Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
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Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial Infarction and Its Effects on Quality of Life and Satisfaction of Patients

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Objective. To explore the application of evidence-based nursing (EBN) intervention combined with PBL teaching mode in acute myocardial infarction (AMI) nursing and the effects on quality of life (QOL) and satisfaction of patients. Methods. Ninety AMI patients enrolled in our hospital (January 2019-January 2021) were chosen as the study subjects and equally randomized into group M and group N. Group N received conventional nursing, and group M received EBN combined with PBL teaching mode. The cardiac function indexes, self-care ability, disease awareness and nursing satisfaction were compared between the two groups. The self-care ability was scored by the Exercise of Self-Care Agency Scale (ESCA). The QOL of both groups before and after intervention was scored by the Generic Quality of Life Inventory-74 (GQOLI-74). The emotional state before and after intervention was evaluated by the Hospital Anxiety and Depression Scale (HAD). Results. After nursing, cardiac function indexes were markedly higher in group M than group N (P<0.001). Compared with group N, group M achieved notably higher ESCA scores (P<0.001), higher awareness of disease knowledge (P<0.001) and higher nursing satisfaction (P<0.05). After intervention, the GQOLI-74 score in group M was obviously higher while the HAD score was lower compared with group N (P<0.001). Conclusion. The implementation of EBN combined with PBL teaching model in AMI patients can effectively improve nursing satisfaction and QOL as well as alleviate the negative emotions, so as to create a harmonious nurse-patient relationship. Therefore, it is worth applying and promoting.

Acute myocardial infarction (AMI), as a common cardiovascular disease, occurs mostly in the middle-aged and elderly people, and shows a trend of younger age [1-2]. The cause of disease is atherosclerosis in patients, while atherosclerosis is related to smoking, hypertension, obesity, diabetes, genetic factors, etc. The clinical symptoms of AMI are chest pain, arrhythmia, shock and cardiac failure. Without treatment timely, several complications can be triggered, such as cardio splitting, postmyocardial infarction syndrome and embolism, which seriously endanger the patients' life and reduce their QOL [3-5]. Failure to take effective nursing measures timely can lead to the development of negative emotions such as depression and anxiety, which are detrimental to the treatment of the disease and prolong the recovery of physical function. According to the clinical findings, evidence-based nursing (EBN) combined with PBL teaching

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Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

mode has remarkable nursing effects and it is widely used in clinical nursing on the ground that it is patient-centered, meets patients' psychological demands, popularizes the relevant disease knowledge, establishes confidence in combating the disease, and alleviates their psychological stress [6-8]. To further study the application of EBN intervention combined with PBL teaching mode in AMI nursing and the effects on QOL and satisfaction, 90 AMI patients were chosen as the research objects, and the results of the present summary are presented below.

INFORMATION AND METHODS
General Information
Ninety AMI patients treated in our hospital (January 2019-January 2021) were enrolled as subjects, and equally randomized into group M and group N.
Inclusion Criteria
① All participants met the diagnostic criteria for AMI. ② Patients had no serious internal or surgical diseases. ③ This study got the approval of the Hospital Ethics Committee, and the patients and their families knew the study, and signed the informed consent.
Exclusion Criteria
① Patients with serious diseases of blood system. ②Patients with severe diseases of the immune system. ③Patients with malignancies.
Methods
Under conventional nursing, group N received life nursing, medicine nursing, diet nursing, psychological nursing, knowledge popularization and discharge guidance. Through regular rounds-making, nursing staff kept their eyes on patients' condition to summarize the problems in the nursing process.

Group M used EBN combined with PBL teaching mode, specifically as follows. ① Nursing staff understood and recorded the actual situation of patients in detail, scientifically assessed their psychological state, and formulated reasonable comprehensive psychological nursing programs. ② After the collection of patients' data and nursing literature, nursing staff proposed EBN problems. According to the feedback on the problem together with the previous evidence-based data from the Internet, nursing needs were clarified, so as to solve nursing problems. ③ When patients presented restlessness, anxiety and other negative emotions during the nursing process, nursing staff gave timely psychological guidance considering their cultural background and characteristics to eliminate their negative emotions. ④ Nursing staff actively communicated with patients and

met their requirements in time for building a friendly nurse-patient relationship. At the same time, encouragement and warmth were given to them for alleviating their stress and pain and making them keep pleasant mood. ⑤ Patients' dietary habits were intervened concerning their actual situation, which were expected to keep a nutritional and balanced diet, reduce the intake of spicy, raw and cold food, and supplement moderate protein and vitamins. ⑥ Patients were guided to take medicines, informed of precautions, and equipped with health knowledge to establish their confidence in overcoming their diseases. The specific measures of PBL teaching mode were as follows. ① Establishment of nursing groups, formulation of teaching plans, and clarification of the duties of tutors and the position of nursing staff. ② Tutors designed and compiled reasonable PBL cases according to learning objectives and multidisciplinary integrated curriculum, put forward questions, retrieved professional books, summarized data, and enriched the knowledge base of nursing staff. ③ Based on the above, nursing staff searched, classified, collated references and books, and wrote analysis reports. ④ One member of the group was selected regularly every day to deliver the learning results online. The reporting time was 30 min. ⑤ After the report, the group members answered and discussed the problems encountered in the study. Tutors were responsible for sorting out and summarizing reports, selecting cases for detailed explanation, and finally collecting feedback.

Observation Indicators
Ultrasonic echocardiography machine (Manufacturer: Shanghai Jumu Medical Instrument Co., Ltd., Brand: GE, Model: MAC2000) was used to measure the cardiac function indexes before and after intervention, including left ventricular ejection fraction (LVEF) and left ventricular end diastolic diameter (LVEDD).

The Exercise of Self-Care Agency Scale (ESCA) [9] was used to score the self-care ability such as self-concept, self-responsibility, self-care skills and the health knowledge level, with each scoring 4 points. Higher scores represented higher self-care ability.

The self-made Disease Knowledge Awareness was used to investigate patients before, during and after nursing. Higher scores represented higher awareness of disease knowledge.

The self-made Patient Satisfaction Questionnaire was used to investigate the satisfaction of patients after nursing. The total score of the scale was 100 points, and the higher the score was, the higher the satisfaction of patients was.

Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

The QOL of both groups before and after intervention was scored according to *GQOLI-74 evaluation scale* [10], including psychological function, physical function, social function and material life state. Higher scores represented better QOL.

HAD Emotional Assessment Scale [11] was used to evaluate the emotional state of patients before and after intervention. The total score of the scale was 42 points, and higher scores presented more serious the anxiety and depression.

Statistical Processing

In this study, the data were processed by SPSS20.0, and graphed by GraphPad Prism7 (GraphPad Software, San Diego, USA). Including enumeration data and measurement data, the study used x^2 test, t test and normality test. The differences were statistically significant at P<0.05.

RESULTS

Comparison of General Data

No notable differences in age, gender, BMI, course of disease, smoking, drinking and residence were observed between the two groups (P>0.05), which was comparable, see below.

Table 1
Comparison of general data

	Group M (n=45)	Group N (n=45)	x^2 or t	P
Age (years old)			0.086	0.932
	66.75±3.32	66.69±3.29		
Gender			0.178	0.673
Male	23(51.11)	21(46.67)		
Female	22(48.89)	24(53.33)		
BMI (kg/m^2)			1.119	0.266
	26.27±1.59	25.89±1.63		
Course of disease(h)			0.283	0.778
	9.12±0.21	9.13±0.11		
Smoking			0.045	0.832
Y	20(44.44)	21(46.67)		
N	25(55.56)	24(53.33)		
Drinking			0.178	0.673
Y	22(48.89)	24(53.33)		
N	23(51.11)	21(46.67)		
Residence			0.050	0.822
Urban	31(68.89)	30(66.67)		
Rural	14(31.11)	15(33.33)		

Comparison of Cardiac Function Indexes

The cardiac function indexes of group M after nursing were markedly higher compared with group N (P<0.05), see below.

Table 2
Comparison of cardiac function indexes [n (%)]

Group	n	LVEF (%)		LVEDD (mm)	
		Before nursing	After nursing	Before nursing	After nursing
Group M	45	36.33±2.38	67.88±2.82	33.98±2.56	56.32±2.41
Group N	45	36.52±2.29	51.36±2.53	33.82±2.61	41.36±2.28
t		0.386	29.251	0.294	30.249
P		0.701	<0.001	0.769	<0.001

Comparison of ESCA Scores

Group M showed notably higher ESCA scores compared with group N (P<0.05), as below.

Table 3
Comparison of ESCA scores ($\bar{x}$±s)

Group	n	Self-concept	Self-responsibility	Self-care skills	Health knowledge level
Group M	45	2.71±0.82	2.32±0.61	2.73±0.45	3.13±0.31
Group N	45	1.33±0.52	1.15±0.32	1.21±0.12	1.52±0.63
t		9.534	11.394	21.894	15.382
P		<0.001	<0.001	<0.001	<0.001

Comparison of Disease Knowledge Awareness

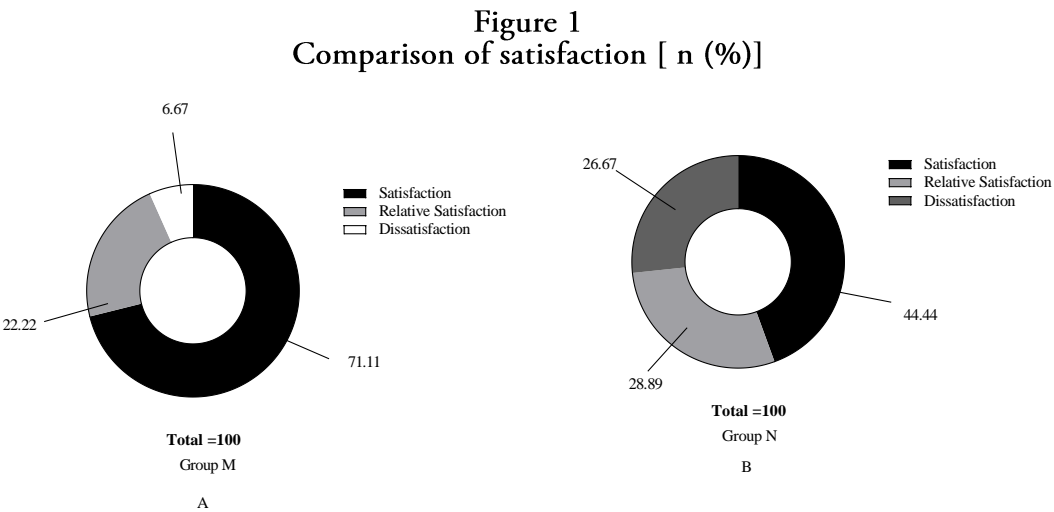The awareness of disease knowledge in group M was obviously higher compared with group N (P<0.05), see below.
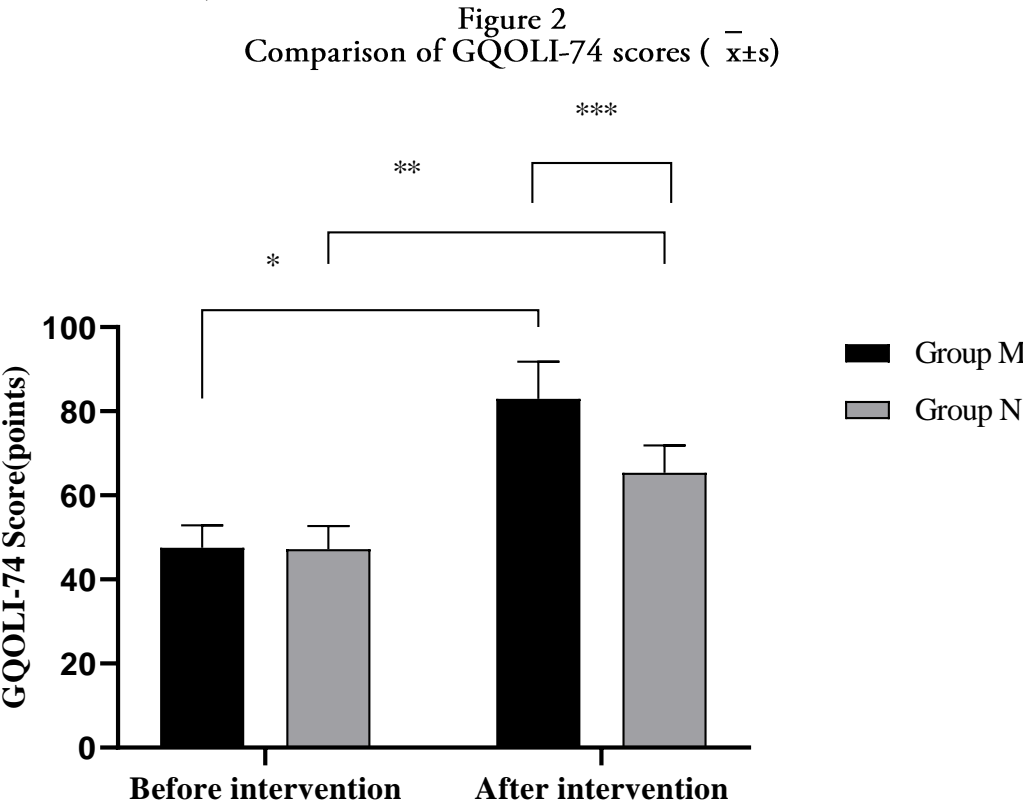
Table 4
Comparison of disease knowledge awareness ($\bar{x}$±s)

Group	n	Before nursing	During nursing	After nursing
Group M	45	4.35±0.31	4.43±0.35	4.63±0.29
Group N	45	2.28±0.11	2.42±0.29	3.12±0.45
t		42.215	29.665	18.921
P		<0.001	<0.001	<0.001

Comparison of Nursing Satisfaction

Group M achieved markedly higher total nursing satisfaction compared with group N (P<0.05), see below.

Figure 1
Comparison of satisfaction [n (%)]

Note: Figure A referred to the nursing effect in group M and Figure B referred to the nursing effect in group N.

The satisfaction rate of group M was 71.11% (32/45), the relative satisfaction rate was 22.22% (10/45), the dissatisfaction rate was 6.67% (3/45), and the total satisfaction rate was 93.33 % (42/45).

The satisfaction rate of group N was 44.44% (20/45), the relative satisfaction rate was 28.89% (13/45), the dissatisfaction rate was 26.67% (12/45), and the total satisfaction rate was 73.33% (33/45).

No notable differences were observed between the two groups after nursing (x^2=6.480, P=0.011).

Comparison of GQOLI-74 Scores

The GQOLI-74 score in group M after intervention was obviously better compared with group N (P<0.05), as below.

Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

Figure 2
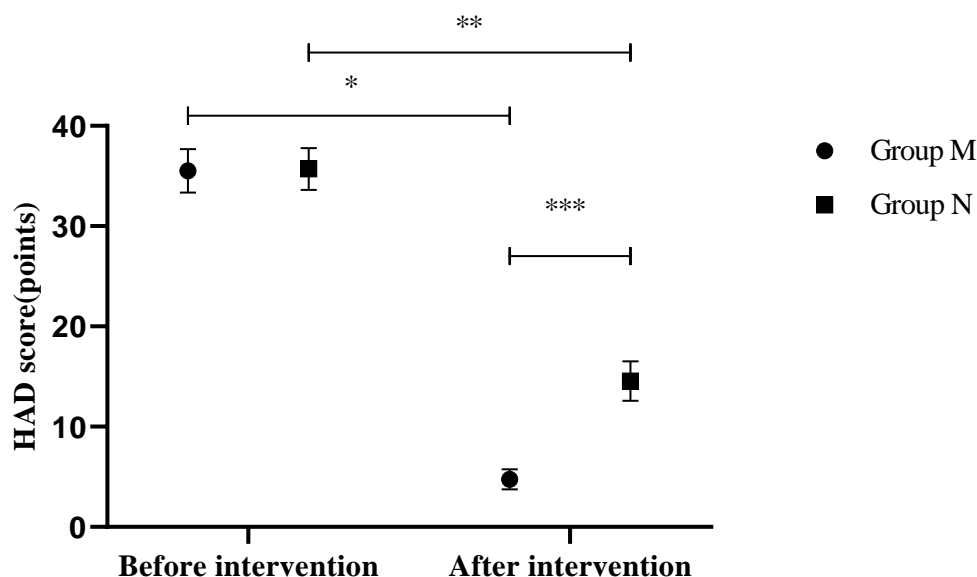### Comparison of GQOLI-74 scores ($\bar{x}$±s)

Note: The abscissa indicated before and after intervention, and the ordinate indicated the GQOLI-74 scores (points).

The scores in group M before and after intervention were 47.58±5.32 and 82.94±8.89, while those in group N were 47.22±5.48 and 65.37±6.53.

* indicated an obvious difference in the GQOLI-74 scores of group M before and after intervention (t =22.895, P<0.001).

** indicated an obvious difference in the GQOLI-74 scores of group N before and after intervention (t=14.282, P<0.001).

*** indicated an obvious difference in the GQOLI-74 scores between the two groups after intervention (t=10.685, P<0.001).

Comparison of HAD Scores

The HAD score in group M after intervention was markedly lower compared with group N (P<0.05), see below.

Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

Figure 3
Comparison of HAD scores ($\bar{x} \pm s$)

Note: The abscissa indicated before and after intervention, and the ordinate indicated the HAD scores (points).

The scores in group M before and after intervention were 35.52±2.16 and 4.75±1.01, while those in group N were 35.71±2.08 and 14.55±1.98).

*indicated an obvious difference in the HAD scores of group M before and after intervention (t=86.565, P<0.001).

** indicated an obvious difference in the HAD scores of group N before and after intervention (t=49.429, P<0.001).

*** showed an obvious difference in the HAD score between the two groups after intervention (t=29.577, P<0.001).

DISCUSSION

AMI has a high mortality rate and mutilation rate, and its disease incentives are related to strong emotional fluctuations, overeating and external environmental factors [12–13]. Related studies have found that more than 50% of patients have early symptoms one week to two weeks before the onset, mainly presenting ventricular premature contractions, which seriously endangers the lives of patients and lowers their QOL. It is clinically found that effective nursing measures during treatment can not only improve clinical efficacy, but also reduce nurse-patient disputes [14-16]. Therefore, EBN combined with PBL teaching mode is widely used in clinical nursing and has delivered remarkable results. In recent years, the conventional nursing mode can hardly meet the clinical needs and improve the QOL of patients. As a new nursing mode, EBN is patient-centered in ways that it can formulate reasonable nursing programs for patients' psychological demands, create a comfortable and harmonious treatment environment, and ultimately meet patients' satisfaction and achieve treating success [17-18]. Related medical studies have shown that due to limited cognitive ability to the disease, AMI patients generally suffer from anxiety, depression and other negative emotions. Such negative emotions will affect the final treatment effect, and even lead to a variety of complications [19-20]. The application of EBN in the treatment of AMI patients can scientifically evaluate their psychological state and equip them with the relevant knowledge, which makes them correctly understand the disease, cooperate with the treatment of the hospital rationally and calmly, establish the confidence to fight against the disease, and strive for early recovery of the disease. Compared with conventional nursing, EBN is featured on systematization and normalization. In clinical practice, EBN should implement different measures according to the actual situation. Meanwhile, clinical nursing has dependency basis, which reduces the randomness and blindness of nursing and improves the QOL of patients [21-23]. Furthermore, the PBL teaching mode enables nursing staff to deeply understand the disease characteristics of patients, cultivate the ability of independent thinking, and improve the ability to deal with problems, so as to develop suitable nursing programs. During the nursing process, nursing staff set up groups to formulate reasonable nursing plans combined with the

Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

patients' conditions and tutors' teaching. The adverse reactions and patients' needs in nursing were observed and recorded, and the meetings were carried out in free time in which the difficulties encountered were actively discussed and solved to shape the suitable and special nursing mode [24]. In this study, group M achieved higher ESCA scores and disease knowledge awareness compared with group N (P<0.05). It shows that the patients in group M can use the knowledge explained by the nursing staff to improve their self-care ability, thus accelerating the recovery of the disease. EBN intervention combined with PBL teaching mode can quickly develop appropriate nursing programs based on the latest and best evidence, the actual situation of patients and clinical nursing experience. This study also found that the nursing satisfaction in group M was markedly higher compared with group N (P<0.05), which was similar to the research results of Chenghong Wu et al. [25], in which they pointed out that the nursing satisfaction of the study group (92.68 %) was notably higher compared with control group (75.61%, P<0.05). It indicated that EBN intervention combined with PBL teaching mode could better meet the needs of clinical nursing, further reduce medical disputes and create a harmonious nurse-patient relationship.

In summary, the application of EBN intervention combined with PBL teaching mode in AMI patients can effectively alleviate negative emotions, improve the QOL and nursing satisfaction, and improve the cardiac function indexes. Therefore, it is worth applying and promoting.

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Yuan Xue et al.
Application of Evidence-based Nursing Intervention Combined with PBL Teaching Model in Nursing of Acute Myocardial
Infarction and Its Effects on Quality of Life and Satisfaction of Patients

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