

ORIGINAL RESEARCH

Impact of Enhanced Emergency Nursing Processes on the Rescue Outcomes of Emergency Patients with Chest Pain

Hongyan Zhu, BD; Dongsheng Ding, BD

ABSTRACT

Background • Chest pain, a sudden and perilous symptom, is frequently encountered in the emergency department. Prompt and efficient first-aid measures and nursing interventions are crucial for effectively rescuing emergency patients experiencing chest pain.

Objective • This study aims to investigate the impact of an enhanced emergency nursing process on the rescue outcomes of emergency patients with chest pain.

Design • A randomized controlled study was conducted.

Setting • The research was conducted at Suzhou Hospital of Integrated Traditional Chinese and Western Medicine.

Participants • A total of 90 emergency chest pain patients admitted between December 2021 and June 2022 were selected and divided into two groups, with 45 cases in each group.

Interventions • The control group received routine emergency nursing, while the observation group underwent an improved emergency nursing protocol.

Primary Outcome Measures • (1) Treatment initiation

time, emergency rescue time, recovery time of vital signs, and hospital stay; (2) curative effect; (3) pain scores; (4) incidence of adverse events; and (5) patient satisfaction.

Results • Compared to the control group, the observation group exhibited shorter treatment initiation time, emergency rescue time, recovery time of vital signs, and hospital stay ($P < .05$). The effective rate in the observation group was higher ($P < .05$), and pain scores were lower at 30 min, 60 min, 120 min, and 240 min post-rescue ($P < .05$). The occurrence of adverse events was reduced in the observation group ($P = .005$), and patient satisfaction was higher at discharge ($P < .05$).

Conclusion • The enhanced emergency nursing process effectively reduces the clinical rescue time for emergency patients with chest pain, enhances rescue efficiency, seizes crucial opportunities for saving lives, and improves patient satisfaction. These findings have significant positive implications for clinical applications. (*Altern Ther Health Med.* 2024;30(10):332-335).

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INTRODUCTION

The emergency department constitutes a vital component of various hospital departments.¹ It experiences a high daily influx of patients, with a substantial patient flow. Most of these patients are critically ill and require urgent and precise diagnosis and treatment.² In the emergency department, chest pain emerges as a clinical manifestation of various critical diseases. It is characterized by severe illness, complex etiology, and rapid progression, posing a significant threat to the life safety of patients.^{3,4}

Approximately 60% of patients experiencing chest pain fall under the category of cardiogenic chest pain, encompassing

conditions like myocarditis, myocardial infarction, and angina pectoris.⁵ The sudden and critical onset of chest pain, characterized by its complexity and rapid changes, significantly increases the challenge of emergency treatment.⁶ Therefore, the implementation of timely and effective first aid measures is of paramount importance for the rescue of emergency patients with chest pain, contributing to the reduction of mortality.

Nursing intervention is a crucial component in the rescue of emergency chest pain.⁷ Scientific and effective nursing interventions play a pivotal role in swiftly and accurately identifying diseases, thereby preventing delayed treatment opportunities.⁸ In conventional nursing approaches, patients experiencing chest pain often receive care guided solely by the doctor's recommendations. This reliance on doctor-directed care results in a lack of timeliness in nursing interventions. This deficiency has a certain impact on the subsequent treatment outcomes.

However, it has been reported that a high-quality emergency nursing process enhances the collaboration

between nurses and doctors to a great extent. This improvement significantly reduces the time required for rescue and the initiation of treatment, thereby ensuring the effectiveness of treatment and nursing for emergency chest pain patients.⁹ Additionally, studies suggest that optimizing and standardizing emergency nursing and monitoring procedures hold substantial importance in the thrombolytic treatment of acute cerebral infarction.¹⁰ Therefore, there is a crucial need to enhance the emergency nursing process to enhance therapeutic outcomes for emergency chest pain patients.

In our study, we investigated the impact of an improved emergency nursing process on the rescue outcomes of patients experiencing chest pain. Notably, our study introduced the novel finding that the enhanced emergency nursing process significantly shortened the clinical rescue time for emergency patients with chest pain while also resulting in high levels of patient satisfaction.

DATA AND METHODS

Study Design

A randomized controlled trial was conducted, and a total of 90 emergency chest pain patients admitted between December 2021 and June 2022 were meticulously selected for this study. The randomization process was conducted using the random number table method, with patients divided into two groups, each comprising 45 cases. Randomization was stratified by sex, utilizing permuted block sizes of 4.

Inclusion and Exclusion Criteria

Inclusion criteria were as follows: (1) Chest pain as the primary complaint lasting for more than 30 minutes; (2) Age ≥ 18 years with a history of chest pain; (3) Onset to treatment time ≤ 12 hours. Exclusion criteria were as follows: (1) Individuals with mental illness; (2) Cases of intermediate transport and pre-hospital death; (3) Patients presenting with traumatic chest pain.

Patient Demographics

The observation group (OG), comprising 24 males and 21 females, aged between 22 to 67 years, with an average age of (46.23 ± 4.52) years and onset-to-treatment time ranging from 0.5 to 31 hours, averaging (13.15 ± 1.24) hours. The OG included 30 cases of cardiogenic chest pain and 15 cases of non-cardiogenic chest pain. The control group consisted of 23 males and 22 females, aged between 22 and 68 years, with an average age of (46.26 ± 4.64) years and onset-to-treatment time ranging from 0.5 to 32 hours, averaging (13.07 ± 1.26) hours. In the control group, there were 29 cases of cardiogenic chest pain and 16 cases of non-cardiogenic chest pain. No significant differences were observed in baseline data between the two groups ($P > .05$).

Routine Emergency Nursing Procedures

Patients in the CG underwent routine emergency nursing procedures. Nursing staff followed established emergency nursing protocols to provide routine care and followed the standard nursing management procedures.

Enhanced Emergency Nursing Procedures

Patients in the OG received enhanced emergency nursing. The operational steps were as follows:

Training and Instrument Grasp. Nursing staff were thoroughly trained in the emergency nursing process to ensure a proficient understanding of various rescue instruments. The emergency department established a comprehensive risk management system emergency response process and reinforced the standard nursing management process.

Consultation Procedures. For self-presenting patients, comprehensive testing of various indicators was conducted to evaluate their physical conditions. Priority was given to patients with severe conditions. Chest pain patients were categorized into cardiac and non-cardiac chest pain based on their actual symptoms. Detailed records of patient symptoms, vital signs, and other relevant information were maintained.

Physical Examination. Patient physical signs, including facial color, posture, and consciousness, were carefully assessed. Chest palpation, percussion, and auscultation were performed, with special attention to symptoms induced by chest pain.

Diagnostic Investigations. In addition to electrocardiogram examinations, routine blood tests, chest X-rays, echocardiography, and blood analyses were conducted. If pulmonary embolism was suspected, CT examinations of the pulmonary artery and aorta were performed, with further scanning if uncertainty persisted. Tailored first aid methods were applied based on the patient's specific symptoms to ensure effective control of their condition.

Observation Indexes

Treatment and Rescue Times. The start time of treatment, emergency rescue time, recovery time of vital signs, and hospital stay for both groups were correctly observed.

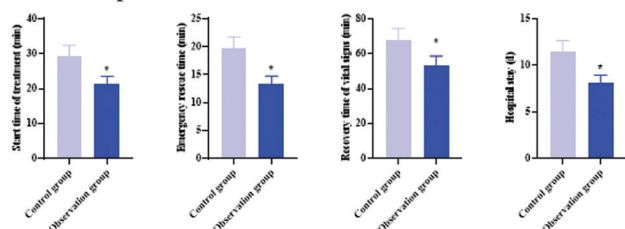
Evaluation of Curative Effect. Assessment of the curative effect includes the following categories: (a) Obvious Effect: Chest pain symptoms gradually disappeared within 30-60 minutes of rescue; (b) Effective: improvement in chest pain symptoms within 30-60 minutes of rescue; (c) Ineffective: Lack of improvement or worsening of chest pain symptoms within 30-60 minutes of rescue. The treatment's effectiveness rate was calculated as follows: The rate of treatment effectiveness = $(a + b) / 45 \times 100\%$

Visual Analogue Scale (VAS) Scores. Patients' VAS scores¹¹ in both groups were compared at 30 min, 60 min, 120 min, and 240 min post-rescue. The total score ranged from 0 to 10 points, with 0 indicating painless and 10 indicating severe pain. A higher score represented a greater degree of pain in patients.

Incidence of Adverse Events. The occurrences of adverse events (shock, stroke, arrhythmia, heart failure) in both groups were recorded.

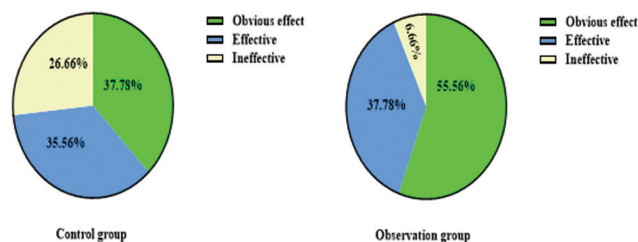
Patient Satisfaction. One day after the completion of rescue, a self-made nursing satisfaction questionnaire was utilized to assess the satisfaction of patients (or their family members) in both groups. The questionnaire covered the nursing process, service attitude, overall score, and other

Figure 1. Comparison of Treatment and Rescue Times in Both Groups



Note: The figure illustrates the start time of treatment, emergency rescue time, recovery time of vital signs, and hospital stay in both the Control and Observation Groups. The asterisk (*) denotes statistical significance at $P < .05$.

Figure 2. Comparison of Therapeutic Effect in Both Groups



Note: The graph illustrates the distribution of therapeutic effects in both the Control and Observation Groups. Results indicate a higher therapeutic effectiveness in the Observation Group compared to the Control Group.

aspects, with a maximum score of 100. The rating scale was as follows: (a) Not Satisfied (<60 points); (b) Basically Satisfied (60-89 points); (c) Very Satisfied (90-100 points). Nursing satisfaction was calculated as $(b + c)/45 \times 100\%$.

Statistical Analysis

Statistical analysis was performed using SPSS 19.0 software (IBM, Armonk, NY, USA). Measurement data were presented as mean \pm standard deviation and analyzed using the t test. Count data were expressed as $[n (\%)]$, and comparisons were made using the χ^2 test. A significance level of $P < .05$ was considered statistically significant.

RESULTS

Treatment and Rescue Times

The start time of treatment, emergency rescue time, recovery time of vital signs, and hospital stay were compared between the two groups. In the OG, these times were notably shorter: 21.83 ± 2.17 , 13.35 ± 1.41 , 53.26 ± 5.37 , and 8.12 ± 0.83 , respectively, compared to the CG with times of 29.24 ± 3.07 , 19.73 ± 2.02 , 67.58 ± 6.83 , and 11.48 ± 1.19 ($P < .05$), see Figure 1.

Therapeutic Effect in Both Groups

The treatment effectiveness rate in the OG significantly increased to 93.34%, surpassing the rate of 73.34% observed in the CG ($\chi^2 = 6.48$, $P < .05$), see Figure 2.

Visual Analogue Scale (VAS) Scores in Both Groups

The VAS scores for the OG at 30 min, 60 min, 120 min, and 240 min were markedly lower: 2.35 ± 0.24 , 2.16 ± 0.22 , 1.57 ± 0.16 , and 0.77 ± 0.07 , respectively, compared to those of the CG after the rescue, with scores of 4.78 ± 0.51 , 4.27 ± 0.43 , 3.74 ± 0.39 , and 2.26 ± 0.24 ($P < .05$), see Figure 3.

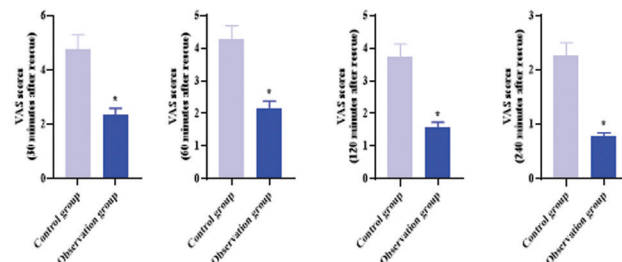
Incidence of Adverse Events in Both Groups

The incidence of adverse events in the OG notably decreased to 8.88%, demonstrating a significant decline compared to the occurrence of 33.34% in the CG ($P = .005$), see Table 1.

Patient Satisfaction in Both Groups

Patient satisfaction in the OG significantly increased to 95.55%, surpassing the satisfaction rate of 75.56% in the CG at discharge ($\chi^2 = 7.28$, $P < .05$), see Figure 4.

Figure 3. Comparison of VAS Scores in Both Groups



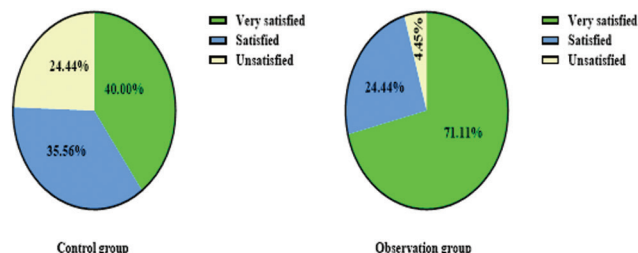
Note: The figure depicts the visual analogue scale (VAS) scores in both the Control and Observation Groups. The asterisk (*) denotes statistical significance at $P < .05$. VAS: visual analogue scale.

Table 1. Incidence of Adverse Events in Both Groups [$n (\%)$]

Group	n	Shock	Stroke	Arrhythmia	Heart Failure	Total Incidence Rate (%)
Control Group	45	3 (6.67%)	3 (6.67%)	4 (8.89%)	5 (11.11%)	15 (33.34%)
Observation Group	45	1 (2.22%)	1 (2.22%)	1 (2.22%)	1 (2.22%)	4 (8.88%)
χ^2		8.073				
P value		.005				

Note: The table presents the incidence of adverse events in both the Control and Observation Groups. The values in parentheses represent the percentage within each category. The χ^2 value is calculated for comparison, and statistical significance is indicated by $P < .05$.

Figure 4. Comparison of Patient Satisfaction in Both Groups



Note: The figure illustrates the levels of patient satisfaction in both the Control and Observation Groups.

DISCUSSION

The emergency department serves as the central unit of the hospital, primarily addressing patients with critical symptoms and high clinical treatment risks.¹² Chest pain, a sudden and terrifying symptom, is frequently encountered in the emergency department.¹³ Throughout the course of the disease, patients may experience pronounced symptoms such as constricting chest pain, dyspnea, and chest tightness.¹⁴

As the disease progresses and worsens, patients may also report pain in the shoulder, ears, and neck.¹⁵ A small number of patients may also exhibit confusion, sweating, and other critical conditions.¹⁶ Therefore, during the rescue process for patients experiencing chest pain, it is particularly crucial to implement positive and effective nursing measures.

Although traditional routine nursing has a certain impact, its efficacy in enhancing rescue outcomes is not sufficiently high, necessitating further refinement. The enhancement of the emergency nursing process involves assigning responsibility for the entire rescue procedure based on the patient's specific circumstances. This approach ensures that every medical staff member can effectively collaborate within the workflow, delivering more targeted and standardized clinical rescue treatment to patients.^{17,18}

Moreover, whether receiving or treating patients, medical staff should adhere strictly to relevant requirements, rescue patients, assess their symptoms, and initiate prompt rescue efforts to minimize the risk of rescue and maximize the quality of life for patients.¹⁹

In this study, the start time of treatment, emergency rescue time, recovery time of vital signs, and hospital stay were shorter in the OG compared to the CG. The effective rate in the OG was higher than that in the CG. The VAS scores of the OG were lower at 30 min, 60 min, 120 min, and 240 min after rescue compared to the CG. The occurrence of adverse events in the OG decreased relative to the CG. Patient satisfaction in the OG was higher compared to the CG at discharge. These outcomes suggest that the improved emergency nursing process program is more effective in the rescue of emergency chest pain patients, aligning with previous literature.²⁰

Li et al. have indicated that optimized emergency nursing to treat patients with mushroom poisoning can significantly reduce the treatment time in the rescue room,²¹ providing evidence to support our findings. In practice, the implications of these findings emphasize the critical need for hospitals and emergency departments to consider and implement enhanced emergency nursing protocols. Such interventions have the potential to improve the timeliness and quality of care for emergency chest pain patients, ultimately contributing to better patient outcomes and satisfaction.

Study Limitations

Several limitations are noteworthy in our study. Primarily, the sample size is relatively small, and being a single-center study introduces inherent biases. The limited scope of the study population may impact the generalizability of the findings to a broader demographic. To address this limitation and enhance the robustness of our conclusions, future research endeavors could focus on conducting multicenter studies with larger sample sizes. This approach would not only mitigate potential biases associated with a single-center study but also contribute to a more comprehensive understanding of the effectiveness and generalizability of the improved emergency nursing process program in diverse healthcare settings.

CONCLUSION

In conclusion, our study establishes that the implementation of the improved emergency nursing process significantly shortens clinical rescue times for emergency chest pain patients. This approach not only enhances rescue efficiency but also aligns with nursing improvement goals, promoting better prognosis and heightened patient satisfaction. The observed positive outcomes underscore the clinical significance of the enhanced nursing approach, emphasizing its potential to save crucial time, improve patient outcomes, and positively impact emergency care practices. Integrating these findings into routine clinical protocols holds promise for elevating the standard of care and enhancing patient experiences during critical situations.

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None

CONFLICT OF INTERESTS

The authors report no conflict of interest.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of this study are available from the corresponding author upon request, subject to reasonable conditions.

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