

Effectiveness of Micro-class Mobile Teaching Video Method Combined with Psycho-cardiology Nursing in Postoperative Nursing for Coronary Heart Disease Patients Underwent Percutaneous Coronary Intervention and Training

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Objective. To explore the effectiveness of micro-class mobile teaching video method combined with psycho-cardiology nursing in postoperative nursing for coronary heart disease (CHD) patients underwent percutaneous coronary intervention (PCI) and training. **Methods.** The clinical information of 120 patients underwent PCI admitted to our hospital (12.2018-12.2020) were retrospectively analyzed, and the patients were divided into the control group and the experimental group, with 60 cases each. Psycho-cardiology nursing was performed to the control group, and the micro-class mobile teaching video method was introduced to the experimental group on this basis to compare the application effect on postoperative nursing and training. **Results.** After nursing intervention, LVEF levels and ADL scores of both groups were increased, of which the experimental group were much higher (P all <0.05); the BNP levels and SAQ, HAMA and HAMD scores of both groups were decreased, of which the experimental group were much lower (P all <0.05); the problem-solving ability and satisfaction scores of the experimental group were higher than those of the control group ($P<0.05$); and the experimental group obtained a significantly lower incidence rate of adverse cardiac events in the between-group comparison (16.67% vs 3.33%, $P<0.05$). **Conclusion.** The combined therapy conducted to CHD patients underwent PCI has a good effect in postoperative nursing and training, can improve the patients' cardiac function, reduce the angina severity, alleviate the anxiety and depression, promote the quality of life and problem-solving ability, and lower the incidence rate of adverse cardiac events, which is worthy of promotion and application.

Key words: micro-class mobile teaching video method; coronary heart disease (CHD); psycho-cardiology nursing intervention; percutaneous coronary intervention (PCI)

Tob Regul Sci.™ 2021;7(5-1):4021-4032

DOI:doi.org/10.18001/TRS.7.5.1.177

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As China's economy is booming, people's work pressure is growing, the dietary structure is changing and some adverse life habits are increasing, leading to the gradually increasing incidence of coronary heart disease (CHD) and causing a certain threat to people's life safety^[1-2]. Percutaneous coronary intervention (PCI) is usually adopted to treat the CHD, which can improve the prognosis of patients, but it can also easily cause in-stent restenosis and some adverse cardiovascular diseases, affecting the mental health of patients^[3-4]. Psycho-cardiology nursing intervention refers to strengthening of psychological care based on the treatment of organic cardiovascular diseases and is devoted to eliminating the adverse emotions of patients^[5-6]. Micro-class mobile teaching video method means learning repeatedly with video by using cellphone and other mobile tools, so as to enhance the targeted communication with patients^[7-8]. The study explored the application effect of micro-class mobile teaching video method combined with psycho-cardiology nursing intervention on postoperative nursing for CHD patients underwent PIC and training, with the following results reported.

MATERIALS AND METHODS

General Information

The clinical information of 120 patients underwent PIC admitted to our hospital (12.2018-12.2020) were retrospectively analyzed, and the patients were randomly divided into the control group and the experimental group, with 60 cases each. The control group had 34 male cases and 26 female cases, with the age range of 33-65 years old, mean age of (52.4±6.2) years old, disease duration of 3-8 years, and mean disease duration of (5.21±2.4) years; the experimental group had 32 male cases and 28 female cases, with the age range of 35-68 years old, mean age of (53.3±6.7) years old, disease duration of 4-9 years, and mean disease duration of (6.01±2.5) years. The general information of both groups was comparable but presented no statistical significance ($P>0.05$).

Included Criteria

① It met the clinical diagnosis criteria for CHD established by the International Society of Cardiology and World Health Organization (WHO); ② the patients were diagnosed by electrocardiogram (ECG), cardiac ultrasonography, coronary angiography and other examinations and underwent PCT; ③ the duration of disease was at

least 1 year; and ④ the study was approved by the Hospital Ethics Committee, and patients and their family members understood the purpose and process of the experimental study and signed the informed consent.

Exclusion Criteria

① The patients had severe hepatic and kidney function obstacle; ② the patients suffered from hypercortisolism; ③ the patients experienced morphines or ethyl alcohol abuse in the past 6 months; and ④ the patients presented bipolar disorder, dementia and suicidal tendency.

Methods

Psycho-cardiology nursing intervention was adopted for patients in the control group, with the following specific steps. (1) Establishing a psycho-cardiology nursing group. A psycho-cardiology nursing group including 1 psychologist, 2 junior cardiologists, and several nurses was established. The junior cardiologists and nurses were lectured by the psychologist. After PCI, an evaluation on patients' problems and specific needs was conducted, a nursing plan was set up, and the nursing effect was assessed. (2) Performing personalized psychological intervention. Personalized psychological intervention plans were proposed, so that professional nurses could conduct psychological intervention to patients and enhance the communication with patients through listening, thus grasping their emotional changes, providing targeted psychological counseling and comfort, offering psychological sympathy and support, and carrying out motivational interview according to the emotional change and personalized differences of each patient. For introverted patients, nurses should encourage them to share their doubts, thereby helping them to clarify the confusion^[9-10]. (3) Performing cognitive intervention. Specialized knowledge lectures were held regularly and health education materials were provided, so that patients could deeply understand relevant knowledge, including the cause, treatment modality, rehabilitation and nursing methods of CHD and the differences between CHD and acute myocardial infarction (AMI), learn the emergency treatment, and correct their misperception about the disease, thereby actively accepting treatment and being compliant with the nursing. (4) Doing exercise. Aerobic exercise plans for cardiac rehabilitation were established according to the patients' condition, including warm-up exercises, riding ergometric bike, walking, and arm swinging with

hydraulic resistance, with each exercise lasted 45-60 min per time and 3 times a week. These exercises could promote limb circulation and prevent joint stiffness^[11], and at the same time, distract attention and relieve the fear of patients, thereby improving cardiac tolerance. (5) Family and social support. Family members should also have a correct understanding of the disease, constantly encourage and care about the patients in daily life, so that patients could keep a cheerful mood, correct their bad life habits and enhance their self-care ability; the family members could play some soft music according to the preference of patients, to distract the patients' attention on the disease and alleviate their anxiety and depression.

On the above basis, the micro-class mobile teaching video method was performed to the experimental group, with the following specific contents. (1) Creating a Wechat group. The management members of the Wechat group included the junior cardiologists, head nurse and nurses, who should grasp the relevant operational skills of Wechat and have good expression, communication and coordination abilities. The patients in the experimental group should be added to the Wechat group. (2) According to the PCI postoperative nursing and rehabilitation plans for patients, Powerpoint files covering some key and difficult points, operation standards and precautions were made and published in the Wechat group for patients to learn. (2) Doubts conclusion. After reading the Powerpoint files, the patients could share and discuss their doubts on Wechat, which should be summarized and concluded by the nursing personnel and answered by the junior cardiologists or via online interaction and explanation. This step was designed to enable the patients to preliminarily accept the knowledge and raise questions, thus enhancing the communication among them. (4) Theoretical systematization. After the training was prepared with mobile devices, the learning process could be more targeted and the patients could gain deeper understanding through the systematic lecture of knowledge by professional doctors. Nursing personnel should record detailed videos about nursing and rehabilitation for patients to watch and do exercise. By referring to medical materials, nursing personnel made the conclusion and summary of knowledge about medication guidance, and published in the Wechat group after being reviewed by the head nurse for patients to use and actively communicate with each other. The nursing group members encouraged the patients to publish health log in the Wechat group, answered their doubts on a regular basis, and reminded them to take the medicine as directed. Both groups accepted

the nursing intervention for 3 months.

Evaluation Indexes

① The patients' cardiac function indexes, including the left ventricular ejection fraction (LVEF) measured by color doppler ultrasonography and the brain natriuretic peptide (BNP) measured by ELISA method, were compared before and after nursing intervention. ② The patients' angina severity was evaluated by the Seattle Angina Questionnaire (SAQ) and compared before and after nursing intervention. The SAQ covered five dimensions, namely, physical limitation, anginal stability, anginal frequency, treatment satisfaction and disease perception, and the scoring standard = (actual score + the lowest score of the dimension) / (the highest score of the dimension - the lowest score of the dimension) × 100%, with higher scores indicating more serious angina. ③ The severity of anxiety and depression symptoms of patients in both groups was compared, of which the anxiety symptoms were evaluated with the Hamilton Anxiety Scale (HAM-A), which consisted of 14 items and each item was scored on a scale of 0 to 4 (1 point - slight symptoms; 2 points - obvious symptoms that did not affect daily life and activities; 3 points - severe symptoms that affected daily life and activities; and 4 points - very severe symptoms that seriously affected life). The total score range was 14-56 points, with higher scores indicating more serious anxiety; the depression symptoms were evaluated with the Hamilton Depression Scale (HDM-A), which covered 17 items and had a total score range of 17-53 points, with higher scores indicating more serious depression. ④ The patients' quality of life was evaluated by the 100-point ability of daily life (ADL) scale before and after intervention, the higher the better. ⑤ The patients' problem-solving ability and satisfaction were investigated in the form of a 100-point questionnaire, the higher the better. ⑥ The adverse cardiac events including recurrent angina, AMI and fatal arrhythmia of patients in both groups were recorded.

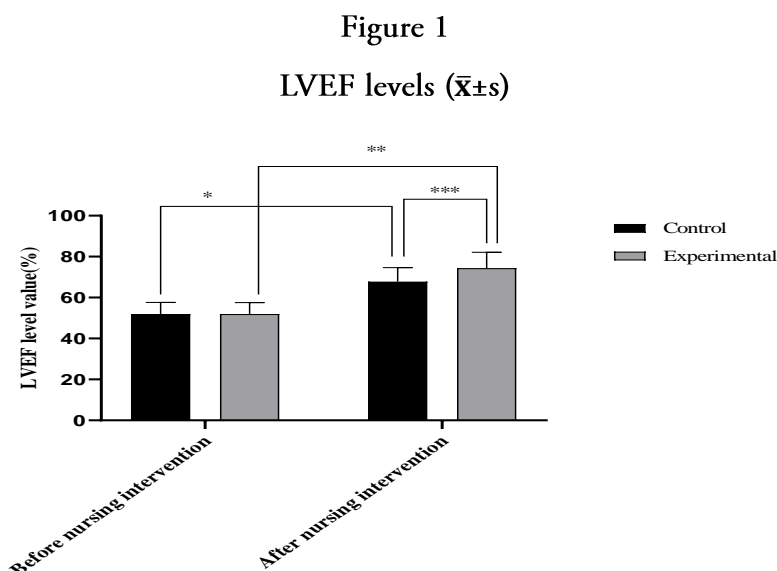
Statistical Methods

In this study, the data processing software was SPSS20.0, the picture drawing software was GraphPad Prism 7 (GraphPad Software, San Diego, USA), the enumeration data were examined by χ^2 test and expressed by [n(%)], the measurement data were examined by t-test and expressed by ($\bar{x} \pm s$), and differences were considered statistically significant at $P < 0.05$.

RESULTS

Comparison of LVEF Levels before and after Intervention

Before intervention, no statistical difference was presented in the LVEF levels ($P>0.05$). After nursing intervention, the LVEF levels of both groups were increased, and those of the experimental group were obviously higher ($P<0.05$). See Figure 1.



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the LVEF level (%);

The control group obtained (51.93±5.66) and (67.82±6.84) on LVEF level at the two periods, respectively;

The experimental group obtained (51.94±5.63) and (74.35±7.80) on LVEF level at the two periods, respectively;

* indicated that the LVEF levels at the two periods of the control group were distinctly different ($t=13.864$, $P=0.0000$);

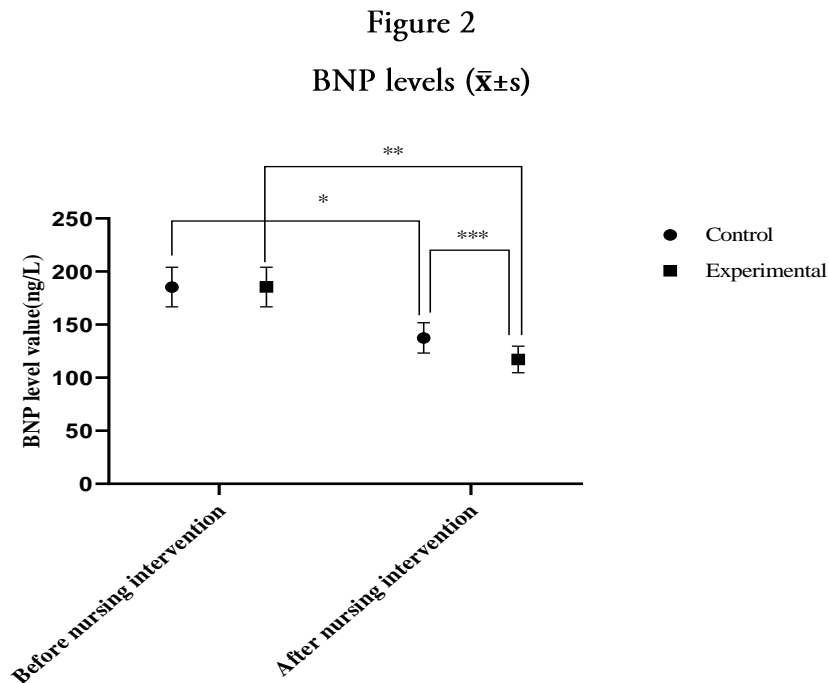
** indicated that the LVEF levels at the two periods of the experimental group were distinctly different ($t=18.045$, $P=0.0000$); and

*** indicated that the LVEF levels after nursing intervention of both groups were distinctly different ($t=4.876$, $P=0.0000$).

Comparison of BNP levels before and after Nursing Intervention

Before intervention, no statistical difference was

presented in the BNP levels ($P>0.05$). After nursing intervention, the BNP levels of both groups were decreased, and those of the experimental group were obviously lower ($P<0.05$). See Figure 2.



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the BNP level (ng/L);

The control group obtained (185.41±18.72) and (137.46±14.24) on BNP level at the two periods, respectively;

The experimental group obtained (185.42±18.66) and (117.16±12.43) on BNP level at the two periods, respectively;

* indicated that the BNP levels at the two periods of the control group were distinctly different (t=15.791, P=0000);

** indicated that the BNP levels at the two periods of the experimental group were distinctly different (t=23.582, P=0000); and

*** indicated that the BNP levels after nursing intervention of both groups were distinctly different (t=8.319, P=0000).

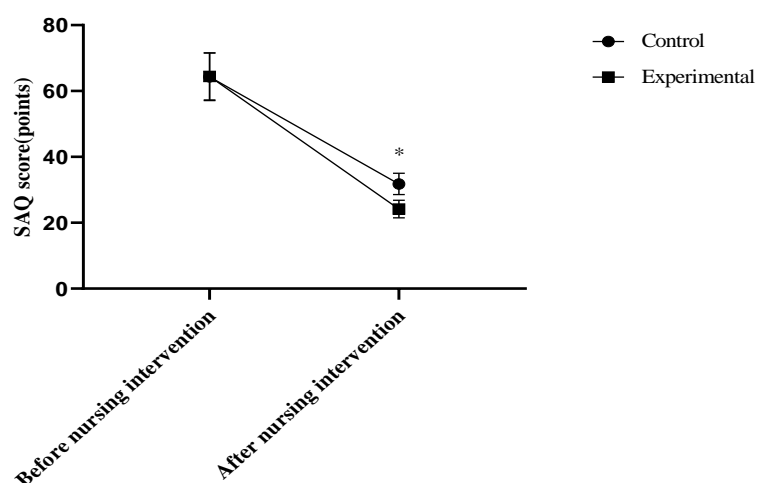
Comparison of SAQ Scores before and after Nursing Intervention

Before intervention, no statistical difference was

presented in the SAQ scores (P>0.05). After nursing intervention, the SAQ scores of both groups were decreased, and those of the experimental group were obviously lower (P<0.05). See Figure 3.

Figure 3

SAQ scores ($\bar{x} \pm s$)



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the SAQ score (points);

The control group obtained (64.33±7.25) and (31.79±3.24) on SAQ score at the two periods, respectively;

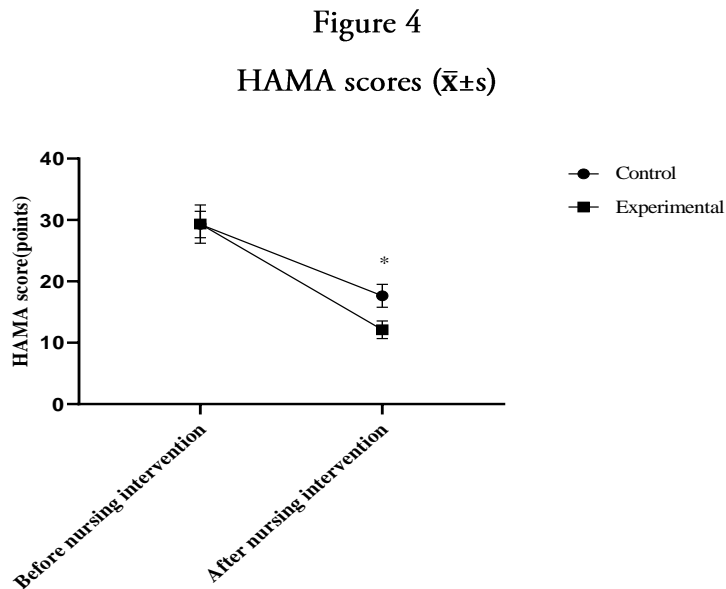
The experimental group obtained (64.42±7.15) and (24.16±2.65) on SAQ score at the two periods, respectively; and

* indicated that the SAQ scores after nursing intervention of both groups were distinctly different ($t=14.120$, $P=0000$).

Comparison of HAMA Scores before and after Nursing Intervention

Before intervention, no statistical difference was

presented in the HAMA scores ($P>0.05$). After nursing intervention, the HAMA scores in both groups were decreased, and those of the experimental group were obviously lower ($P<0.05$). See Figure 4.



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the HAMA score (points);

The control group obtained (29.28±2.15) and (17.64±1.87) on HAMA score at the two periods, respectively;

The experimental group obtained (29.34±3.11) and (12.12±1.43) on HAMA score at the two periods, respectively; and

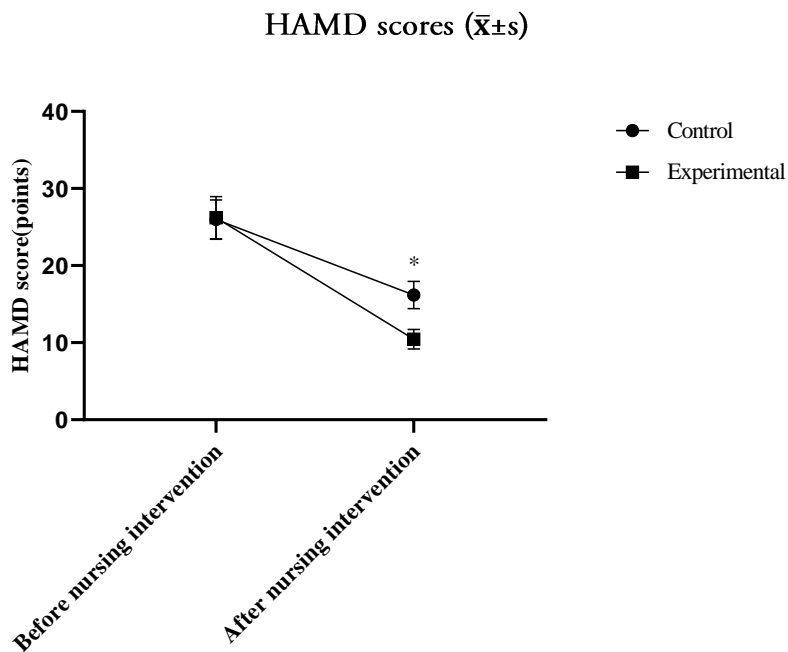
* indicated that the HAMA scores after nursing intervention of both groups were distinctly different (t=18.163, P=0000).

Comparison of HAMD Scores before and after Nursing Intervention

Before intervention, no statistical difference was

presented in the HAMD scores (P>0.05). After nursing intervention, the HAMD scores of both groups were decreased, and those of the experimental group were obviously lower (P<0.05). See Figure 5.

Figure 5



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the HAMD score (points);

The control group obtained (25.97±2.55) and (16.18±1.77) on HAMD score at the two periods, respectively;

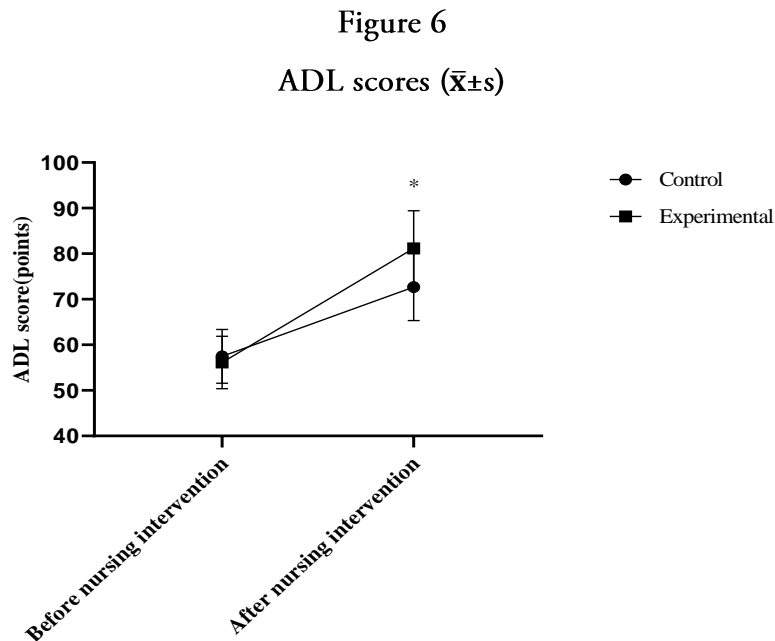
The experimental group obtained (26.22±2.73) and (10.45±1.26) on HAMD score at the two periods, respectively; and

* indicated that the HAMD scores after nursing intervention of both groups were distinctly different (t=20.428, P=0000).

Comparison of ADL Scores before and after Nursing Intervention

Before intervention, no statistical difference was

presented in the ADL scores (P>0.05). After nursing intervention, the ADL scores of both groups were increased, and those of the experimental group were obviously higher (P<0.05). See Figure 6.



Note:

The horizontal axis indicated before and after nursing intervention, and the vertical axis indicated the ADL score (points);

The control group obtained (57.48±5.88) and (72.67±7.34) on ADL score at the two periods, respectively;

The experimental group obtained (56.11±5.74) and (81.19±8.23) on ADL score at the two periods, respectively; and

* indicated that the ADL scores after nursing intervention of both groups were distinctly different (t=5.985, P=0000).

Comparison of Problem-solving Ability and Satisfaction Scores higher problem-solving ability and satisfaction in the between-group comparison (P<0.05), see Table 1.

The experimental group achieved significantly

Table 1			
Problem-solving ability and satisfaction scores ($\bar{x}\pm s$, points)			
Group	N	Problem-solving ability	Satisfaction
Control	60	73.36±1.83	70.34±2.02
Experimental	60	87.55±1.33	86.69±1.29
T48.587 52.841			
P		<0.05	<0.05

Comparison of Incidence Rates of Adverse Cardiac Events the between-group comparison (16.67% vs 3.33%, P<0.05). See Table 2.

The incidence rate of adverse cardiac events of the experimental group was significantly lower in

Table 2
Incidence rates of adverse cardiac events [n(%)]

Group	N	Angina	AMI	Fatal arrhythmia	Incidence
Control	60	3 (5.00)	3 (5.00)	4 (6.67)	10 (16.67)
Experimental	60	1 (1.67)	1 (1.67)	0 (0.00)	2 (3.33)
X ²					5.926
P					<0.05

DISCUSSION

CHD is a general cardiovascular disease that greatly threatens people’s physical fitness, and as it tends to be associated with multiple basic diseases as well as psychological problems such as anxiety and depression, the incidence of adverse cardiac events is increasing^[12-13]. PCI is the most common method for the treatment of CHD patients, which can relieve the myocardial blood supply of patients, but it is prone to adverse emotions such as anxiety and depression after surgery, causing adverse effects on the cardiac rehabilitation of patients. Therefore, performing nursing intervention to the patients is important to postoperative rehabilitation^[14-15].

The psycho-cardiology nursing intervention is based on the “psycho-cardiology” medical model, which will not only offer biological treatment and care for the disease, but also has the advantages of enhancing the psychological care intervention, correcting the adverse life habits, understanding the emotional changes, adjusting the psychological state, benefiting the cardiac rehabilitation, strengthening circulation and preventing joint stiffness of patients by guiding them in exercise training^[16-18]. With the micro-class mobile teaching video method, more learning materials can be accommodated, and the specific operation can be demonstrated via videos that can be reviewed, so as to enhance the patients’ understanding and memory^[19-20]. Creating Wechat group enables more convenient and interactive communication and

targeted answers to questions raised by patients, thus eliminating patients’ concerns and favoring faster recovery^[21-22].

The literature^[23] indicated that the micro-class mobile teaching video method combined with psycho-cardiology nursing intervention had a significant effect on the postoperative nursing for CHD patients underwent PCI, mainly in improving the patients’ adverse emotions through psychological intervention, cognitive intervention, and strengthened communication. The study results showed that after intervention, the LVEF levels of both groups were increased, of which the experimental group were obviously higher (P<0.05), the BNP levels of both groups were decreased, of which the experimental group were obviously lower (P<0.05), indicating that the combined treatment could improve the patients’ heart functions. After nursing intervention, the SAQ, HAMA and HAMD scores of both groups were decreased, of which the experimental group were obviously lower (P<0.05), which was similar to the study results achieved by ALDO P^[24] et al, implying that the combined treatment could lower the severity of angina and alleviate the anxiety and depression. After nursing intervention, the ADL scores of both groups were increased, of which the experimental group were obviously higher (P<0.05), which was consistent with the founding of CHANGJUN WU^[25] et al, indicating that the combined treatment could enhance the self-care ability and improve the quality of life of patients. The

experimental group obtained higher problem-solving ability and satisfaction scores in the between-group comparison ($P < 0.05$). The incidence rate of adverse cardiac events of the experimental group was significantly lower than that of the control group (16.67% vs 3.33%, $P < 0.05$), demonstrating that the combined treatment could lower such incidence.

In conclusion, combining the micro-class mobile teaching video method with the psycho-cardiology nursing has a good effect in postoperative nursing for CHD patients underwent PCI and training, which should be promoted and applied in the clinic, because it can improve the heart functions, lower the severity of angina, alleviate the anxiety and depression, improve the quality of life, enhance the problem-solving ability and reduce the incidence rate of adverse cardiac events for patients.

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