgery is a mature technology used to diagnose and treat coronary heart disease. It can dredge blood vessels through cardiac catheterization or dispose of stents in criminal vessels to improve myocardial blood perfusion. Such surgical intervention has high diagnostic and cure rates, leads to minimal complications and quick recovery, reduces the possibility of postoperative surgery, and restores a patient's freedom of movement.[1] However, before the coronary intervention, patients generally have negative emotions and psychological stress reactions, which are not conducive to the smooth implementation of the surgical process. Therefore, attention is required to alleviate patients' negative emotions before coronary intervention.[2]

Conventional perioperative care often pays attention only to patient care, but countering patients' negative emotions needs improvement. Family-centered care emphasizes the role of the family in treating patients' diseases and encourages patients' families to participate in the treatment and care of patients.[3,4]

Pediatrics and selected other areas have employed family-centered nursing intervention models in recent years.[5] This study examined the impact of family-centered healthcare interventions on perioperative patients receiving coronary interventional therapy, focusing on their anxiety, depression, and sleep quality.

MATERIALS AND METHODS

General information about the subjects

The research subjects comprised selected patients receiving coronary interventional therapy in the researchers' hospital from August 2020 to April 2021. The inclusion criteria were: (1) patients and their family members received coronary intervention therapy for the first time, (2) patients had elementary school education or above, (3) patients were older than 18 years and younger than 80, and (4) patients had full consciousness and capable of cooperating with this study. The exclusion criteria were: (1) patients who had difficulty in verbal expression and (2) patients and their families who required emergency surgical treatment.

Based on the criteria, 100 patients were eligible. The 50 patients in the control group comprised 29 males and 21 females, ages 49–73 (average age of 65.24 ± 7.23 years). The 50 patients in the observation group consisted of 30 males and 20 females, ages 50–73 (average age of 65.29 ± 8.11 years). There was no difference in general information, such as age and gender, between the two groups; they were comparable. The hospital ethics committee reviewed and approved the study, and all patients provided informed consent.

Study methods

Both groups of patients received routine nursing care. The intervention room nurses provided health education to the bedside. The content included the treatment process and precautions of coronary intervention. Patients were also informed about various facets of post-operation care, including observing the incision site, determining when they could get out of bed after the operation, and understanding the frequency, method, and intensity involved.

The observation group received family-centered health interventions. Before the operation, the family members of all patients received preoperative health education by watching coronary angiography videos and conversations. The content included coronary angiography indications, benefits, risks, and possible complications. Photos and albums introduced the operating room environment, and videos introduced the operation process. Cooperation was encouraged so that family members were proficient in the relevant knowledge of coronary intervention. Family members served as the primary educators, supplemented by intervention room nurses. Family members also provided comfort and psychological counseling to patients.

Considerations for Family-Centered Health Interventions:

Personalized Intervention. Each family and patient has unique needs. Therefore, interventions should be tailored based on the specific circumstances of each family.

Participation of Family Members. It's essential to encourage family members to be actively involved and understand the needs and recovery process of the patient.

Psychological Support. Offer counseling and support to assist patients and their family members in dealing with potential emotional fluctuations after the procedure.

Education. Educate family members about coronary intervention therapy and how to appropriately care for the patient at home.

Emotional Stability. Family-based health interventions can help patients better manage postoperative emotional fluctuations, reducing symptoms of anxiety and depression.

Boosted Confidence. Patients may feel more confident and assured in their recovery knowing they have a supportive family backing them up.

Evaluation index

The researchers monitored differences in anxiety and depression scores, self-care ability, sleep quality, and incidence of complications between the two groups before and after the intervention.

The Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) evaluated the anxiety and depression of patients before and after the intervention, respectively. The SAS used 50 as the standard cut-off value, with 50–59 as mild, 60–69 as moderate, and 70 and above as severe. The SDS range is 53 points; the higher the score, the more serious the depression.[6] The Pittsburgh Sleep Quality Index (PSQI)[7] evaluated sleep quality. The scale includes seven dimensions. A higher score indicates poorer sleep quality.

The Barthel index (activities of daily living [ADLs])[8] is a common method to assess the self-care ability of individuals in rehabilitation institutions in the United States. The total score of this index is 0–100 points. A score of 100 indicates that the patient's basic ADLs are good and do not require help from others. A score of > 60 is rated as good, indicating a mild dysfunction, but the individual is generally capable of self-care. A score of 60–41 indicates moderate dysfunction, with individuals needing some help performing ADLs. A score of 40–21 indicates a severe dysfunction; they must rely on others to perform their ADLs. A score of < 20 indicates safety disability and complete dependence on others in performing ADLs.

Statistical Analyses

The data were analyzed using the Statistical Package for the Social Sciences, version 20.0, software. Count and measurement data were expressed as cases and mean ± standard deviation, respectively. The data were statistically processed using the *t* test and chi-square test. A score of $P < .05$ indicated statistical significance.

RESULTS

Comparison of anxiety and depression scores between the two groups of patients before and after the intervention

As shown in Table 1, there was no difference in the anxiety and depression scores between the two groups of patients

before the intervention. After the intervention, the SAS and SDS scores of the two groups of patients were significantly lower than those before the intervention. Notably, the scores of the observation group were significantly lower than those of the control group (t = 7.915, 8.836, P < .001).

Comparison of sleep quality between the two groups of patients before and after the intervention

As shown in Table 2, there was no difference in sleep quality between the two groups of patients before the intervention. After the intervention, the sleep quality of the observation group was better than that of the control group. The difference was statistically significant (P < .001).

Comparison of ADL scores between the two groups of patients before and after the intervention

There was no significant difference in ADL scores between the two groups of patients before the intervention and on the first three days after the intervention (Table 3).

Comparison of the incidence of postoperative complications between the two groups

Table 4 shows the incidence of postoperative arrhythmia and coronary restenosis in the control group and observation groups were 6.00% and 2.00%, respectively. However, the difference was not statistically significant.

DISCUSSION

Coronary intervention is the current "gold standard" method for treating patients with coronary heart disease. It can effectively restore the lost vascular diameter, improve myocardial blood supply, and alleviate the symptoms of acute coronary syndrome. However, perioperative negative feelings can decrease patients' quality of life and a prolonged hospital stay. It may also affect the success of interventional treatment and increase the risk of complications such as arrhythmia and coronary restenosis.[9,10]

Numerous studies note that patients' negative feelings due to their lack of knowledge about the disease, planned treatment, and concerns regarding medical expenses can significantly affect patient sleep quality and perpetuate a cycle of worry detrimental to patient recovery. Thus, clinical health education is frequently employed to assist patients in alleviating negative emotions.[11,12] Conventional health education solely focuses on patients and does yield satisfactory outcomes, particularly for elderly patients with poor understanding, hearing, and vision.[13-15]

Family-centered nursing intervention emphasizes the role of the family in disease treatment and leverages the influential role of the patient's family. While pediatric treatments have followed this practice for some time,[16] this study applies the family-centered health intervention model to patients undergoing elective coronary interventions. Family members of patients viewed a concentrated video and in-person instruction to assist them in mastering relevant knowledge. The family members and nursing staff jointly completed the disease awareness and education programs. Family members were the leaders in imparting this knowledge to the patient, supplemented by the nursing staff. This practice is more conducive to increasing the interaction between the patient's family, the medical care, and the patient and deepens the patient's understanding of the medical condition and treatment.[17,18]

SAS and SDS assessed the anxiety and depression levels of the two groups of patients; PSQI assessed the sleep quality. The study revealed that family-centered health interventions were effective in perioperative patients receiving coronary interventional therapy and improved patients' mood and sleep quality.

The researchers suggest the improvements resulted from the family-centered health intervention model by stimulating the enthusiasm of the patient's family to participate actively. The nursing staff cannot match the tacit understanding between the family and the patient; it is easier for the family to determine the patient's mood and understand the causes. Moreover, the patient's emotional dependence on family

Table 1. Comparison of Anxiety and Depression Scores Between the Two Groups of Patients Before and After Intervention

Group	Case	SAS		SDS	
		Before intervention	After the intervention	Before intervention	After the intervention
Control group	50	57.98 ± 3.37	45.87 ± 3.84	58.13 ± 4.28	46.14 ± 4.26
Observation group	50	58.03 ± 4.15	40.21 ± 3.29	58.15 ± 3.97	39.29 ± 3.45
t		0.066	7.915	0.024	8.836
P value		.947	<.001	.981	<.001

Table 2. Comparison of Sleep Quality Between the Two Groups of Patients Before and After Intervention

Project	Before intervention		After the intervention	
	Control group	Observation group	Control group	Observation group
Sleep quality	1.95 ± 0.72	1.93 ± 0.68	1.54 ± 0.62[a]	1.27 ± 0.53[a,b]
Time to fall asleep	2.23 ± 0.65	2.25 ± 0.84	1.73 ± 0.98[a]	1.48 ± 0.49[a,b]
sleeping time	1.77 ± 0.59	1.75 ± 0.62	1.29 ± 0.25[a]	0.96 ± 0.18[a,b]
Sleep efficiency	1.79 ± 0.55	1.77 ± 0.65	1.18 ± 0.31[a]	0.98 ± 0.25[a,b]
sleep disorder	1.58 ± 0.63	1.56 ± 0.58	1.29 ± 0.35[a]	1.07 ± 0.42[a,b]
Hypnotics	0.97 ± 0.12	0.99 ± 0.15	0.53 ± 0.08[a]	0.25 ± 0.07[a,b]
Daytime function	2.18 ± 0.95	2.14 ± 0.74	1.48 ± 0.22[a]	0.96 ± 0.15[a,b]
PSQI total score	11.47 ± 2.68	11.49 ± 3.15	9.27 ± 1.09[a]	6.32 ± 1.02[a,b]

*P < .05, compared with before intervention
#P < .05, compared with control group after intervention

Table 3. Comparison of ADL Scores Between the Two Groups of Patients Before and After Intervention

Group	case	Before intervention	1st day after surgery	2nd day after surgery	3rd day after surgery
Control group	50	87.24 ± 6.34	52.56 ± 4.27	78.68 ± 5.01	85.45 ± 5.48
Observation group	50	87.28 ± 5.93	53.01 ± 4.48	79.03 ± 4.96	84.48 ± 6.27
t		0.033	0.514	0.351	0.824
P value		.974	.608	.726	.412

Table 4. Comparison of the Incidence of Complications Between the Two Groups of Patients

Group	case	Arrhythmia	Coronary restenosis	Total number of cases
Control group	50	2	1	3 (6.00%)
Observation group	50	1	0	1 (2.00%)
χ^2				1.042
P value				.307

members makes them more agreeable to treatment. As a result, the patient can receive more effective emotional support from family members, which is conducive to increased patient amicability.[17,19,20]

Pictures, picture albums, animation videos, and other illustrated and descriptive texts make information about the disease and treatment easier to understand and remember. These materials, in turn, help patients and their families to achieve a better understanding of the operation process and help to assuage negative concerns caused by a lack of relevant knowledge.

Once family members gained relevant knowledge, it was transformed into language familiar to the family and passed on to the patient, making the situation easier for the patient to accept. The emotional state of family members directly affects the patient and can assist the patient in facing coronary intervention surgery with a more active and optimistic attitude. Negative emotions can cause a decline in sleep quality, and poor sleep can aggravate negative emotions. Family-centered health interventions break a cycle of concern, reduce the patient's negative emotions, and improve sleep quality for the patient.[21-25]

To measure the effect of family-centered operative involvement, the ADL score showed no statistically significant difference in ADL scores between the control and observation groups before the surgery and the first, second, and third day after the surgery. In other words, the center health intervention, which encompassed the perioperative period of coronary intervention therapy, did not significantly improve the self-care ability of daily life. Researchers speculate this may be because coronary intervention is less traumatic, and patients can move early after the operation. In addition, the operation generally has little effect on the patient's ability to perform ADLs.

The study found no statistically significant difference between the two groups in the incidence of arrhythmia and coronary restenosis. This result suggests that family-centered health intervention also had no evident advantage in reducing complications for patients undergoing coronary interventional treatment during the perioperative period. This result may be because postoperative complications are related to the degree of vessel obstruction, intraoperative mechanical stimulation, atherosclerosis, and other factors. Regardless, health education interventions have limited effects on postoperative complications.

The researchers stress some possible limitations of this study. Research participants were from a single center, and the sample was limited. Moreover, the study may not have fully considered other salient factors when evaluating patients' negative moods and sleep quality.

CONCLUSION

Cardiovascular diseases, particularly stroke and coronary heart disease, are major health threats in China.Coronary heart disease alone contributes to 10%-20% of all cardiovascular-related deaths.Notably, younger individuals are increasingly becoming victims of these diseases.Interestingly, the rate of these diseases between urban and rural areas in China is becoming more balanced, hinting at a widespread challenge across demographics.Given the anticipated rise in cardiovascular diseases in the future, there's a strong case for early interventions, especially concerning coronary heart diseases.Patients from the research hospital who received coronary intervention therapy between August 2020 and April 2021 were the focus.These patients were divided into two groups: control and observation.While both groups received standard care, the observation group was given additional family-centered health interventions.Key points of comparison were anxiety and depression levels, self-care capabilities, sleep quality, and the occurrence of complications before and after the said intervention. In conclusion, family-centered health interventions could improve the sleep quality and reduce the incidence of postoperative arrhythmia and coronary artery restenosis in perioperative patients receiving coronary intervention therapy.

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AUTHOR CONTRIBUTIONS

Xianjie Hao and Dongjing Wang designed the study; Xianjie Hao and Xiuping Xiao performed the research; Xianjie Hao and Dongjing Wang analyzed the data and wrote the manuscript. All authors have read and approved the final manuscript. Xianjie Hao and Dongjing Wang is equal contributors and co-first authors.

DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

AUTHOR DISCLOSURE STATEMENT

All authors have no conflicts of interest to disclose.

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