ORIGINAL RESEARCH

Analysis of the Influencing Factors of Delirium after PCI for Acute Myocardial Infarction and its Impact on the Quality of Life of Patients

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ABSTRACT

Objective • Delirium is a common and serious issue in patients recovering from percutaneous coronary intervention (PCI). It can lead to longer hospital stays, increased mortality, and decreased quality of life. This study aims to investigate different nursing interventions to improve care for post-PCI patients by reducing the incidence and duration of delirium.

Methods • Between December 2021 and April 2023, we enrolled patients who underwent PCI surgery for acute myocardial infarction at our hospital as study participants. Utilizing a clinical randomized controlled trial design, we allocated these patients randomly into either the intervention group or the control group. The control group received conventional nursing care, while the intervention group received routine nursing care augmented by family visit nursing care, encompassing emotional support, education, and enhanced communication with family members. Upon the completion of all intervention measures, we assessed the incidence of delirium in post-PCI patients using the Richmond Agitation Sedation Scale (RASS) and the ICU Ambiguity Assessment Method for the Intensive Care Unit (CAM-ICU). Furthermore, we evaluated the patients' quality of life using the US Medical Bureau's Quality of Life Health Survey (SF-36).

Result • Significant differences were observed in Richmond Agitation Sedation Scale (RASS) scores at 24 and 48 hours post-PCI, favoring the intervention group ($P < .05$). The intervention group also exhibited a lower incidence of delirium at 24 hours ($P < .05$) and a significantly shorter delirium duration ($P < .05$). While baseline quality of life scores did not differ significantly between the groups, post-intervention, the intervention group demonstrated significantly higher quality of life scores. These results underscore the positive impact of combined nursing interventions on sedation levels, delirium incidence and duration, and overall quality of life for post-PCI patients.

Conclusion • The combined approach of routine nursing care and home visit interventions significantly reduced delirium incidence and duration in post-PCI patients. This personalized care strategy emphasizes patient well-being and is indicative of a broader shift towards individualized healthcare. It highlights the potential for enhanced patient outcomes and improved quality of life in the context of post-PCI patient management. (*Altern Ther Health Med.* 2023;29(8):910-917).

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INTRODUCTION

Percutaneous coronary intervention (PCI), a pivotal milestone in the diagnosis and treatment of coronary artery diseases, has evolved significantly over its more than 50-year history. Early PCI primarily revolved around diagnostic angiography but has transformed through stages encompassing balloon angioplasty and bare-metal stents to counter restenosis. The advent of drug-eluting stents (DES) marked a paradigm shift, reducing repeat procedures and adverse events. This progress has coincided with an exponential rise in global case volumes, establishing PCI as a cornerstone of cardiology practice. Its expanding indications now encompass acute myocardial infarction and elective interventions, while ongoing research delves into procedural optimization and patient care. This evolutionary trajectory mirrors the synergy of innovation and patient welfare, with ongoing advancements promising improved cardiovascular outcomes.[1,2]

However, despite remarkable technological progress in PCI, postoperative complications remain a concern. Notably, postoperative delirium, a state of acute cognitive dysfunction

and altered consciousness, poses significant challenges. Often overlooked, delirium frequently occurs in patients with acute myocardial infarction during PCI procedures.[3] This mental aberration, attributed to various stressors and characterized by attention deficits, emotional fluctuations, impaired thinking, and sleep disturbances, can lead to poor patient cooperation, misdiagnosis, extended hospitalization, heightened risk of complications, and increased resource utilization.[4] It also exerts a substantial impact on long-term prognosis.[5]

Recognizing the need for effective intervention, the Family Caregivers (FC) program emerges as a novel approach. This initiative seeks to establish patient-related memories while appointing bedside nurses as family mentors, delivering delirium-specific guidance and interventions. The strength of this approach lies in direct family involvement, fostering patient engagement. Nonetheless, its drawbacks surface when applied to critically ill patients, potentially hindering clinical operations and impacting healthcare delivery.[6]

In this context, extensive research by domestic and international scholars has aimed to reduce delirium incidence in PCI patients. From refining delirium assessment scales to implementing various intervention strategies, these efforts strive to detect and address delirium early, optimizing patient care.[7] However, in the realm of non-pharmaceutical interventions, evidence remains limited, particularly concerning the comparison between cognitive function training and home visiting care. This study endeavors to bridge this gap by exploring nursing intervention measures tailored to reduce post-PCI delirium rates, incorporating cognitive function training and home visits into routine nursing care.

In conclusion, postoperative delirium in PCI patients holds significant clinical implications, impacting outcomes, hospitalization duration, complications, and overall prognosis. The evolution of PCI and its associated complications have heightened the importance of addressing delirium, especially in patients with acute myocardial infarction. The introduction of the Family Caregivers program and the identified research gap underscore the significance of investigating non-pharmaceutical interventions. This study aims to contribute valuable insights to the field of post-PCI patient care by examining the impact of cognitive function training and home visiting care.

MATERIALS AND METHODS

General information

Prospective and continuous inclusion of acute myocardial infarction patients undergoing PCI surgery admitted to our hospital from December 2021 to April 2023 as the study subjects. Inclusion criteria: (1) Age ≥ 18 years old; (2) Expected stay in ICU for 3 days or more; (3) Patients who are awake after general anesthesia or local anesthesia surgery; (4) Accessibility to listening and verbal communication; (5) Patients and their families have informed consent and voluntarily participate in the investigation and research; Exclusion criteria: (1) clear the history of Mental disorder in the past; (2) Combined with severe liver and kidney dysfunction; (3) Previous history of craniocerebral injury; (4) Language, visual, and auditory impairments leading to inability to cooperate with normal examinations; (5) Lack of basic cultural background; (6) Can only use dialects and cannot communicate fluently in Mandarin; (7) The postoperative condition worsened. The inclusion and exclusion criteria are established to ensure that the study participants represent a specific population and to minimize confounding factors that could influence the research results. This study has been approved by the Ethics Committee of the Second Affiliated Hospital of Jiaotong University.

Method

Routine care mode. Provide patients with a quiet and suitable temperature and humidity environment in the ward; Inform the family members to provide corresponding Household goods according to the patient's condition to ensure the cleanness and dryness of the patient's bed unit; 24-hour continuous electrocardiogram monitoring, blood pressure monitoring, heart rate monitoring, and blood oxygen saturation monitoring, closely monitoring changes in the patient's vital signs, and promptly notifying doctors for joint treatment in case of any changes in the condition; Properly fix each pipeline to avoid entanglement and compression; Observe the drainage situation of each pipeline and inform the doctor of any abnormalities found; Maintain smooth breathing for patients, replace and add oxygen absorbing humidification water in a timely manner; Follow the doctor's instructions to take medication on time and observe after medication, and complete all procedures and treatments on time; Every morning, after the doctor completes the room check, the bed doctor will concentrate on explaining the condition to the family members; The fixed daily visit time is from 16:00 to 16:30 in the afternoon. Family members complete hand hygiene disinfection and enter the ward in isolation clothes. In case of special circumstances in the ward, the visit time will be postponed or shortened. Under the special circumstances of COVID-19, in order to meet the epidemic prevention and control requirements and hospital infection requirements, all visitors need to hold a negative nucleic acid certificate within 24 hours and have no exposure history of medium and high risks in the past week.

(1) Patients are provided with a quiet and suitable temperature and humidity environment in the ward; (2)Family members are informed to supply appropriate household goods based on the patient's condition to ensure the cleanliness and dryness of the patient's bed unit; (3)Continuous 24-hour monitoring includes electrocardiogram, blood pressure, heart rate, and blood oxygen saturation monitoring, with a vigilant watch on vital sign changes and prompt notification of doctors in case of any condition alterations; (4) Proper fixation of all pipelines is maintained to prevent entanglement and compression; (5) Regular observation of pipeline drainage is conducted, and any detected abnormalities are reported to the medical team; (6) Ensuring patients' smooth breathing, oxygen-

absorbing humidification water is replenished as needed;7) Medication is administered as prescribed by physicians, followed by post-medication observation, and all procedures and treatments are diligently completed;8)Each morning, the bed doctor communicates the patient's condition to family members;9)Standard visiting hours are set from 16:00 to 16:30 in the afternoon, with family members required to practice hand hygiene disinfection and wear isolation clothing;10)Visit times are adjusted under special circumstances in the ward, especially during the COVID-19 pandemic, where visitors must hold a negative nucleic acid certificate within 24 hours and have no exposure history of medium and high risks in the past week.

Intervention mode for family visits and accompanying care. (1) In the intervention mode for family visits and accompanying care, specific family members receive pre-admission knowledge explanations and related precautions; (2) They are educated on how to provide psychological care to patients, boosting their confidence while also being advised against making loud noises and touching equipment around the patient's bed unit; (3) Careful planning encompasses visiting times and requirements for visiting caregivers, who are selected for their effective communication skills, including both family members and designated personnel; (4) Accompanying personnel are required to prepare in the buffer room 10 minutes before daily visits, adhering to strict protocols of hand hygiene disinfection and the donning of standard isolation clothing to prevent cross-infection; (5) For COVID-19 safety, all visitors must furnish a negative nucleic acid certificate within 24 hours and demonstrate no exposure history of medium and high risks in the past week; (6) Differentiated visiting times are established in the home visiting and accompanying mode, with bedside visits from 11:30 to 12:30, coinciding with lunchtime and completion of medical procedures; (7) Evening video visitation is scheduled from 20:30 to 21:00, facilitating patient comfort during the shift handover; (8) Continuous family visits alleviate patient psychological burdens and foster familiarity with medical staff, contributing positively to nighttime sleep quality; (9) After each visit, feedback is collected to ensure ongoing improvement in the quality of care provided.

Observation indicators

(1) Patient general situation questionnaire, including patient's age, gender, surgical method, surgical site, whether they have been admitted to the ICU, whether they have underlying diseases, whether they have used psychotropic drugs, etc. Understanding patient characteristics and medical history helps in assessing the baseline health status and potential confounding factors that may influence the development and management of delirium. It allows for the identification of any patterns or associations between these factors and delirium, contributing to a comprehensive patient profile.; (2) Evaluate the current status of delirium among patients in each group using the RASS scale. Scores range from -5 (coma) to +4 (agitation), with 0 indicating wakefulness and quiet. Lower scores indicate more coma and higher scores indicate more agitation. This scale helps quantify the severity of delirium symptoms in patients. Monitoring changes in RASS scores over time provides insights into the effectiveness of interventions in managing delirium. It helps healthcare providers tailor treatment plans to individual patients' needs.; (3) The duration between the first diagnosis of positive delirium and the last diagnosis of positive delirium after the patient enters the ICU, accurate to hours (h), converted into days (d). Tracking the duration of delirium is essential for assessing the course of the condition and evaluating the effectiveness of interventions. Longer durations may be associated with worse outcomes, making it an important parameter for assessing the impact of treatments.; (4) Quality of life was evaluated using the US Medical Bureau Quality of Life and Health Survey (SF-36) before and after intervention in two groups of patients, mainly including physiological function, physiological function, mental health, and social function. Each aspect had a full score of 100 points, and the score was positively correlated with the patient's quality of life. Assessing the quality of life using SF-36 before and after intervention allows for evaluating the overall well-being and functional status of patients. Changes in scores provide insights into the impact of delirium and its management on patients' lives. It helps in understanding the broader implications of delirium and the effectiveness of interventions beyond symptom management.

Statistical Analysis

Use Statistic Package for Social Science (SPSS) 19.0 software (IBM, Armonk, NY, USA) to process and analyze the data. Descriptive statistical analysis will be employed to summarize the data. For continuous variables, including age and duration of delirium, descriptive statistics such as the mean ($\bar{x}$), standard deviation (s), median, minimum, and maximum values will be calculated. For instance, the mean age of patients in each group will be reported as "Mean age ± Standard Deviation." To assess differences between groups, independent sample t tests will be used for continuous variables, considering data distribution and homogeneity of variance. Non-parametric tests like the Mann-Whitney U test will be utilized if normal distribution assumptions are violated. Categorical variables, such as gender, surgical site, and ICU admission status, will be summarized using frequency and percentage calculations. To test differences between groups for categorical variables, either the chi-square test or Fisher's exact test will be employed. Statistical significance will be determined at a significance level of $P < .05$, indicating a statistically significant difference or association. For example, a $P < .05$ in an independent sample t-test will signify a significant difference in the variables being compared. These analytical methods will provide a robust framework for evaluating the study objectives and drawing meaningful conclusions from the data.

RESULTS

Comparison of baseline data between two groups of patients

In Table 1, we present a comparison of the general data between the control group (n = 73) and the intervention group (n = 75) in our study. The results reveal a comprehensive overview of the patient demographics and characteristics. Age distribution showed that the mean age in the control group was 43.95 years, with a standard deviation of 11.59, while in the intervention group, it averaged 46.12 years, with a standard deviation of 10.99. Importantly, there was no statistically significant difference in age between the two groups (F = 1.60, *P* = .21).Gender distribution indicated that in the control group, 56.16% of patients were male and 43.84% were female, whereas in the intervention group, 52.00% were male, and 48.02% were female. Notably, there was no significant difference in gender distribution between the groups (χ^2 = 0.27, *P* = .87). Regarding the surgical method, 58.90% of patients in the control group underwent general anesthesia, compared to 50.67% in the intervention group. However, this difference did not reach statistical significance (χ^2 = 4.46, *P* = .11).Surgical site distribution exhibited variations, with the only significant difference found in "Chest and abdomen" surgeries, which were more prevalent in the intervention group (28.01%) compared to the control group (16.44%) (χ^2 = 13.78, *P* = .09). ICU admission revealed that the majority of patients in both groups had not been admitted to an ICU. In the control group, 90.41% denied ICU admission, while in the intervention group, 94.67% had not been admitted. No significant difference was observed (χ^2 = 3.25, *P* = .20). The presence of underlying diseases, including respiratory, circulation, digestive, urology, blood system diseases, and multi-system diseases, showed variations between the two groups. However, none of these differences reached statistical significance (χ^2 = 16.85, *P* = .08). In terms of the use of psychotropic drugs, 56.16% of the control group and 62.67% of the intervention group denied their use, with no statistically significant difference observed (χ^2 = 2.27, *P* = .32).These findings collectively illustrate the comparability of the control and intervention groups with regard to general patient characteristics. There were no statistically significant differences in age, gender, surgical method, ICU admission, underlying diseases, or the use of psychotropic drugs between the two groups. Nonetheless, the observed variations in surgical site distribution may warrant further investigation to assess their potential impact on the study outcomes.

Table 1. Comparison of general data between the two groups

	Variable	Control group (n = 73)	Intervention group (n = 75)	F	*P* value
Age		43.95±11.59	46.12±10.99	1.60	.21
Gender, n(%)	Male	41(56.16)	39(52.00)	0.27	.87
	Female	32(43.84)	36(48.02)		
Surgical method, n (%)	General anesthesia	43(58.90)	38(50.67)	4.46	.11
	Inhibition anesthesia	30(41.10)	37(49.33)		
Surgical site, and n (%)	Pate	20(27.40)	16(21.33)		
	BUE	8(10.96)	14(18.67)		
	BLE	19(26.03)	12(16.03)	13.78	.09
	Chest and abdomen	12(16.44)	21(28.01)		
	Other	14(19.18)	12(16.04)		
Have been in an ICU, n (%)	Deny	66(90.41)	71(94.67)	3.25	.20
	Yes	7(9.59)	4(5.33)		
With the underlying disease, n (%)	Disease of respiratory system, respiratory disease	13(17.81)	11(14.67)		
	Circulation system disease	14(19.18)	9(12.05)		
	Digestive system disease	12(16.44)	11(14.67)	16.85	.08
	Urology disease	11(15.07)	13(17.33)		
	Blood system diseases	16(21.92)	11(14.67)		
	Multi-system disease	7(9.59)	19(25.33)		
With psychotropic drugs, n (%)	Deny	41(56.16)	47(62.67)	2.27	.32
	Yes	32(43.84)	28(37.33)		

Table 2. Comparison of RASS scores at 24 after PCI in the two groups

RASS grade 24 Hours	Control group (n = 73), n (%)	Intervention Group 1 (n=75), n (%)	F	*P* value
0	61(83.60)	71(94.70)	7.79	.02
1	1(1.40)	0(0.0)		
2	2(2.70)	1(1.30)		
3	5(6.80)	2(2.70)		
4	4(5.50)	1(1.30)		

Table 3. Comparison of RASS scores at 48 after PCI in the two groups

RASS grade 48 Hours	Control group (n = 73), n(%)	Intervention Group 1 (n = 75), n(%)	F	*P* value
0	64(87.70)	74(98.70)	9.07	.01
1	0(0.0)	0(0.0)		
2	3(4.10)	0(0.0)		
3	3(4.10)	2(1.30)		
4	3(4.10)	0(0.0)		

Comparison of RASS scores 24 hours after PCI between two groups of patients

Table 2 presents a comparison of Richmond Agitation-Sedation Scale (RASS) scores at 24 hours after percutaneous coronary intervention (PCI) between the control group (n = 73) and intervention group 1 (n = 75).RASS Grade 0: At 24 hours post-PCI, the majority of patients in both groups achieved a RASS score of 0, indicating a state of wakefulness and quiet. However, a significantly higher proportion of patients in intervention group 1 (94.70%) achieved this score compared to the control group (83.60%) (χ^2 = 7.79, *P* = .02). RASS Grades 1 to 4: There were minimal occurrences of RASS scores from 1 to 4 in both groups, with very low percentages. Notably, no patients in intervention group 1 had a RASS score of 1 at 24 hours post-PCI.These results demonstrate that at 24 hours after PCI, a notably larger proportion of patients in intervention group 1 achieved a RASS score of 0, indicating a state of wakefulness and calmness, compared to the control group. This suggests that the intervention may have had a positive impact on patient sedation levels during the post-PCI period.

Comparison of RASS scores 48 hours after PCI between two groups of patients.

Table 3 presents a comparative analysis of Richmond Agitation-Sedation Scale (RASS) scores at 48 hours following percutaneous coronary intervention (PCI) between the control group (n = 73) and intervention group 1 (n = 75).RASS Grade 0: At the 48-hour post-PCI assessment, a substantial difference was observed in the distribution of RASS scores of 0 between the two groups. In intervention group 1, an overwhelming majority

of patients (98.70%) achieved a RASS score of 0, denoting wakefulness and tranquility, while in the control group, 87.70% of patients reached this score. This difference was statistically significant (F = 9.07, *P* = .01).RASS Grades 1 to 4: Notably, no patients in either group were assigned RASS scores of 1 or 4 at the 48-hour post-PCI evaluation. There were minimal occurrences of RASS scores of 2 and 3, with a slightly higher incidence in the control group.These findings indicate that at the 48-hour mark after PCI, a significantly higher proportion of patients in intervention group 1 achieved a RASS score of 0, signifying a state of wakefulness and calmness, compared to the control group. This suggests that the intervention may have had a positive and sustained impact on patient sedation levels during the post-PCI recovery period.

Table 4. Comparison of RASS scores at ICU entry in the two groups

RASS score at ICU exit	Control group (n = 73), n(%)	Intervention Group 1 (n = 75), n(%)	F	*P* value
0	68(93.20)	75(100.00)	7.64	.02
1	3(4.10)	0(0.0)		
2	2(2.70)	0(0.0)		
3	0(0.0)	0(0.0)		
4	0(0.0))	0(0.0)		

Table 5. Comparison of the occurrence of banter in the two groups

Phase	Control group (n = 73), n(%)	Intervention Group 1 (n = 75), n(%)	F	*P* value
Entering the ICU	6(8.22)	7(9.33)	0.49	.78
At least 24 hours after ICU entry	12(16.44)	4(5.33)[a]	7.80	.02
At least 48 hours after ICU entry	9(12.33)	1(1.33)[a]	-	.02
Out of 1CU	5(6.85)	0(0)[a]	-	.01

[a]indicates *P* < .05 compared to the control group.

Table 6. Comparison of the three groups ($\bar{x} \pm s$)

Variable	Control group (n = 73)	Intervention group (n = 75)	F	*P* value
False duration (d)	3.24±0.13	1.49±0.06	8334.35	<.01

Comparison of RASS scores between two groups of patients when leaving the ICU

Table 4 illustrates the comparison of Richmond Agitation-Sedation Scale (RASS) scores at the point of entry into the Intensive Care Unit (ICU) between the control group (n = 73) and intervention group 1 (n = 75). RASS Grade 0: At the time of ICU admission, a noteworthy difference in the distribution of RASS scores of 0 was observed between the two groups. In intervention group 1, a significant majority of patients (100.00%) achieved a RASS score of 0, signifying wakefulness and tranquility. In contrast, in the control group, 93.20% of patients reached this score. This difference reached statistical significance (F = 7.64, *P* = .02).RASS Grades 1 to 4: Notably, no patients in intervention group 1 had RASS scores of 1, 2, 3, or 4 upon entry into the ICU. In the control group, a few patients had RASS scores of 1 (4.10%) and 2 (2.70%) at this time.These findings indicate that at the moment of ICU admission, a significantly higher proportion of patients in intervention group 1 achieved a RASS score of 0, signifying wakefulness and calmness, compared to the control group. This suggests that the intervention may have led to a more alert and tranquil state for patients upon entering the ICU.

Comparison of delirium occurrence in patients at different time points after intervention

Table 5 outlines the comparison of delirium occurrence between the control group (n = 73) and intervention group 1 (n = 75) at various phases of patient care.Entering the ICU: At the point of entering the Intensive Care Unit (ICU), the occurrence of delirium, characterized by "banter," was relatively low in both groups, with 8.22% in the control group and 9.33% in intervention group 1. The difference between the groups was not statistically significant (F = 0.49, *P* = .78).At least 24 hours after ICU entry: Subsequently, at least 24 hours after ICU admission, there was a notable difference in delirium occurrence between the groups. In the control group, 16.44% of patients experienced delirium, while only 5.33% in intervention group 1 did so. This difference reached statistical significance (F = 7.80, *P* = .02).At least 48 hours after ICU entry: Further into the ICU stay, at least 48 hours after admission, the difference in delirium occurrence became more pronounced. In the control group, 12.33% of patients exhibited delirium, whereas only 1.33% in intervention group 1 experienced it. This difference was statistically significant (*P* = .02). Out of ICU: Upon exiting the ICU, the occurrence of delirium significantly differed between the two groups. In the control group, 6.85% of patients had delirium, while none in intervention group 1 exhibited this condition. This difference was statistically significant (*P* = .01). It's important to note that "a" indicates statistically significant differences (*P* < .05) compared to the control group. These findings suggest that the intervention may have contributed to a reduced occurrence of delirium, particularly beyond the initial phase of ICU admission and upon exiting the ICU.

Comparison of delirium duration in patients before and after intervention

Table 6 provides a comparison of the control group (n = 73) and the intervention group (n = 75) concerning the variable "False duration (d)." False Duration (d): The results indicate a substantial difference in the duration of false events between the control and intervention groups. In the control group, the mean false duration was 3.24 days, with a standard deviation of 0.13 days. In contrast, the intervention group exhibited a significantly lower mean false duration of 1.49 days, with a standard deviation of 0.06 days. This difference was highly statistically significant (F = 8334.35, *P* < .01).

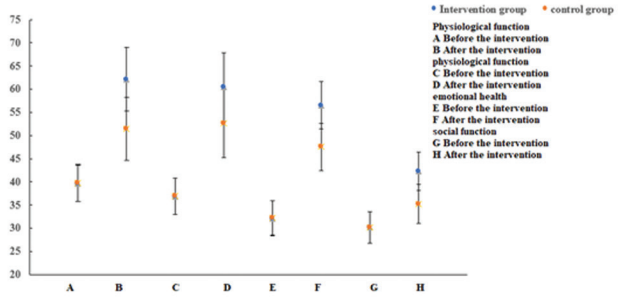
Comparison of quality of life scores between two groups of patients before and after intervention

Table 7 presents a comparative analysis of quality of life scores before and after the intervention in both the intervention group and the control group.Physiological Function: Before the intervention, the mean score for physiological function in the intervention group was 39.68

Table 7. Comparison of quality of life scores between two groups before and after intervention ($\bar{x} \pm s$, points)

Group	Physiological function		Physiological function		Emotional health		Social function	
	Before the intervention	After the intervention	Before the intervention	After the intervention	Before the intervention	After the intervention	Before the intervention	After the intervention
Intervention group	39.68±3.98	62.14±6.81	36.85±3.94	60.43±7.35	32.14±3.75	56.52±5.09	30.15±3.39	42.28±4.15
control group	39.73±4.06	51.41±5.06	36.92±4.05	52.61±6.53	32.21±3.84	47.54±4.69	30.11±3.44	35.24±3.57
t	0.05562	7.99879	0.07835	5.03043	0.08248	8.20577	0.05238	8.13351
P value	.9558	.0000	.9377	.0000	.9345	.0000	.9584	.0000

Figure 1. Comparison of quality of life scores between two groups before and after intervention



points, while it significantly improved to 62.14 points after the intervention. In contrast, the control group started with a similar mean score of 39.73 points but showed a lower improvement to 51.41 points post-intervention. This difference in improvement was highly statistically significant (t = 7.99879, P < .0001).Emotional Health: Similarly, the intervention group displayed a remarkable improvement in emotional health scores, from 36.85 points before the intervention to 60.43 points after. The control group, with an initial mean score of 36.92 points, showed a comparatively smaller increase to 52.61 points post-intervention. This difference in improvement was highly statistically significant (t = 5.03043, P < .0001). Social Function: Before the intervention, the intervention group had a mean social function score of 32.14 points, which significantly increased to 56.52 points after the intervention. Conversely, the control group began with a similar mean score of 32.21 points but showed a lesser improvement to 47.54 points post-intervention. This difference in improvement was highly statistically significant (t = 8.20577, P < .0001).Overall Quality of Life: The overall quality of life, as indicated by the mean score, showed significant improvement in the intervention group, from 30.15 points before the intervention to 42.28 points after. In contrast, the control group started with a mean score of 30.11 points and showed a lower increase to 35.24 points post-intervention. This difference in improvement was highly statistically significant (t = 8.13351, P < .0001).These findings clearly demonstrate that the intervention had a significant and positive impact on improving the quality of life in the intervention group when compared to the control group, with highly statistically significant differences observed in all aspects of quality of life.

DISCUSSION

Delirium is an acute and reversible cognitive impairment characterized by fluctuations in mental state. The incidence of delirium is higher in critically ill patients admitted to the ICU after surgery, which seriously affects the prognosis of the disease. Postoperative delirium after PCI brings multiple burdens to patients and their families, so early detection and intervention of postoperative delirium after PCI is of great significance for the rehabilitation of patients.[8] Postoperative complications of PCI have an important impact on the rehabilitation and clinical management of patients with myocardial infarction. Although PCI provides an opportunity for patients to improve outcomes, complications may interfere with the rehabilitation process, increase healthcare resource use and costs, and reduce quality of life. These complications not only have an impact on the physiological level but also lead to psychological distress and reduced social functioning. In addition, medical teams need to address the clinical challenges posed by complications, including closer monitoring and more complex treatment strategies.

Exploring Clinical Effects of Home Visit Accompanying Nursing Intervention

This study investigates the clinical effects of the home visit accompanying nursing intervention model in patients after PCI surgery. The active involvement of family members plays a pivotal role in home care planning. They are responsible for ensuring patients attend interventions punctually, offering emotional support, collaborating with the medical team to devise rehabilitation plans, assisting with cognitive function training, and participating in home visits alongside healthcare professionals. Their engagement significantly influences patient recovery and disease management.

Identifying the Peak Period of Abnormal RASS Scores

The study reveals that the peak period for abnormal Richmond Agitation-Sedation Scale (RASS) scores occurs 24 hours after ICU admission. This finding aligns with the anxiety experienced by many patients upon entering the ICU. Factors contributing to this result may include the operative mode, duration, narcotics employed during the procedure, and their dosages.[9] Measures such as extending visitation time, implementing cognitive function exercises, and providing mental health care have shown positive effects in preventing and treating delirium in PCI patients.[10] Most clinical studies on postoperative delirium after PCI assess the overall incidence of delirium throughout the ICU stay. Few examine the incidence at different time points, making it challenging to evaluate the peak occurrence of delirium after PCI. This study underscores the effectiveness of the home visit accompanying model in reducing postoperative delirium following PCI. Rigorous training and simulation assessments

on delirium knowledge empower medical staff to better screen, identify, and manage delirium in PCI patients, facilitating early detection, intervention, and prevention. ICU nurses play a pivotal role in this study, with training enhancing their confidence in delirium management and promoting effective prevention and treatment strategies.

Addressing Limitations and Controversies in ICU Care

The home visit accompanying mode is a nursing mode of routine daily care for patients during hospitalization, but there are certain limitations in ICU care.[11] With the extension of visiting time and the frequency of family members entering and leaving, it is a factor that increases the risk of hospital infection for patients, but the existing evidence increasingly does not support this viewpoint. Research has shown that prolonged visitation time does not increase the risk of infection; on the contrary, the incidence of acquired infections in the ICU decreases. In this study, only one patient was unable to continue the study due to worsening infection, and no other study subjects were experiencing worsening infection. Therefore, the above viewpoint is supported. Research has shown that family members participate in nursing work in a timely manner after receiving guidance and training from medical staff. At present, the protective measures for delirium are all completed by nurses.[12] For busy nurses, this takes up much of their work time, and the effect is insignificant. As long-term caregivers for patients, family members can detect subtle changes in patients' cognition and behavior compared to medical staff. Therefore, family members are clinically available resources for delirium care for patients.[13] Research has shown that family participation and authorization play a positive role in preventing delirium. Moreover, family involvement in the prevention and treatment of delirium is a potential and cost-effective method that can reduce unnecessary complications and medical expenses.

Shortened Duration of Delirium and Improved Psychological Well-being

This study measures the duration of delirium from the patient's initial diagnosis of positive delirium upon ICU admission to the last diagnosis, with results indicating a relatively short duration. Possible reasons for this include extensive training of medical staff on delirium-related knowledge, improved early detection and intervention, and the psychological support provided by family members during meals, enhancing patients' sense of belonging and reducing anxiety.[14-16]

Enhancing Psychological Well-being and Quality of Life

Research shows that ICU patients are accompanied by a certain degree of mental health problems, with anxiety and depression being the most common emotions. Closed environments and special treatments can increase negative emotions in patients. Research has shown that ineffective communication between family members and healthcare providers is one of the main reasons for low satisfaction.[17] Research shows that family-centered nursing and multiple family intervention methods can improve the Psychological stress of family members of patients after PCI and improve the quality of life of patients after PCI. The results of this study showed that the intervention group had higher satisfaction with patients and their families compared to the control group ($P < .05$); The possible reasons are that the family visiting nursing mode can increase the communication time between nurses and patients, help patients express their inner needs, alleviate Psychological stress, reduce patients' anxiety, improve patients' prognosis, and shorten hospital stay; The direct participation of family members in family visitation and accompanying can effectively increase the patient's sense of family belonging and security, alleviate adverse psychological symptoms caused by unfamiliar environments and faces, and bring in the distance between nurses and patients, thereby improving the patient's quality of life.[18] In this study, it was found through investigation that in a closed ICU, patients are more eager for their family members to have more time to care for themselves, and family members also have a strong desire to participate in patient care, which can improve patients' sense of security and affection; And able to establish collaborative relationships with medical staff in a timely manner, eliminating unnecessary misunderstandings during hospitalization.

Clinical Significance and Practical Implications

Our study holds significant clinical implications. Firstly, identifying the 24-hour peak period for postoperative delirium after PCI enables clinicians to focus their monitoring and intervention efforts during this critical window. Early detection and management of delirium can lead to improved patient outcomes. Secondly, the home visit accompanying nursing model involving family members has demonstrated its effectiveness in reducing postoperative delirium. Healthcare institutions can consider implementing similar programs to actively engage families in patient care, enhance emotional support, and improve patient recovery. Furthermore, challenging the belief that extended ICU visitation time increases infection risk offers opportunities for policy changes. Hospitals can revisit their visitation policies to provide patients with more time and emotional support from their families without compromising infection control measures.Incorporating family members into delirium care can lead to cost-effective interventions and better patient satisfaction. It empowers family caregivers to actively participate in patient recovery and contribute to reducing complications and medical expenses.While acknowledging the limitations of our study, such as the sample size and single-center design, these findings provide valuable insights that can enhance clinical practices and patient care in post-PCI settings. Overall, our research highlights the importance of early intervention, family involvement, and reconsidering ICU visitation policies in improving patient outcomes and quality of care.

Study Limitations and Considerations

However, there are some limitations to this study. First, the sample size is relatively small, which may affect the broad applicability of the results. Second, this study used a single-center design, which may be subject to regional and institutional bias, limiting the ability to extrapolate the findings. In addition, although we rigorously guided home care planning, implementation by family members may vary depending on individual factors, potentially affecting the consistency of the findings. Finally, although we made efforts to control the standardization of the intervention, there may have been some variation in the actual implementation due to the different circumstances of each patient. These limitations need to be considered when interpreting the findings and formulating clinical applications.

CONCLUSION

This study identifies a critical 24-hour peak period for postoperative delirium after PCI, emphasizing the need for early intervention. The home visit accompanying nursing model involving family members is crucial for patient recovery. Contrary to common beliefs, extended ICU visitation time does not increase infection risk, challenging existing practices.Active family participation in delirium care proves cost-effective, reducing complications and expenses. Shortened delirium duration highlights the significance of staff training and family involvement. Addressing ICU patients' mental health with family-centered nursing improves patient and family satisfaction.Despite limitations like a small sample and single-center design, these findings offer valuable insights for patient care. By balancing limitations with intervention benefits, this research underscores its practical significance.

CONFLICT OF INTEREST

The authors have no potential conflicts of interest to report relevant to this article.

AUTHOR CONTRIBUTIONS

CC and RW designed the study and performed the experiments, DG and XW collected the data, YW, YZ and SY analyzed the data, CC and RW prepared the manuscript. All authors read and approved the final manuscript.

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