ORIGINAL RESEARCH

The Improved Emergency Nursing Procedure and Human-oriented Nursing Care Can Significantly Reduce Hard Feelings of Patients with Acute Myocardial Infarction

Zhiping Zhang, MBBS; Danfeng Gu, MM; Sujing Li, MBBS

ABSTRACT

Objective • The purpose of this study was to investigate the therapeutic effects of improved emergency nursing procedures and human-oriented nursing care to patients in the acute phase of myocardial infarction. This study is important because it aims to demonstrate the potential benefits of these nursing interventions in reducing negative feelings in patients with acute myocardial infarction and improving the success rate of first aid.

Methods • A total of 180 inpatients with acute myocardial infarction hospitalized from January 2020 to December 2020 were selected as the research object and randomized into either study group or control group, with 90 cases in each. The study group received combined nursing care that included improved emergency nursing procedures and human-oriented nursing care, while the control group received conventional nursing care. The specific interventions in the study group included rapid response training, on-route care, hospital arrival protocol, human-oriented care training, psychological support measures, and a pain management protocol. The study evaluated SAS scores, mental state score, platelet index, first aid effect, thrombolysis and nursing satisfaction in comparison of the two groups.

Results • Before receiving nursing care, there were no significant differences in the SAS scores between the study group and the control group (53.92±8.22 vs 54.03±8.56) ($t = .09$, $P = .930$, nonsignificant). However, after receiving care, patients in the study group had significantly lower SAS scores compared to the control group (9.21±2.67 vs 17.93±1.86) ($t = 25.42$, $P < .001$, statistically significant). Patients in the study group exhibited lower psychological scores compared to the control group in terms of depression, fear and paranoia (0.47±0.13 vs 0.76±0.12, 0.27±0.06 vs 0.46.±0.12, 0.67±0.29 vs 0.86±0.25) (t=15.55, 13.43, 4.71, all $P < .001$, statistically significant). Patients in the study group presented MPV levels as (12.41±1.31) and PDV level (14.26±1.23) while those had MPV level (10.02±1.21) and PDV level (18.68±1.83) in the control group (t=12.71, 19.01, both $P < .001$). The study group outperformed the control group in terms of first aid effects ($P < .05$, statistically significant). Thrombolysis was more effective in the study group compared to the control group ($P < .05$, statistically significant). Patients in the study group reported higher levels of satisfaction with the nursing service compared to those in the control group ($P < .05$, statistically significant).

Conclusion • The improved emergency nursing procedure and human-oriented nursing care can significantly reduce the hard feelings of patients with acute myocardial infarction, improve the success rate of first aid, and is worthy of extensive application and promotion. Healthcare providers and hospitals can benefit from adopting these nursing approaches to reduce negative feelings, improve first aid outcomes, and ultimately enhance patient satisfaction and treatment effectiveness. (*Altern Ther Health Med.* 2024;30(12):406-410.)

Zhiping Zhang, MBBS; Sujing Li, MBBS; Department of General Medicine, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu Province, China. **Danfeng Gu, MM,** Department of Nursing, Affiliated Hospital of Jiangnan University, Wuxi, Jiangsu Province, China.

Corresponding author: Sujing Li , MBBS
E-mail: sushangguan983960@126.com

INTRODUCTION

Acute myocardial infarction (AMI) is a common disease that undoubtedly threatens people's health and lives. Globally, AMI is a significant cause of morbidity and mortality. According to estimates from the Global Burden of Disease Study 2019, there were approximately 57.8 million cases of AMI worldwide in 2019. Statistics in 2019 showed that the estimated prevalence of AMI in China was 1.7% among adults aged 35 to 74 years. As per data from the China Health Statistics Yearbook 2020, the mortality rate from cardiovascular diseases, including AMI, was 261.7 per 100 000 population in 2019.

Therefore, quick access to medical treatment is especially important, as it can retrieve more myocardium at the early stage of the disease and reduce the mortality rate.[1,2] Myocardial infarction is mainly caused by interruption or sharp reduction of coronary artery blood flow, making the myocardial hypoxia and ischemia to trigger myocardial necrosis. Severe retrosternal pain is often observed during the disease, leaving patients in anxiety, fear and other negative feelings. Such pain will increase the heart rate, blood pressure and arrhythmia and to some extent, raise the oxygen consumption of the myocardium. What's worse is that shock and collapse may occur in severe cases.[3,4] As people's lifestyles change, the mortality rate of myocardial infarction in China is increasing year by year. The therapeutic effects and prognosis of many patients have been greatly affected due to the lack of revascularization.[5,6] Currently, the intravenous thrombolysis treatment method is the mainstay in treating AMI, which mainly improves cardiac function by dredging the blocked coronary artery so as to increase the survival chance of patients.[7,8]

Clinical practice has proved that sound nursing procedures can shorten the rescue time and improve the therapeutic effects. The provision of high-quality nursing care is essential not only for the immediate stabilization and recovery of AMI patients but also for long-term outcomes and prevention of future cardiac events. Nurses are often the first healthcare professionals to

encounter patients with symptoms suggestive of AMI. Their ability to promptly recognize the signs and symptoms of AMI, initiate emergency protocols, and alert the medical team is vital for timely intervention and improved outcomes. 1) Nurses continuously monitor AMI patients, assessing vital signs, cardiac rhythm, oxygen saturation, and pain levels. They also assess the response to treatment and identify any potential complications, such as arrhythmias or heart failure. Regular monitoring allows for early detection of changes and timely intervention. 2) Nurses are responsible for administering medications prescribed for AMI, such as antiplatelet agents, anticoagulants, beta-blockers, and nitroglycerin. They ensure accurate dosing, monitor for medication effectiveness and side effects, and educate patients about their medications. 3) AMI patients often experience severe chest pain. Nurses play a crucial role in assessing and managing pain through various interventions, including administering analgesics, positioning for comfort, and providing non-pharmacological techniques like relaxation and distraction. 4) Nurses provide AMI patients with essential education on lifestyle modifications, medication adherence, cardiac rehabilitation, and recognizing warning signs for future cardiac events. They also offer emotional support, address patient concerns, and involve patients in shared decision-making regarding their care. 5) Nurses actively participate in cardiac rehabilitation programs, assisting patients in physical activity training, dietary counseling, and psychosocial support. They promote lifestyle changes aimed at reducing cardiovascular risk factors and improving overall patient well-being.

Building upon the recognized significance of nursing care in the management of acute myocardial infarction (AMI), this study aims to investigate the impact of specific nursing procedures on the treatment and outcomes of AMI patients. By focusing on the implementation and effectiveness of targeted nursing interventions, this research seeks to contribute valuable insights into optimizing nursing care practices for AMI patients, ultimately improving their overall prognosis and quality of life.

SUBJECTS AND METHODS
General information

The study selected 180 inpatients with acute myocardial infarction hospitalized from January 2020 to December 2020 and evenly divided them into two groups, with 90 cases in each. There were 53 male patients and 37 female patients in the control group between the age group of 31–72 years, with an average age of (46.39 ± 2.71), while 56 males and 34 females between 33 and 77, with an average age of (47.16 ± 1.03) in the study group. No significant differences were detected in general information between the two groups ($P > .05$).

Inclusion Criteria: (1) Respondents with symptoms consistent with the diagnostic criteria for myocardial infarction established by the International Society for Heart Research. (2) Cardiac function above the third level, as confirmed by the hospital's ethics committee. (3) All patients and their family members provided informed consent after being informed about the purpose and methods of the study.

Exclusion Criteria: (1) Patients with drug contraindications. (2) Patients with a history of cardiovascular and cerebrovascular diseases. (3) Patients with mental disorders. (3) Patients with severe dysfunction of the liver and kidney.

Methods

Patients of the control group got conventional nursing, including medication guidance and diet care. The study group received an enhanced emergency nursing protocol integrated with human-oriented care. Enhanced Emergency Nursing Protocol:

Nursing staff received comprehensive training on the enhanced emergency nursing protocol. The training encompassed various aspects, including early recognition of AMI symptoms, rapid response procedures, and the use of evidence-based guidelines for AMI management.

Training sessions also focused on enhancing nursing skills in administering emergency medications, performing electrocardiograms (ECGs), and monitoring vital signs during the acute phase of AMI.

Furthermore, the training emphasized effective communication and coordination among the nursing team, ensuring efficient collaboration with other healthcare professionals involved in the care of AMI patients.

Human-Oriented Care:

(1) Human-oriented care in this study encompassed various elements aimed at addressing the physical, emotional, and psychological needs of AMI patients.

(2) Psychological support measures were implemented, including providing information and education to patients and their family members about AMI, its management, and lifestyle modifications. This education aimed to alleviate anxiety, enhance understanding, and promote patient involvement in decision-making.

(3) Nurses employed active listening and empathy to create a supportive and compassionate environment for patients, encouraging them to express their concerns, fears, and emotional distress related to their AMI experience.

(4) Encouraging family involvement and providing emotional support to both patients and their family members were integral components of the human-oriented care approach.

(4) Pain management strategies were implemented, including the appropriate use of analgesics, positioning for comfort, and the utilization of non-pharmacological techniques such as relaxation and distraction.

(5) Patient-centered education on self-care, medication adherence, and lifestyle modifications, including dietary changes and physical activity, were provided to empower patients to actively participate in their recovery.

Observation of indexes

Both the SAS (Self-Rating Anxiety Scale) and SDS (Self-Rating Depression Scale)[9] questionnaires consist of 20 questions each. Each question is scored on a 4-point scale, ranging from 1 (none, or a little of the time) to 4 (most, or all

of the time). The raw total scores are calculated by summing up the scores of all 20 questions and are then converted to percentile standard scores.

For the SAS questionnaire: (1) Individuals with SAS scores of 50 or higher are diagnosed with anxiety. (2) Scores ranging from 50 to 59 are classified as "mild" anxiety. (3) Scores ranging from 60 to 69 are classified as "moderate" anxiety. (4) Scores above 69 are classified as "severe" anxiety.

For the SDS questionnaire: (1) Individuals with SDS scores of 53 or higher are identified as having depression. (2) Scores ranging from 53 to 62 are classified as "mild" depression. (3) Scores ranging from 63 to 72 are classified as "moderate" depression. (4) Scores above 72 are classified as "severe" depression.

The platelet index includes two components: Mean Platelet Volume (MPV) and Platelet Distribution Width (PDW). The effectiveness of first aid measures can be evaluated based on several factors, including the length of hospitalization, success rate of emergency treatment, mortality rate, and thrombolysis outcomes. Thrombolysis assessment encompasses parameters such as the starting time of thrombolysis, duration of first aid, and the success rate of the procedure. To assess nursing satisfaction, a self-developed satisfaction measurement scale was created. The scale consists of items that capture various dimensions of nursing care, including communication, responsiveness, professionalism, empathy, and overall quality of care. Participants rate each item using a 5-Likert scale, providing their level of agreement or satisfaction. After piloting and refining the scale, it was administered to a larger sample, and the data collected were analyzed for descriptive statistics and potential underlying dimensions. The scale's validity and reliability were evaluated, and its results were interpreted to identify areas of strength and improvement in nursing care.

Statistical Methods

The data analysis in this study was conducted using SPSS21.0 software. All continuous variables were presented as mean ± standard deviation and analyzed using independent t tests. Categorical variables were presented as frequencies and percentages (n %) and analyzed using Chi-square tests.

Statistical significance was set at $P < .05$. By achieving statistical significance, the study findings surpass a predetermined threshold (usually $P < .05$) and provide substantial support for the presence of a relationship or an effect being examined. This statistical significance reinforces the credibility of the observed differences and strengthens the confidence in the study's conclusions. Before conducting t tests, we assessed the normality of distribution for all continuous variables using the Shapiro-Wilk test. The normality of variable distributions was thoroughly evaluated to ensure the appropriateness of parametric statistical tests. In instances where variables deviated from the assumptions of normality, non-parametric tests were employed to maintain the integrity of the analysis, Wilcoxon signed-rank test.

Table 1. Comparison of effects of first aid after Nursing care

Groups	Cases	Length of hospitalization	Success rate	Motailty rate
Study group	90	13.7±3.66	97.8% (88/90)	4.4% (4/90)
Control group	90	25.03±4.13	84.4% (76/90)	13.3% (66/90)
t		12.6	9.88	4.39
P value		0	.002	.036

Table 2. Comparison of thrombolysis after nursing care

Groups	Cases	Starting time of thrombolysis	Rescue time	Success rate of thrombolysis
Study group	90	54.12±3.87	58.13±11.22	88.9% (80/90)
Control group	90	68.36±12.42	79.62±19.37	73.3% (66/90)
t		10.38	9.1	7.107
P value		0	0	.008

Table 3. Comparison of satisfaction of nursing (n,%)

Groups	Cases	Very satisfied	Satisfied	Unsatisfied	Rate of success
Study group	90	83.3% (75/90)	12.2% (11/90)	4.4% (4/90)	95.5% (86/90)
Control group	90	66.7% (60/90)	16.7% (15/90)	16.7% (15/90)	83.3% (75/90)
χ^2		6.67	0.72	7.12	7.12
P value		.01	.40	.008	.008

RESULTS

Comparison of SAS scores:

Before receiving nursing care, there were no significant differences in the SAS scores between the study group and the control group (53.92±8.22 vs 54.03±8.56) ($t = .09$, $P = .930$, nonsignificant). However, after receiving care, patients in the study group had significantly lower SAS scores compared to the control group (9.21±2.67 vs 17.93±1.86) ($t = 25.42$, $P < .001$, statistically significant). The difference in SAS scores indicates a reduction in anxiety and stress levels among patients in the study group. The confidence intervals for the mean SAS scores in the study group were [8.85, 9.57] and in the control group were [17.71, 18.15].

Comparison of scores of mental state after nursing care:

Patients in the study group exhibited lower psychological scores compared to the control group in terms of depression, fear, and paranoia (0.47±0.13 vs 0.76±0.12, 0.27±0.06 vs 0.46±0.12, 0.67±0.29 vs 0.86±0.25) ($t = 15.55$, 13.43, 4.71, all $P < .001$, statistically significant). The difference in psychological scores indicates improved mental well-being among patients in the study group. The confidence intervals for the mean psychological scores in the study group were [0.41, 0.53] for depression, [0.24, 0.30] for fear, and [0.55, 0.79] for paranoia, while in the control group were [0.72, 0.80] for depression, [0.42, 0.50] for fear, and [0.61, 1.11] for paranoia.
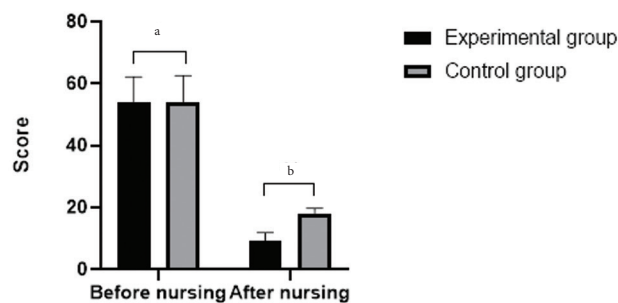
Comparison of platelet indexes after nursing care:

Patients in the study group presented MPV levels as (12.41±1.31) and PDV levels (14.26±1.23), while those in the control group had MPV levels (10.02±1.21) and PDV levels (18.68±1.83) ($t = 12.71$, 19.01, both $P < .001$, statistically significant). The confidence intervals for the mean MPV levels in the study group were [12.06, 12.76] and in the control group were [9.69, 10.35], while for PDV levels they were [13.81, 14.71] in the study group and [17.79, 19.57] in the control group.

Comparison of effects of first aid after nursing care:

The study group outperformed the control group in terms of first aid effects ($P < .05$, statistically significant). The difference in

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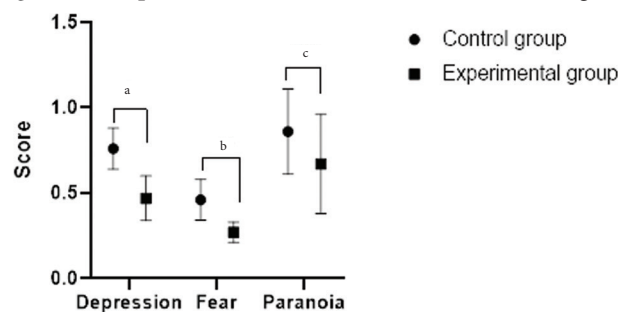**Figure 1.** Comparison of SAS scores after nursing care

[a]indicated that no significant differences in SAS score between the two groups before they got nursing were found, $t = .09$; $P = .93$.
[b]indicated that there was a significant difference in SAS scores between the two groups, $t = 25.42$; $P = 0$.

Note: The abscissa represents the nursing time, while the ordinate displays the rating. The SAS scores of the study group were (53.92 ± 8.22) and (9.21 ± 2.67) before and after getting nursing, respectively, while the control group scored (54.03 ± 8.56) and (17.93 ± 1.86).

Figure 3. Comparison on platelet indexes after nursing care

[a]represents the significant difference in MPV level between the two groups, $t = 12.71$; $P = 0$.
[b]indicates that the PDV level was remarkably different between the two groups, $t = 19.01$; $P = 0$.

Note: The abscissa represents the platelet index; the vertical axis displays its level. Patients in the study group presented MPV levels as (12.41 ± 1.31) and PDV level (14.26 ± 1.23) while those had MPV level (10.02 ± 1.21) and PDV level (18.68 ± 1.83) in the control group.

Figure 2. Comparison of scores of mental state after nursing care

[a]indicates that there was a significant difference in depression scores between the two groups, $t = 15.55$; $P = 0$.
[b]indicates that a significant difference in fear scores between the two groups was observed, $t = 13.43$; $P = 0$.
[c]indicates that paranoia scores between the two groups revealed significant difference, $t = 4.71$; $P = 0$.

Note: The abscissa represents the psychological state; the vertical axis shows the mental state rating. The scores on the indicators of depression, fear and paranoia in the study group were respectively (0.47 ± 0.13), (0.27 ± 0.06), (0.67 ± 0.29) while the corresponding scores were (0.76 ± 0.12), (0.46 ± 0.12) and (0.86 ± 0.25) in the control group.

first aid effects indicates the superior effectiveness of the improved emergency nursing procedures implemented in the study group.
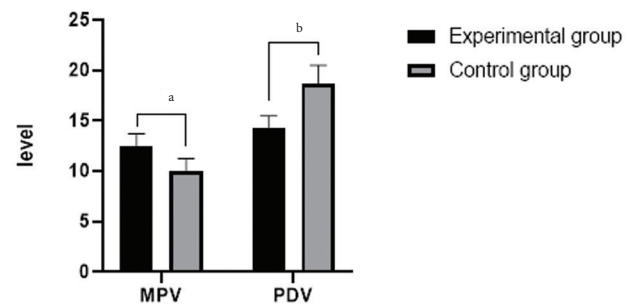
Comparison of thrombolysis after nursing care:

Thrombolysis was more effective in the study group compared to the control group ($P < .05$, statistically significant). The difference in thrombolysis outcomes suggests that the combined nursing care approach facilitated better restoration of blood flow in the blocked coronary arteries.

Comparison of satisfaction of nursing:

Patients in the study group reported higher levels of satisfaction with the nursing service compared to those in the control group ($P < .05$, statistically significant). The difference in satisfaction levels highlights the positive impact of the improved emergency nursing procedures and human-oriented care provided in the study group.

DISCUSSION

The findings of our study have significant clinical relevance, as they provide valuable insights into how improved emergency nursing procedures and human-oriented care can positively impact the prognosis and outcomes of patients with acute myocardial infarction (AMI). By summarizing the key findings of our study, we observed several important improvements in various aspects of patient care.

Firstly, the significant reduction in SAS scores among patients in the study group indicates a decrease in anxiety and stress levels. Lower levels of anxiety can play a crucial role in improving patient adherence to treatment plans, as well as facilitating engagement in lifestyle changes and self-management strategies.[10] Patients who experience reduced anxiety are more likely to actively participate in their own care, leading to better treatment outcomes and long-term recovery. The improvement in psychological well-being can be attributed to multiple factors. Firstly, the implementation of improved emergency nursing procedures and human-oriented care creates a supportive and empathetic environment for patients. This compassionate approach helps alleviate patient anxiety and fosters a sense of trust and security. Additionally, the provision of clear and comprehensive information about the condition, treatment options, and recovery process can empower patients, reducing their anxiety and promoting a positive psychological state.[11] Moreover, the involvement of patients in shared decision-making and care planning can enhance their sense of control and autonomy, further contributing to improved psychological well-being.

Moreover, the improved psychological states observed in the study group, including decreased depression, fear, and paranoia, highlight the importance of addressing psychological well-being in AMI patients. Psychological factors can significantly influence patient outcomes, and by providing supportive and empathetic care, healthcare providers can help patients navigate the emotional challenges associated with AMI. This, in turn, can enhance patient

motivation and commitment to their treatment plans, resulting in improved adherence and lifestyle modifications.

The changes observed in platelet indexes, specifically lower mean platelet volume (MPV) and platelet distribution width (PDW) levels in the study group, have important clinical implications.[12] Platelet activation and aggregation are key factors in the development of thrombotic events in patients with AMI. A lower platelet index indicates a potential reduction in thrombotic risk, as smaller platelet size and narrower distribution may be associated with decreased platelet reactivity and aggregation. This finding suggests that the improved emergency nursing procedures implemented in the study group may contribute to a lower incidence of thrombotic events and recurrent myocardial infarctions. The observed decrease in platelet indexes, such as mean platelet volume (MPV) and platelet distribution width (PDW), suggests a potential reduction in thrombotic risk. Platelets play a crucial role in the formation of blood clots, and their activation and aggregation contribute to the development of thrombotic events in AMI patients. The improved emergency nursing procedures implemented in our study may have influenced platelet function and reduced platelet activation. This could be attributed to various factors, such as the timely administration of antiplatelet medications, optimized oxygenation and blood flow, and effective management of risk factors like hypertension and hyperlipidemia.[13-15] By mitigating platelet activation, the risk of thrombotic events and recurrent myocardial infarctions is potentially reduced.

The positive outcomes related to first-aid effects and thrombolysis can be attributed to the optimized and timely management of AMI. The improved emergency nursing procedures likely facilitated prompt recognition of AMI symptoms, early activation of the emergency response system, and rapid initiation of appropriate interventions.[16] Early administration of thrombolytic therapy and reperfusion strategies, such as percutaneous coronary intervention (PCI), can restore blood flow to the occluded coronary artery, limiting the extent of myocardial damage. By minimizing ischemic time and maximizing the effectiveness of thrombolysis, the improved emergency nursing procedures contributed to better outcomes in terms of first-aid effects and thrombolysis.[17,18]

Comparing our findings with Li et al.,[19] we find consistencies in the positive effects of improved emergency nursing procedures on patient outcomes in the acute phase of AMI. However, our study adds to the existing literature by incorporating human-oriented care, which emphasizes a patient-centered approach and holistic nursing interventions. The inclusion of human-oriented care likely contributed to the observed improvements in patient satisfaction, as it addresses the unique needs and preferences of individual patients.[20]

Despite the strengths of our study, it is important to acknowledge its limitations. Conducted at a single center, our findings may not be fully generalizable to other healthcare settings. The relatively small sample size and non-randomized study design introduce the potential for selection bias and limit the statistical power of the results. Additionally, the study focused on a specific population, and further research is needed to determine the applicability of these interventions to diverse patient profiles and different types of myocardial infarction cases.

To build upon our findings, future research should aim to conduct multicenter studies with larger sample sizes and employ randomized controlled trial designs. Such studies would strengthen the evidence base and provide more robust insights into the benefits of improved emergency nursing procedures and human-oriented care. Additionally, investigating the long-term effects and sustainability of these interventions would be valuable in determining their lasting impact on patient outcomes.

In conclusion, our study emphasizes the importance of applying improved emergency nursing procedures and human-oriented care in the acute phase of AMI. The observed improvements in patient outcomes, including reduced anxiety, improved psychological states, decreased thrombotic risk, and increased patient satisfaction, highlight the potential for widespread implementation and promotion of these nursing interventions. By addressing psychological well-being, reducing thrombotic risk, and providing patient-centered care, healthcare providers can significantly enhance the prognosis and outcomes of patients with acute myocardial infarction.

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