Analysis of the Effect of Problem-Oriented Nursing Intervention on Patients with Lower Extremity Arteriosclerosis Obliterans in Vascular Surgery

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Abstract: *Objective:* To analyze the effect of problem-oriented nursing intervention on patients with lower extremity arteriosclerosis obliterans (ASO) in vascular surgery. *Methods:* The clinical data of 128 patients with lower extremity ASO in vascular surgery were selected and randomly divided into groups A and B, with 64 cases each. Group A is the control group, and Group B is the observation group. Group A received the routine nursing intervention, and Group B received the problem-oriented nursing intervention. The compliance, self-care ability, psychological state, quality of life, and nursing satisfaction of the two groups of patients were evaluated based on various indicators. *Results:* After the intervention, the evaluation of self-care ability (ESCA) score of the patients in Group B was higher than that of Group A, and the symptom checklist-90 (SCL-90) score was lower than that of Group A. The differences were significant ($t = 10.019$, $t = 3.118$, $P < 0.01$). After the intervention, the World Health Organization Quality of Life Brief (WHOQOL-BREF) index scores of the two groups increased and the increase in Group B was significantly higher than Group A ($P < 0.001$). The compliance rate of Group B (62/ 96.88%) was higher than that of Group A (52/ 81.25%), and the difference was extremely significant ($\chi^2 = 8.020$, $P < 0.01$). *Conclusion:* Problem-oriented nursing intervention for patients with lower extremity ASO in vascular surgery improved the patient's self-care ability, and quality of life, reduced the patient's negative emotions, and enhanced their overall satisfaction.

Keywords: Problem orientation; Nursing intervention; Vascular surgery; Lower extremity arteriosclerosis obliterans

1. Introduction

With the advancement of society and living standards, the incidence of vascular diseases is increasing yearly. Among them, arteriosclerosis obliterans (ASO) of the lower limbs is a common vascular surgical disease that adversely affects the quality of life and mental health of patients [1,2]. To address this, more effective treatments and nursing interventions are being developed. Problem-based learning is an autonomous, collaborative model

that is problem-solving oriented by stimulating the patient's intrinsic motivation. Under this model, nursing intervention is patient-centered, where it addresses the patient's problems as the entry point to improve the patient's quality of life through effective behavioral intervention and health education. The application effect of this intervention in the nursing field has been validated to a certain extent. However, there is a limited number of studies regarding problem-oriented nursing intervention studies for patients with lower extremity ASO. More emphasis is placed on medical treatment of the condition, resulting in the neglect of the patient's overall quality of life. This will undoubtedly decrease the effectiveness of this nursing intervention. Therefore, this article explored the impact of problem-oriented nursing intervention on patients with lower extremity ASO in vascular surgery to enrich and improve the theory and application of nursing intervention. This is to ultimately improve the patient's rehabilitation outcome and quality of life.

2. Materials and methods

2.1. General information

The clinical data of 128 patients with lower extremity ASO in vascular surgery were selected and randomly divided into groups A and B, with 64 cases each. Group A is the control group, and Group B is the observation group. Inclusion criteria: (1) Patients who have been clinically diagnosed with ASO of the lower limbs; (2) consented; (3) patients who can communicate properly and comply. Exclusion criteria: (1) Patients with other serious diseases such as heart, liver, and kidney failure; (2) patients with mental or cognitive impairment; (3) patients who have received similar nursing intervention or are participating in other related studies; (4) patients who received other treatments or interventions during the study that may affect the results of the study.

2.2. Method

Group A received routine nursing intervention. The patient's lower limb skin temperature, color, sensation, and arterial pulsation were regularly monitored. Any changes in the patient's condition were promptly detected and recorded. Patients were advised to maintain a healthy lifestyle, including a reasonable diet, moderate exercise, smoking cessation and alcohol restriction, etc., to slow down the progression of the disease. The functions and side effects of the drugs administered were explained to ensure that patients take drugs on time and in the right dosage, and the drug effects were closely monitored. The patient's emotional changes were monitored and necessary psychological support was provided when necessary to help patients build confidence in overcoming the disease.

Group B received the problem-oriented nursing intervention. A special nursing team composed of senior nurses, head nurses, and nursing staff who were responsible for the patient's overall care was established. A comprehensive assessment of all aspects of the patient was conducted to identify the patient's main health problems, and a targeted intervention plan was formulated based on the results. The target intervention plan covered several aspects. Firstly, cognitive intervention was implemented by providing patients and their families with disease-related knowledge. The causes, development process, treatment options, and expected after-effects were explained to help the patients establish a correct understanding of the disease. Patients were also taught on how to monitor their condition, such as observing the skin color, temperature of the lower limbs, and sensory changes. This further improves patient compliance. Psychological intervention was also implemented by using professional psychological assessment tools to assess the patient's emotional state and identify anxiety, depression, and other negative emotions. Psychological support was provided through psychological consultation, supportive conversations, etc., to help patients establish a positive treatment attitude and increase their confidence. Patients were guided to cope with anxiety, depression, and other emotions,

by carrying out deep breathing, relaxation training, or positive self-talk. Personalized exercise plans were developed including strength training, flexibility training, etc., to enhance lower limb muscle strength and joint flexibility. The step-by-step principle should be followed during exercise, from simple to complex levels, easy to high-intensity, where the difficulty and intensity of exercise are gradually increased. Patients were instructed to keep their lower extremities warm and avoid prolonged exposure to cold environments. At the same time, the patient's skin was kept clean and dry to prevent skin infections. Patients were guided on how to avoid lower extremity injuries, such as trimming nails and wearing loose-fitting clothing and shoes. The condition of the skin, blood vessels, and nerves of the lower limbs were regularly monitored and any abnormalities were dealt with promptly. A personalized diet plan was developed based on the individual condition of the patient, including adequate intake of protein, carbohydrates, fats, vitamins, and minerals, and timely adjustments were made according to changes in the patient's condition.

2.3. Observation indicators

This study investigated the patient's compliance through questionnaires, where the patient's self-care ability, psychological state, and quality of life were assessed with the Self-Care Ability Scale (ESCA), the Symptom Self-rating Scale (SCL-90), and the WHOQOL-BREF scale, respectively. A questionnaire was then used to evaluate the patient's satisfaction with care.

2.4. Statistical methods

The SPSS 20.0 software was used to analyze the research data. The measurement data that conformed to the normal distribution were expressed as mean ± standard deviation and compared using the t-test. The count data were expressed as % and analyzed using the chi-squared (χ^2) test. Results were considered statistically significant at $P < 0.05$.

3. Results

3.1. Comparison of ESCA and SCL-90 scores between the two groups of patients before and after intervention

As shown in Table 1, after the intervention, the ESCA score of patients in Group B was higher than that of Group A, and the SCL-90 score of Group B was lower than that of Group A. The differences were significant ($t = 10.019$, $t = 3.118$, $P < 0.01$).

Table 1. Comparison of ESCA and SCL-90 scores between the two groups of patients before and after intervention

Indicator	Time	Group A ($n = 64$)	Group B ($n = 64$)	t	P
ESCA score	Before intervention	103.25 ± 8.36	104.02 ± 8.30	0.523	0.602
	After intervention	121.33 ± 8.69	136.98 ± 8.98	10.019	0.000
SCL-90 score	Before intervention	158.41 ± 36.22	156.45 ± 37.69	0.300	0.765
	After intervention	138.97 ± 33.34	120.67 ± 31.58	3.188	0.002

3.2. Comparison of WHOQOL-BREF scores between the two groups of patients before and after intervention

As shown in **Table 2**, after the intervention, the WHOQOL-BREF index scores of both groups of patients increased, with the increase in Group B being significantly higher than Group A. The difference between the

two groups was extremely significant ($P < 0.001$).

Table 2. Comparison of WHOQOL-BREF scores between the two groups of patients before and after intervention

Indicator	Time	Group A ($n = 64$)	Group B ($n = 64$)	t	P
Quality of life	Before intervention	10.49 ± 3.06	10.48 ± 3.12	0.018	0.985
	After intervention	18.35 ± 5.65	23.68 ± 5.89	5.224	0.000
Self-feeling	Before intervention	17.98 ± 5.16	18.65 ± 5.21	0.731	0.466
	After intervention	27.68 ± 5.59	36.87 ± 5.77	9.151	0.000
Daily life	Before intervention	21.63 ± 6.58	21.55 ± 6.59	0.069	0.945
	After intervention	29.72 ± 8.67	37.18 ± 8.78	4.837	0.000
Health status	Before intervention	9.46 ± 3.19	9.50 ± 3.13	0.072	0.943
	After intervention	13.22 ± 4.31	17.41 ± 4.69	5.263	0.000

3.3. Comparison of compliance behavior between the two groups of patients

As shown in **Table 3**, the compliance rate of Group B (62/ 96.88%) was higher than that of Group A (52/ 81.25%) and the difference was extremely significant ($\chi^2 = 8.020$, $P < 0.01$).

Table 3. Comparison of compliance behavior between the two groups of patients

Indicator	Group A ($n = 64$)	Group B ($n = 64$)	χ^2	P
Complete compliance	22 (34.37%)	50 (78.13%)	-	-
Partial compliance	30 (46.88%)	12 (18.75%)	-	-
Noncompliance	12 (18.75%)	2 (3.12%)	-	-
Compliance rate	52 (81.25%)	62 (96.88%)	8.020	0.005

3.4. Comparison of nursing satisfaction between the two groups of patients

As shown in **Table 4**, Group B had higher nursing satisfaction (61/ 95.31%) than that of Group A (50/ 78.13%), and the difference was extremely significant ($\chi^2 = 8.208$, $P < 0.01$).

Table 4. Comparison of nursing satisfaction between the two groups of patients

Satisfaction indicator	Group A ($n = 64$)	Group B ($n = 64$)	χ^2	P
Very satisfied	22 (34.38%)	47 (73.43%)		
Generally satisfied	28 (43.75%)	14 (21.88%)		
Not satisfied	14 (21.87%)	3 (4.69%)		
Overall satisfaction rate	50 (78.13%)	61 (95.31%)	8.208	0.004

4. Discussion

ASO of the lower limbs is a chronic progressive disease mainly caused by degenerative and proliferative changes in the intima and media of the lower limb arteries, leading to the thickening and stiffness of the arterial wall, stenosis or occlusion of the vascular lumen, and ischemia in the lower limbs [3]. This disease is more common in middle-aged and older people, with a higher incidence rate in men than women. With the population's aging and lifestyle changes, the incidence of this disease is increasing yearly and seriously affects

the patient's quality of life [4,5]. ASO in the lower limbs can be caused by high blood pressure, hyperlipidemia, diabetes, smoking, etc. These factors lead to vascular endothelial damage, lipid deposition, and the formation of atherosclerotic plaques, which can lead to vascular stenosis or occlusion. Clinically, patients with lower limb ASO usually present with symptoms such as lower limb pain, numbness, chills, and difficulty walking. As the disease progresses, patients may develop signs such as skin color changes, ulcers, and necrosis of the lower limbs, which may require amputation in severe cases. Therefore, exploring effective nursing intervention is of great significance for the early recovery of ASO patients after vascular surgery [6,7].

Routine nursing interventions often follow a fixed set of procedures and standards and lack personalized care tailored to individual patient differences, resulting in patients not being able to receive treatments that fully cater to their needs. Additionally, routine nursing interventions often focus on problems that have already occurred rather than preventing potential problems. This "behind-the-scenes" approach to care may result in patients receiving attention only when problems arise, without taking the necessary preventive measures before the problems occur. In routine care, there may be insufficient communication between nurses and patients, resulting in patients not fully understanding their condition and being unable to express their needs and worries effectively. Therefore, the advantages of problem-oriented nursing intervention are highlighted.

Problem-oriented nursing intervention is tailored to the patient's specific problems and needs. It emphasizes being patient-centered and developing personalized care goals and plans through comprehensive problem identification and assessment. In this model, the care process not only focuses on the direct treatment of the disease but also pays attention to the comprehensive consideration of the patient's overall condition. For example, in addition to paying attention to the patient's disease, this intervention focuses on improving the patient's negative emotions and implementing psychological care. In this study, the SCL-90 score of Group B using was lower than that of Group A ($t = 3.118$, $P < 0.01$), indicating that the former had obvious advantages in improving the patient's negative emotions. In the care of patients with lower extremity arteriosclerosis occlusive disease, problem-oriented nursing intervention methods can also develop nursing plans based on the patient's condition, such as pain management and walking training. This can improve the pertinence and effectiveness of care provided. This approach emphasizes formulating personalized care plans based on the patient's differences and needs, thus improving the adaptability and satisfaction of care. Through education and guidance, patients can also deepen their understanding of the disease, and way of care, and improve compliance and self-management capabilities. This ultimately enhances patient satisfaction and confidence in the treatment. These findings were consistent with other studies. In this study, the ESCA and WHOQOL-BREF scores of Group B were higher than those in Group A, indicating that Group B's self-care ability and quality of life were better than those in Group A. In addition, the patient's compliance and satisfaction with care in Group B were also higher than those in Group A.

The advantages of problem-oriented nursing intervention are not only reflected in the care of patients with lower limb ASO. Zhou *et al*. pointed out that problem-oriented nursing intervention effectively treated patients with severe pancreatitis and improved their condition and quality of life [8]. Shao proposed the preventive effect of a problem-oriented nursing model on the occurrence of hypoglycemia in patients with diabetic nephropathy during hemodialysis [9]. Yang *et al*. proposed that problem-oriented nursing intervention enhanced the self-efficacy and medical compliance behavior in elderly patients with coronary heart disease [10].

5. Conclusion

Problem-oriented nursing intervention improved the self-care ability and quality of life of patients with

lower extremity ASO in vascular surgery, reduced the patient's negative emotions, and enhanced their overall satisfaction.

Disclosure statement

The author declares no conflict of interest.

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