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Effect of Health Education and Follow-up on the Control of Residual Cardiovascular Risk in Patients Undergoing PCI

Yu Jian[1], Liu Lihong[2], Chen Jiali[1, *], Huang Xianzhen[1], Qiu Weiyu[1], Wang Jinlong[1]

[1]Department of Cardiology, The First Affiliated Hospital, Jinan University, Guangzhou, China

[2]Department of Nursing, Linzhi People's Hospital, Linzhi, China

Email address:

chenjiali2018@sina.com (Chen Jiali)

[*]Corresponding author

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Abstract: Objective To analyze the effect of health education and follow-up on the control of residual cardiovascular risk in patients after percutaneous transluminal coronary intervention (PCI). Methods One hundred participants admitted to the Department of Cardiology of The First Affiliated Hospital of Jinan University from October 2015 to October 2016 were randomly divided into control group and research group after undergoing PCI. Two groups received the same level of health education when discharged. The research group went back to the hospital to receive health education and health guidance every 3 months while the control group did not return to receive lecture and training but only returned to the outpatient clinic for regular or irregular reexamination and medication, and received telephone follow-up. The two-year follow-up of the two groups was summarized and analyzed. Results The cardiovascular event rate, rehospitalization rate caused by cardiovascular disease and the incidence of second stent implantation in the research group were significantly lower than those in the control group while the standard-reaching rate of low density lipoprotein and the drug compliance were significantly higher than those in the control group, and there was significant difference between the two groups (P < 0.05). Before the implementation of health education, there was no significant difference in the health knowledge score between the two groups (t=-0.211, P>0.005), but after the implementation of health education, the score of the research group was (25.96 + 0.44) which was significantly higher than that of the control group (P < 0.05). Conclusion Health education and follow-up have great effect on the control of residual cardiovascular risk in patients after PCI, which helps to develop a healthy life style, effectively reduce the incidence of risk events, and improve the prognosis of patients.

Keywords: Health Education, Follow-up, Patients Undergoing PCI, Cardiovascular Disease, Residual Risk Control

1. Introduction

Coronary heart disease (CHD) is the leading cause of death and hospitalization among Chinese adults with heart disease, and the incident number is growing rapidly in the next 10 years [1]. With the development of diagnosis and treatment of coronary heart disease, percutaneous transluminal coronary intervention has also witnessed rapid growth, which can relieve vascular stenosis and dilate the diameter of coronary artery to improve myocardial blood supply and promote blood circulation. Studies have comfirmed that the indications of PCI are increasingly expanding and its complications are

gradually reducing, whcih significantly reduces the mortality, making it an effective means of treatment of coronary heart disease [2-4]. Due to the interaction between the complexity and independence of risk factors, it is necessary to strengthen the implementation of health education and follow-up after surgery to eliminate the harmful factors in postoperative life, to promote the formation of a scientific and healthy lifestyle and medical compliance behavior, and to enhance the patients' self-nursing ability in order to slow disease progression and improve survival quality. With the development of quality care services, the implementation of specialist health education for patients has become an important part of clinical nursing. Specialist health education is conducive to improving

medication compliance and medical compliance behavior in patients after PCI, and reducing the rate of rehospitalization and complication. Therefore, this study analyzed the impact of health education and follow-up on the control of residual cardiovascular risk in patients after PCI, which is reported as follows.

2. Data and Methods

2.1. General Clinical Data

One hundred patients undergoing PCI, hospitalized in the Department of Cardiology of The First Affiliated Hospital of Jinan University from October 2015 to October 2016 were included as participants and they were randomly and averagely divided into control group with 21 males and 29 females aged from 56-75 (average age 64.31±5.01) and research group with 20 males and 30 females aged from 55-75 (average age 63.46±6.35). There was no significant difference in the baseline data between the two groups (P>0.05).

2.2. Nursing Methods

The two groups received the same level of health education including instructions on taking medicine, life style and exercise when discharged. Patients in the control group did not return to hospital to receive lecture and training but only went to the outpatient clinic for regular or irregular reexamination and medication, and received telephone follow-up.

The research group received extra continuous health education and nursing based on the instructions given to the control group. Patients in the research group were informed of related knowledge of the disease so that the relevant risk factors for the disease, key points on prevention and rehabilitation can be made understood. The role of PCI surgery, prognosis, and postoperative points for attention were also informed, and patients were urged to give up their unhealthy life habits, strictly follow the doctor's advice, take drugs, and learn about the role and side effects of related drugs [6]. Patients were scientifically guided to develop healthy and balanced postoperative eating habits including giving up fat and animal innards, eating more fruits and vegetables etc. patients were also advised to take appropriate and scientific postoperative exercise such as aerobic exercise 4 times a week and 50 min per time, and to control weight. Smoking and alcohol were urged to be quit. Regular blood

routine test and reexamination after discharge were taken. Interventions were performed about 5 times during hospitalization. Two-year follow-ups were conducted 2 months after discharge, and intensive education was carried out for patients who had not taken health education [7-8]. Every 3 months patients were told to return to the hospital to receive a series of health education such as PowerPoint lectures, free blood sugar and blood pressure measuring, and personalized health education contents such as medication and exercise instructions, and low-density lipoprotein test were developed for them.

2.3. Evaluation

The incidence of cardiovascular events, drug compliance, standard-reaching rate of low density lopoprotein, rehospitalization caused by cardiovascular disease and second stent implantation were collected during the two-year follow-up. The nurses in-charge completed the medication compliance questionare which was divided into four levels including "always comply", "offten comply", "sometimes comply" and "never comply". Moreover, "always comply" and "offten comply" were evaluated as "comply" and"sometimes comply" and "never comply" were taken as "not comply" [9].

2.4. Data Analysis Methods

The enumeration data was expressed as a percentage (%) and entered into statistical software SPSS 18.0 for χ^2 test analysis. And "P <0.05" indicates a significant statistical difference between the groups.

3. Results

3.1. Comparison of Follow-ups

The statistical data showed that the incidence of cardiovascular events, rehospitalization rate caused by cardiovascular disease, and the incidence of second stent implantation in the research group were significantly lower than those in the control group. And the standard-reaching rate of low-density lipoprotein was significantly higher than that in the control group. There was a statistically significant difference between the two groups (P < 0.05). See Table 1 for details.

Table 1. Comparison of Follow-ups between the Two Groups ($\bar{x}$±s).

Groups	Cardiovascular events	Rehospitalization	Second stent implantation	Low density lipoprotein reaching standard
Control group (n=50)	6 (12.00)	5 (10.00)	4 (8.00)	29 (58.00)
Research group (n=50)	2 (4.00)	1 (2.00)	0 (0.00)	48 (96.00)
χ^2	7.56	6.54	4.13	20.34
p	0.012	0.035	0.041	0.000

3.2. Comparison of Health Knowledge Scores Before and After Implementation of Health Education

Before the implementation of health education, there was no significant difference in the health knowledge score

between the research group and the control group (t=0.211, P>0.005). After the health education, the health knowledge score in the research group was (25.96±0.44) which was significantly higher than that in the control group (P < 0.05) as shown in Table 2.

Table 2. Comparison of Health Knowledge Scores before and after Implementation of Health Education ($\bar{x} \pm s$).

Groups	n	Before health education	After health education
Research group	50	15.64±1.44	25.96±0.44
Control group	50	15.70±1.42	17.09±1.64
t	-	-0.211	37.115
P	-	P>0.05	P<0.05

3.3. Comparison of Medication Compliance

According to the statistics, the medication compliance in the research group was 98.0% which was significantly higher than 70.0% in the control group. There was significant difference between the two groups (P<0.05). See Table 3 for more details.

Table 3. Comparison of Medication Compliance between the Two Groups (%).

Groups	Always comply	Often comply	Sometimes comply	Never comply	Compliance
Control group	15 (30.00)	20 (50.00)	9 (18.00)	6 (12.00)	35 (70.00)
Research group	38 (76.00)	11 (22.00)	1 (2.00)	0 (0.00)	49 (98.00)
χ^2					8.43
p					0.001

4. Discussion

The rapid development of social economy has promoted people's living standard, led to changes in the diet structure and also caused an increase in the incidence of cardiovascular disease, which has become a public health problem threatening human health [9]. According to statistics in recent years, the incidence of cardiovascular disease has increased significantly. In China, more than 2 million people die from heart disease every year, more than 35% of the total deaths per year [1, 10]. Health education is mainly based on nursing. Generally, before implementing health education for patients, it is necessary to clarify the clinical data of each patient, to evaluate their cognitive status and to give them specific health guidance. According to relevant reports, 70% of patients' knowledge of disease is acquired from the hospitals, and more than 85% of patients are more convinced of the health knowledge that medical personnel have informed. Therefore, health education from medical staff makes a huge difference in calming patients down and improving treatment compliance [11-12].

Long-term comprehensive treatment and healthy lifestyle after PCI are necessary to promote recovery and avoid cardiovascular risk events, readmission and reoperation [13]. What's more, most patients are at high age and have low compliance, so health education and follow-up are especially important [14]. In this study, the research group returned to the hospital every 3 months for health education and health guidance. Individualized content of health education is developed based on different education backgrounds, ages and physical conditions to better implement health education. For example, free monitoring of blood glucose and blood pressure help patients learn about their own condition to improve the compliance of antihypertensive and hypoglycemic drugs so as to ensure that blood sugar and blood pressure values are maintained at normal levels. And personalized health education can improve patients' knowledge of the disease, clarify the importance of a healthy lifestyle, dietary precautions, and the importance of adhering to medication and appropriate exercise [15]. Developing personalized exercise program according to testing of patients' low-density lipoprotein and supervising them to follow the program help to improve the standard-reaching rate of low-density lipoprotein. On the contrary, patients in the control group only received regular or irregular reexamination and telephone follow-up. The results show that the incidence of cardiovascular events, rehospitalization rate caused by cardiovascular disease, and the incidence of second stent implantation in the research group are significantly lower than those in the control group while the standard-reaching rate of low density lipoprotein and medication compliance in the research group are significantly higher than those in the control group, which suggests that health education and follow-up can significantly control the residual cardiovascular risk in patients after PCI.

5. Conclusions

In conclusion, we provide individualized health guidance in the manner of health education and follow-up to bridge the communication gap between medical staff and patients with coronary heart disease so as to help reduce the incidence of re-hospitalization due to the aggravation of coronary heart disease. And a lot of medical care resources thus have been saved. Health education and follow-up can also effectively control the residual risk of cardiovascular disease after PCI, help the formation of healthy lifestyle of patients, effectively reduce the incidence of risk events and improve the prognosis of patients, playing a clinically significant role in the study of prognosis of patients with coronary heart disease.

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