



Effect of Problem-Oriented Evidence-Based Nursing on Clinical Recovery and Prognosis in Patients with Arrhythmia after Acute Myocardial Infarction

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Abstract

Background: To probe into the influence of evidence-based nursing (EBN) on clinical recovery and prognosis of patients with arrhythmia after acute myocardial infarction (AMI).

Methods: Totally, 240 AMI patients with arrhythmia treated in Taizhou People's Hospital (Jiangsu, China) from July 2019 to December 2020 were collected and randomly divided into the study group (n = 120) and control group (n = 120). The control group was received routine nursing, while the study group carried out EBN. The following indicators were evaluated and compared between the two groups: length of hospital stay, symptom disappearance time, cardiac function, psychological status, and incidence of adverse events after 6 months of follow-up were.

Results: Compared to the control group, the length of hospital stay, symptom disappearance time, LVEF (left ventricular ejection fraction), LVEDD (left ventricular end-diastolic diameter), SAS (self-rating anxiety scale) score and SDS (self-rating depression scale) score in the study group were significant improves ($P < 0.05$), and the incidence of adverse events after 6-month follow-up in the study group was also significantly lower than that in the control group ($P < 0.05$).

Conclusion: EBN intervention for AMI patients with arrhythmia can significantly improve the length of hospital stay and symptom disappearance time, adjust cardiac function and psychological status, and reduce the incidence of adverse events.

Keywords: Evidence-based nursing; Acute myocardial infarction; Arrhythmia; Prognosis; Clinical effect

Introduction

Acute myocardial infarction (AMI), defined as myocardial necrosis caused by acute and persistent ischemia of the coronary artery, is one of the most common fatal cardiovascular diseases (1, 2). Myocardial infarction (MI) results in more than one million deaths in China each year (3), which

can also easily lead to serious complications, such as ventricular arrhythmias (4). If patients with acute MI accompanied by arrhythmia do not receive effective treatment and nursing, blood supply to the myocardium and other organs will be seriously affected, resulting in clinical symptoms



such as shock, nausea and vomiting, and even death (5). In MI patients, the direct cause of deaths is arrhythmia after MI, which poses a serious threat to the quality of life and life safety of patients (6).

Evidence-based nursing (EBN) is a brand-new nursing model. This model requires scientific nursing information from relevant literature and books, and timely summary of nursing experience (7). Then the clinical experience and scientific theory are organically combined to solve clinical practice problems. Specifically, under the EBN model, by timely monitoring clinical indicators of patients and correctly evaluating their disease severity, the nursing staff allows the attending physician to fully develop a targeted treatment and nursing plan (8). Therefore, improvements in treatment efficiency and nursing quality have been achieved, consequently increasing nursing satisfaction and compliance of patients (8). In addition, by making the dietary plan according to the actual situation of patients, the nursing staff allows the patients to provide sufficient nutrients to the body in order to enhance their own physical fitness during treatment and nursing (8). Therefore, a promotion of disease recovery to a greater extent and a reduction in length of hospital stay and bed rest time and adverse reactions have been realized, consequently improving the therapeutic effect (9).

Many scholars have shown the effectiveness of EBN while treating patients with arrhythmia after AMI (10, 11). For further exploring the effects of this nursing model on recovery and prognosis of patients, with AMI patients with arrhythmia who received treatment in our hospital as the study subjects, their clinical indicators, cardiac function, psychological status before and after intervention and the incidence of adverse events after 6 months were compared between the two groups.

Materials and Methods

Baseline information

Totally, 240 patients with arrhythmia after AMI treated in Taizhou People's Hospital from July

2019 to December 2020 were selected and divided into study and control groups (120 cases/group).

All participants provided informed consent. This study was approved by the Clinical Research Ethics Committee of Taizhou People's Hospital.

Inclusion criteria were as follows: 1) Patients diagnosed with AMI accompanied by arrhythmia by clinical comprehensive diagnosis; 2) Patients with cardiac functional classification I to IV; 3) Patients under 75 years of age; 4) Patients who could communicate normally and complete the survey in oral or written form; 5) Patients and their families signed informed consent to participate in the study. Exclusion criteria were as follows: 1) Patients with arrhythmia not caused by AMI; 2) Patients with other serious organ and tissue diseases.

Intervention

The control group received routine nursing, mainly including admission examination and cooperation with doctors in detecting various indicators and in controlling complications.

The study group was adopted EBN, mainly including 4 aspects: 1) Establishment of an evidence-based group. After the patient was admitted to the hospital, the head nurse selected the nursing staff with rich nursing theoretical knowledge and excellent practical skills to establish an EBN group. On the basis of a comprehensive understanding of the patient's baseline data and disease condition, pre-nursing training was carried out (12). 2) Raising of evidence-based questions. By searching the literature, the nursing staff proposed the possible problems that would occur in the nursing process. On the basis of a comprehensive assessment and analysis of the actual condition of the patient, the nursing staff put forward corresponding measures for the problems. 3) Exploration of evidence-based supports. The nursing staff obtained the theoretical basis of EBN by consulting the relevant databases and resource networks. The theory was combined with the situation of the patient to provide a guidance for clinical nursing (13). 4) Practice of EBN. First, the nursing staff

strengthened the monitoring of the patient's condition, and recorded all vital signs in detail to ensure a stable state. Second, the nursing staff regularly communicated with the patient's families to inform the treatment methods and precautions, so as to eliminate their blind perception of the disease, and to avoid other complications. Third, the nursing staff paid close attention to and comprehensively assess the patient's psychological status. Subsequently, the staff provided psychological comfort and counseling and alleviated their negative psychology by exemplifying the cases of successful treatment, consequently improving the compliance of treatment and nursing of the patient. Fourth, the nursing staff told the patient to take the drug in strict accordance with the doctor's advice, and checked the relevant information again during the preparation and dispensing process to prevent errors. Fifth, during the intravenous infusion, the nursing staff strengthened the patrol, and controlled the speed of intravenous drip. If abnormalities were found, they timely informed the attending physician and provided assistance to take first aid measures. Sixth, when the patient's condition was stable and improved, the nursing staff developed a scientific and reasonable rehabilitation exercise plan and guided the patient to exercise step by step. Seventh, based on the principle of patient-centered, the nursing staff met all reasonable needs of the patient as much as possible, and provided high-quality nursing services for the patient. This contributed to a good doctor-patient relationship, and provided guarantee for clinical treatment and nursing intervention (14).

Observation indicators

The following indicators in the two groups were observed: 1) Baseline information: age, gender, course of disease and cardiac functional classification; 2) Clinical indicators: length of hospital stay and symptom disappearance time; 3) Cardiac function: left ventricular ejection fraction (LVEF) and left ventricular end-diastolic diameter (LVEDD); 4) Psychological status before and after intervention: self-rating anxiety scale (SAS) and self-rating depression scale (SDS); 5) Incidence of adverse events after six months of follow-up.

Statistical analysis

SPSS 22.0 was employed for statistical analysis. For measurement data expressed as mean \pm standard deviation (SD), independent sample t-test was used for intergroup comparison while paired t-test for intragroup comparison before and after intervention. For enumeration data expressed as n (%), chi-square test was used for intergroup comparison. $P < 0.05$ indicated a statistically significant difference.

Results

Clinical baseline characteristics of patients in the two groups

Baseline characteristics of 240 patients are presented in Table 1. No significant difference was identified in gender, age, course of disease, and NYHS classification between the two groups ($P > 0.05$), suggesting that the two groups were comparable (Table 1).

Table 1: Comparison of the baseline characteristics between the two groups

Item	Control group (n=120)	Study group (n=120)	t/X ²	P
Gender(%)			0.427	0.513
Male	72 (60.0)	67 (55.8)		
Female	48 (40.0)	53 (44.2)		
Age (year)	63.66 \pm 4.17	64.05 \pm 4.18	0.727	0.468
Course of disease (year)	2.08 \pm 0.64	2.07 \pm 0.66	0.100	0.921
NYHS classification (%)			0.338	0.845
Class II	35 (29.2)	31 (25.8)		
Class III	56 (46.7)	59 (49.2)		
Class IV	29 (24.2)	30 (25.0)		

Values are mean \pm SD or n (%).

Comparison of treatment-related indicators between the two groups

The hospital stay and symptom disappearance time in the study group were significantly lower

than that in the control group. And the difference had statistical significance ($P < 0.05$) (Table 2).

Table 2: Comparison of hospital stay and symptom disappearance time after treatment between the two groups

Group	Case	Symptom disappearance time (d)	Hospital stay (d)
Control group	120	5.28 ± 1.28	32.50 ± 4.03
Study group	120	3.13 ± 1.15	22.20 ± 4.07
<i>t</i>		13.757	19.701
<i>P</i>		0.000	0.000

Values are mean ± SD

Comparison of cardiac function between the two groups

The recovery of cardiac function after different nursing interventions in the two groups was fur-

ther analyzed. As shown in Table 3, patients in the study group had significantly higher LVEF and lower LVEDD than the control group ($P < 0.05$).

Table 3: Comparison of cardiac function between the two groups

Group	Case	LVEF (%)	LVEDD (%)
Control group	120	47.09 ± 5.34	55.62 ± 4.45
Study group	120	52.28 ± 5.25	49.71 ± 2.91
<i>t</i>		7.595	12.174
<i>P</i>		0.000	0.000

Values are mean ± SD. LVEF, left ventricular ejection fraction; LVEDD, left ventricular end-diastolic diameter

Comparison of psychological status before and after intervention between the two groups

In addition, we also observed changes in the psychological status of patients in both groups. The results showed that in comparison with before

intervention, decreases of the SAS and SDS scores were found in both groups after intervention. Further, after the intervention, the SAS score and SDS score in the study group were significantly lower than the control group ($P < 0.05$) (Table 4).

Table 4: Comparison of psychological status before and after intervention between the two groups

Group	Case	SAS		SDS	
		Before intervention	After intervention	Before intervention	After intervention
Control group	120	52.62 ± 6.44	32.52 ± 5.72*	54.81 ± 7.11	35.55 ± 6.03*
Study group	120	52.51 ± 6.62	31.29 ± 2.87*	54.31 ± 5.43	33.12 ± 4.55*
<i>t</i>		0.128	2.109	0.612	3.528
<i>P</i>		0.898	0.036	0.541	0.001

Values are mean ± SD. * $P < 0.05$ vs. before intervention. SAS, self-rating anxiety scale; SDS, self-rating depression scale

Comparison of incidence of adverse events after 6-month follow-up between the two groups

Six months after discharge, the follow-up result revealed that the incidence rate of adverse events

in the study group (1.7 %) was lower than that of the control group (7.5 %), with a significant difference ($P < 0.05$) (Table 5).

Table 5: Comparison of incidence of adverse events after 6-month follow-up between the two groups

Group	Case	Ventricular fibrillation (%)	Tachycardia (%)	Hypotensive syndrome (%)	Ventricular premature contraction (%)	Total (%)	X ²	P
Control group	120	0(0)	2(1.7)	4(3.3)	3(2.5)	9(7.5)	4.669	0.031
Study group	120	1(0.8)	0(0)	1(0.8)	0(0)	2(1.7)		

Discussion

With the improvement of people's quality of life and changes of lifestyle in recent years, the incidence of AMI has shown a significant increase. This disease is characterized by an acute onset, and serious complications and sequelae (15). If AMI patients accompanied by arrhythmias cannot be treated promptly and effectively, a high mortality rate will be caused. This disease poses a great threat to the life safety and quality of life of patients, so it has a high requirement for medical staff in clinical practice (16). Additionally, nursing interventions are needed to improve treatment outcomes, patients' quality of life, and their prognosis and rehabilitation (17).

Traditional nursing mainly refers to passive nursing. This kind of nursing is for therapeutic purposes only and nursing staff lack initiative, resulting in poor nursing outcomes (18). EBN is a novel nursing model at this stage and is a product of the development of clinical nursing (19, 20). This novel model originated from evidence-based medicine and was proposed by professors at McMaster University in Canada, which has quietly emerged but rapidly developed (21). Mulhall et al has defined EBN as a means by which nursing staff plan their nursing activities based on the

combination of scientific researches with clinical experience and patient needs (22). Specifically, EBN, also known as empirical nursing, refers to nursing measures developed under the combination of 3 aspects. The first is the careful, accurate, and wise application of the best current research evidence obtained by nursing staff. The second is the professional skills and many years of clinical experience of nursing staff. The third is the value, desire, and actual situation of patients (23). EBN staff can fully integrate their rich clinical experience with clinical conditions, thus improving the quality of nursing, and ensuring the early recovery of patients. This nursing model contributes to the reduction of medical costs and the promotion of harmonious doctor-patient relationship (24). It has gradually received attention since its birth in the 1990s, and its nursing purpose is to develop the most appropriate personalized and specialized nursing plan for each patient through questioning and satisfying, thereby improving treatment outcomes (25-28). Therefore, our hospital introduced the EBN model in the Department of Cardiovascular Medicine for enhancing the therapeutic and nursing effects.

In this study, we found that comparison with the control group, the study group led to lower the length of hospital stay and symptom disappear-

ance time, lower SAS and SDS scores, better LVEF and LVEDD condition, and lower incidence of adverse events after 6-month follow-up. Additionally, some authors (16, 29-31) have proved that for AMI patients with arrhythmia, EBN can significantly improve the clinical efficacy, heart function and patient satisfaction, and shorten the rehabilitation time. Collectively, EBN intervention for AMI patients with arrhythmia is markedly superior to routine nursing. That is, EBN has a better application effect on the clinical recovery and prognosis quality of AMI patients with arrhythmia.

Conclusion

For AMI patients with arrhythmia, EBN intervention can effectively change the nursing model to a detailed and scientific one, thereby enhancing patient satisfaction, reducing the incidence of adverse events, and improving the prognosis. Therefore, this nursing model has high clinical application value, which is worthy of wide application and promotion.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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