

## Original Article

# Humanistic care interventions in patients with lower extremity arteriosclerosis obliterans

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**Abstract:** Objective: This study was designed to investigate the application value of humanistic care interventions in patients with lower extremity arteriosclerosis obliterans (LEASO). Methods: We enrolled 98 LEASO patients undergoing interventional therapy in our hospital into this study, among whom 47 cases received conventional care interventions (the regular group) while the other 51 received humanistic care interventions based on conventional care interventions (the research group). The two groups were compared in negative emotions, complications, and quality of life of patients. Results: Scores of negative emotions were lower in the research group than in the regular group after care ( $P < 0.05$ ). The pain intensity decreased in both groups after care, with a sharper decrease in the research group ( $P < 0.05$ ). The incidence of complications was lower in the research group than in the regular group after care ( $P < 0.05$ ). The pain-free walking distance (PFWD) increased remarkably in both groups after care, with a longer PFWD in the research group than in the regular group ( $P < 0.05$ ). Scores of the 36-Item Short-Form Health Survey (SF-36) increased after care in both groups ( $P < 0.05$ ), with higher SF-36 scores in the research group than in the regular group ( $P < 0.05$ ). SF-36 reflects the quality of life of patients from four aspects including vitality, emotional state, social function, and role-emotional. The care compliance and satisfaction level with care of patients were higher in the research group than in the regular group ( $P < 0.05$ ). The care compliance rate and patient satisfaction level with care were higher in the research group than in the regular group ( $P < 0.05$ ). Conclusion: Humanistic care interventions can reduce postoperative pain intensity and improve the quality of life in patients with LEASO.

**Keywords:** Humanistic care interventions, lower extremity arteriosclerosis obliterans, application value

## Introduction

Lower extremity arteriosclerosis obliterans (LEASO), a chronic and progressive disease, is caused by insufficient blood supply for limbs affected by thickened arterial intima and artery stenosis and occlusion resulted from atherosclerosis, which triggers a series of symptoms and signs of the affected limb [1, 2]. Mainly affecting middle-aged and elderly people, LEASO has risen as a public health problem due to the aging of population and the changing dietary structure of people [3]. Limb ischemia caused by LEASO leads to surging disability and mortality, which seriously impairs the prognosis of patients [4]. At present, surgery and interventional therapy are effective in relieving arterial occlusion. Interventional therapy is a common treatment for LEASO patients, characterized by simple operations, small trauma, and

high safety [5, 6]; however, its long-term efficacy remains controversial. Therefore, it is highly significant to design scientific and standardized perioperative care interventions to enhance treatment efficacy, reduce the risk of complications, and improve the treatment services.

Continuous developments of social economy have increased people's health awareness and requirements for nursing [7]. Care interventions have shown good application value in the treatment of various diseases [7, 8]. For example, high-quality perioperative care can effectively relieve negative emotions and improve the quality of life in patients with lung cancer [8]. Personalized care can improve the perception of care and enhance the satisfaction level with care in patients undergoing orthopedic surgery [9]. So care interventions are crucial during disease treatment. Humanistic care interventions

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are guided by knowledge of multiple disciplines, which can enhance the subjectivity of nurses, foster a good nurse-patient relationship, and improve the overall quality of the nursing team, aiming to provide patients with more systematic and comprehensive high-quality services [10, 11]. In view that only a few studies have investigated the application of humanistic care interventions, here we compared the clinical performances of humanistic care interventions and conventional care interventions to assess the application value of humanistic care interventions in LEASO patients undergoing interventional therapy.

### Materials and methods

We analyzed the medical records of 98 LEASO patients undergoing interventional therapy in The First Hospital of Changsha. Among them, 47 cases (30 males and 17 females) receiving conventional care interventions were assigned to the regular group, with an average age of  $62.01 \pm 9.01$  years; the other 51 cases (33 males and 18 females) receiving humanistic care interventions based on conventional care interventions were assigned to the research group, with an average age of  $61.98 \pm 8.77$  years. This study has obtained ethical approval from the ethics committee of our hospital. All research participants signed the written informed consent. Inclusion criteria: Patients meeting the diagnostic criteria of LEASO [12]; patients with no drug treatment prior to hospital admission; patients with normal liver and kidney functions; patients with no genetic history of mental illness; patients capable of verbal communication; patients with clear consciousness. Exclusion criteria: Patients with comorbid systemic diseases such as infectious diseases and hematopoietic dysfunction; patients with surgical contraindications; patients with incomplete clinical data; patients unwilling to cooperate with treatment; patients with no family accompany at the time of admission.

### Nursing methods

Patients in the regular group received conventional care interventions. The introduction of health knowledge to patients was arranged immediately after admission. The condition of patients was monitored closely. Before surgery, nurses provided guidance about diet, medica-

tion, daily routine, and care of the affected limb and ordered patients to quit smoking and drinking. Also, nurses instructed patients to soak their feet in warm water every day and take daily foot care. After surgery, patients were given necessary anticoagulation treatment. Nurses instructed patients to do appropriate physical exercises when patients' physical condition allowed and gave certain nursing guidance when patients were discharged from the hospital.

Patients from the research group received humanistic care interventions based on conventional care interventions. All nurses were trained about humanistic care knowledge to improve their nursing skills, responsibility, patience, and compassion. Humanistic care interventions were patient-centered and aimed to meet the needs of patients as much as possible. Specific care interventions were tailored to patients' educational backgrounds and personality characteristics. For psychological interventions, nurses actively communicated with patients, answered various questions raised by them with enthusiasm and patience, and listened to the inner voice of patients to build trust. Nurses also encouraged the families of patients to show care, love, and support for patients to reduce their psychological burden, making joint efforts to provide patients with humanistic care. The ward was comfortable, quiet, and well-equipped to improve the patient's sense of belonging and facilitate the implementation of care interventions. Health knowledge was regularly introduced. Before surgery, patients were informed about knowledge on the disease and treatment, as well as possible postoperative complications and related countermeasures. Nurses shared some successful treatment cases with patients to correct their perception of the disease and enhance their self-confidence. Also, nurses evaluated the pain intensity of patients and designed pain interventions to increase patients' pain threshold. Patients were distracted from pain by things they were interested in or took analgesics in severe cases. Nurses stressed the importance of foot care during the hospitalization and instructed patients to wash their feet gently with warm water every day without damaging their skin. Patients were also recommended to wear soft and comfortable socks and shoes. Nurses also provided appropriate dietary guidance. Patients with comorbid

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**Table 1.** Clinical data of patients [n (%)/(mean ± SD)]

	Research group (n = 51)	Regular group (n = 47)	X <sup>2</sup> /t	P
Sex			0.009	0.928
Male	33 (64.71)	30 (63.83)		
Female	18 (35.29)	17 (36.17)		
Average age (year)	61.98 ± 8.77	62.01 ± 9.01	0.017	0.987
BMI (kg/m <sup>2</sup> )	26.01 ± 4.23	25.79 ± 4.37	0.252	0.802
Smoking			0.056	0.813
Yes	27 (52.94)	26 (55.32)		
No	24 (47.06)	21 (44.68)		
Comorbid hypertension			0.085	0.771
Yes	30 (58.82)	29 (61.70)		
No	21 (41.18)	18 (38.30)		
Comorbid diabetes			0.022	0.881
Yes	17 (33.33)	15 (31.91)		
No	34 (66.67)	32 (68.09)		
Number of affected limbs			0.037	0.848
One	36 (70.59)	34 (72.34)		
Two	15 (29.41)	13 (27.66)		

diabetes received interventions to control blood sugar, and those with comorbid hypertension were instructed about standard medication to effectively control their blood pressure.

### Outcome measures

1. The efficacy of interventional therapy in LEASO patients receiving different care interventions was evaluated, which was divided into marked response, moderate response, and no response [3].

2. The degree of anxiety and depression was assessed by the Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) designed by W. K. Zung [13, 14]. A higher SAS/SDS score indicates a higher degree of negative emotions.

3. Pain intensity was evaluated by the Visual Analogue Scale (VAS) [15]. A higher VAS score indicates higher pain intensity.

4. Postoperative complications, care compliance rate, and pain-free walking distance (PFWD) of all patients were recorded.

5. The quality of life of patients was assessed by the 36-Item Short-Form Health Survey (SF-36) [16]. A higher SF-36 score indicates a bet-

ter quality of life. Patient satisfaction with care was evaluated by the self-made questionnaire.

### Statistical analysis

Data analysis and visualization were performed using Graphpad prism 6. Count data were expressed as n [%] and the comparison was analyzed by the chi-square test. Measurement data were expressed as mean ± standard deviation and the comparison was analyzed by the t-test. The difference between before care and after care was analyzed by the ANOVA and LSD-t post-hoc test. P < 0.05 indicates the difference was statistically significant.

## Results

### Comparison of clinical data of patients

Details of clinical data of all patients are shown in **Table 1**. Differences between the research and the regular groups in sex, average age, body mass index (BMI), smoking, hypertension, diabetes, and number of affected limbs are not statistically significant (P > 0.05).

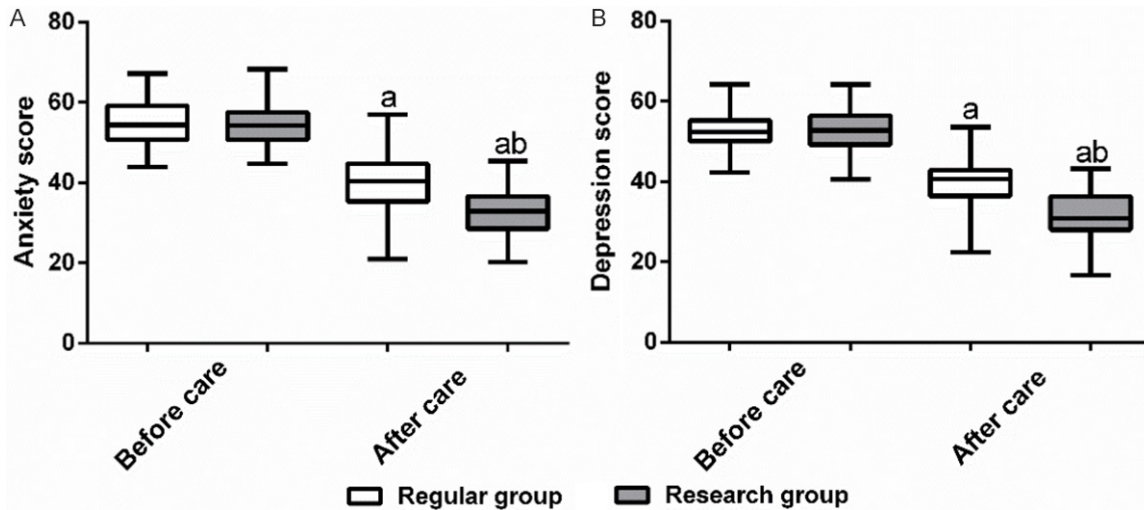
### Comparison of treatment efficacy in patients

Details of treatment responses in the two groups are shown in **Table 2**. Overall response rate = the percentage of cases with marked

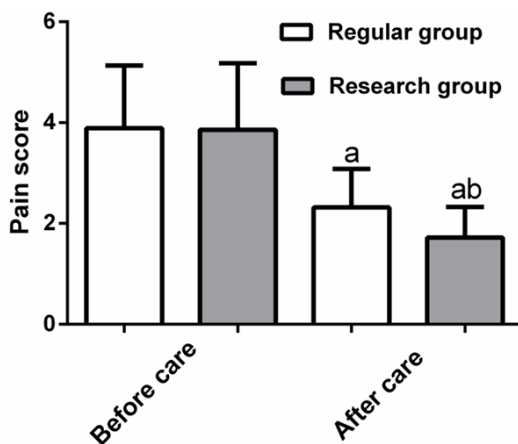
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**Table 2.** Treatment responses in the two groups [n (%)]

	Marked response	Moderate response	No response	Overall response rate
Research group (n = 51)	28 (54.91)	18 (35.29)	5 (9.80)	46 (90.20)
Regular group (n = 47)	18 (38.30)	20 (42.55)	9 (19.15)	38 (80.85)
X <sup>2</sup>				1.744
P				0.187



**Figure 1.** Comparison of scores of negative emotions. A. Comparison of the anxiety score. B. Comparison of the depression score. Note: “a” indicates  $P < 0.05$  when compared with data before care within the same group; “b” indicates  $P < 0.05$  when compared with data in the regular group after care.



**Figure 2.** Comparison of the pain score between the two groups before and after care. Note: “a” indicates  $P < 0.05$  when compared with data before care within the same group; “b” indicates  $P < 0.05$  when compared with data in the regular group after care.

responses + cases with moderate responses. The overall response rate was slightly higher in the research group than in the regular group (90.20% vs. 80.85%), but the difference was not significant ( $P > 0.05$ ).

### Comparison of scores of negative emotions

The degree of anxiety and depression was reflected by the SAS and SDS designed by W. K. Zung (**Figure 1**). Differences in anxiety and depression scores between the two groups before care were not marked ( $P > 0.05$ ). Scores of anxiety and depression decreased remarkably in both groups after care, with lower anxiety and depression scores in the research group than in the regular group ( $P < 0.05$ ).

### Comparison of pain intensity

Pain intensity of patients was reflected by the VAS (**Figure 2**). Differences in the pain score between the two groups before care were not marked ( $P > 0.05$ ). The pain score decreased remarkably in both groups after care, with a lower pain score in the research group than in the regular group ( $P < 0.05$ ).

### Comparison of postoperative complications

Details of postoperative complications in the two groups are shown in **Table 3**. The overall incidence of postoperative complications was

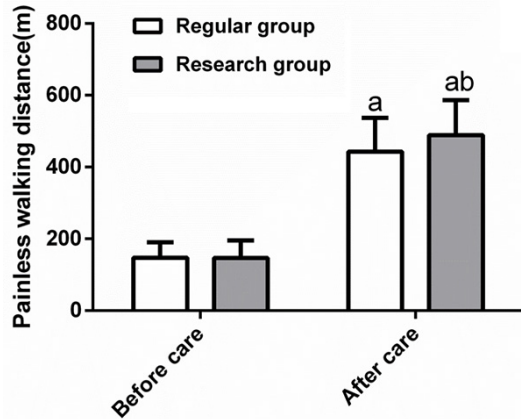
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**Table 3.** Postoperative complications in the two groups [n (%)]

	Infection	Hematoma	Pressure ulcer	Constipation	Arterial thrombosis	Incidence rate
Research group (n = 51)	1 (1.96)	2 (3.92)	0 (0.00)	2 (3.92)	0 (0.00)	5 (9.80)
Regular group (n = 47)	2 (4.26)	3 (6.38)	2 (4.26)	4 (8.51)	1 (2.13)	12 (25.54)
X <sup>2</sup>						4.220
P						0.040

**Table 4.** Care compliance of patients

	Case number	Medication compliance	Positive changes in living habits	Self-monitoring	regular review
Research group	51	42 (82.35)	33 (64.71)	26 (50.98)	35 (68.63)
Regular group	47	30 (63.83)	21 (44.68)	14 (29.79)	23 (48.94)
X <sup>2</sup>		4.305	3.965	4.548	3.926
P		0.038	0.047	0.033	0.048



**Figure 3.** Comparison of the painless walking distance of patients between the two groups before and after care. Note: “a” indicates  $P < 0.05$  when compared with data before care within the same group; “b” indicates  $P < 0.05$  when compared with data in the regular group after care.

remarkably lower in the research group than in the regular group (9.80% vs. 25.54%,  $P < 0.05$ ).

### Care compliance of patients

Care compliance was assessed from four dimensions: medication compliance, positive changes in living habits, self-monitoring, and regular review, as shown in **Table 4**. According to data statistics, the number of cases with good compliance in medication, positive changes in living habits, self-monitoring, and regular review was higher in the research group than in the regular group ( $P < 0.05$ ).

### Comparison of walking capacity of patients

Details of PFWD of patients in the two groups are shown in **Figure 3**. The difference between the two groups in PFWD was not significant before care ( $P > 0.05$ ). PFWD increased remarkably after care in both groups, with longer PFWD in the research group than in the regular group ( $489.10 \pm 97.11$  vs.  $443.29 \pm 93.39$ ,  $P < 0.05$ ).

### Comparison of quality of life of patients

The quality of life of patients was reflected by the SF-36 from four aspects including vitality, emotional state, social function, and role-emotional (**Figure 4**). Differences between the two groups in scores of the SF-36 were not notable before care. Scores of four aspects of the SF-36 increased in both groups after care ( $P < 0.05$ ), with higher scores of four aspects of the SF-36 in the research group than in the regular group ( $P < 0.05$ ).

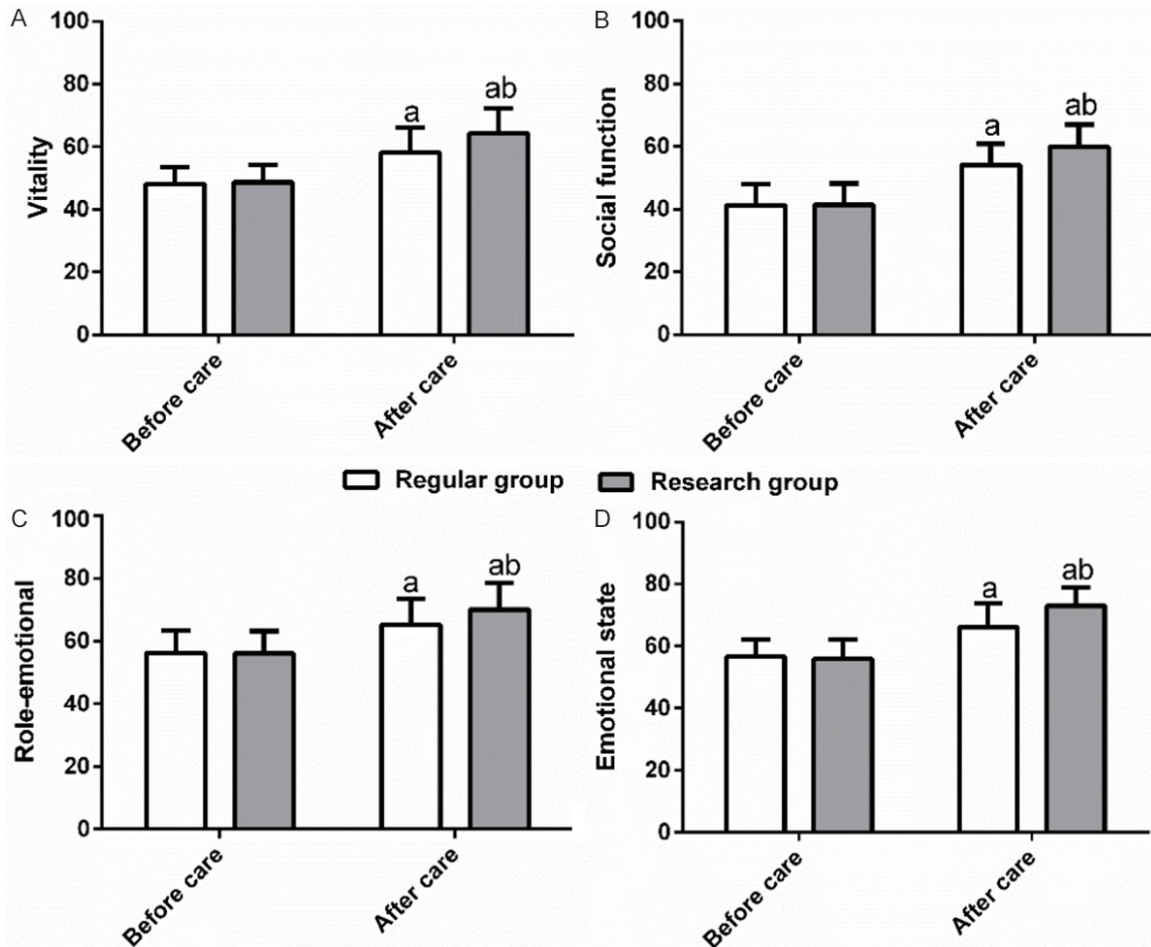
### Comparison of patient satisfaction with care

Patient satisfaction level was reflected by the self-made questionnaire, ranging from great satisfaction, partial satisfaction, moderate satisfaction, and dissatisfaction (**Table 5**). The care satisfaction rate was higher in the research group than in the regular group (94.12% vs. 80.85%,  $P < 0.05$ ).

### Discussion

LEASO is a common life-threatening systemic peripheral vascular disease, manifesting as

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**Figure 4.** Comparison of quality of life of patients. A. Comparison of the score of viability between the two groups before and after care. B. Comparison of the score of social function between the two groups before and after care. C. Comparison of the score of role-emotional between the two groups before and after care. D. Comparison of the score of emotional state between the two groups before and after care. Note: “a” indicates P < 0.05 when compared with data before care within the same group; “b” indicates P < 0.05 when compared with data in the regular group after care.

**Table 5.** Patient satisfaction with care in the two groups [n (%)]

	Great satisfaction	Partial satisfaction	Moderate satisfaction	Dissatisfaction	Satisfaction level
Research group (n = 51)	15 (29.41)	21 (41.18)	12 (23.53)	3 (5.88)	48 (94.12)
Regular group (n = 47)	7 (14.89)	14 (29.79)	17 (36.17)	9 (19.15)	38 (80.85)
X <sup>2</sup>					6.133
P					0.013

limb numbness, coldness, pain, and intermittent claudication in its early stage and developing into gangrene and even severe conditions requiring amputation [4, 17]. Conventional care for LEASO is basic and can meet the needs of most hospitalized patients; however, it can hardly meet the needs of some patients due to the increasing requirements for care interven-

tions, prompting the need for novel care interventions that can cooperate with treatment interventions to the greatest extent [18, 19].

The main targets of existing care interventions are patient-centered to provide traditional medical care and give humanistic care to help patients find their own life value [20]. The

humanistic care ability of medical staff can affect the treatment efficacy, psychological condition, and rehabilitation ability of patients [21]. The importance of humanistic care interventions in modern medicine has been acknowledged, but the application of humanistic care interventions in patients with LEASO has not been fully studied. Here we trained medical staff responsible for LEASO patients undergoing interventional therapy with relevant knowledge and skills on humanistic care interventions and assessed the treatment efficacy after care. The overall response rate was higher in patients receiving humanistic care interventions than in patients receiving conventional care interventions, but the difference was not statistically significant. Here we only assessed the short-term treatment efficacy in patients, so the effects of different care interventions on the long-term treatment efficacy need to be further studied. Suffering from long-lasting illness, LEASO patients, mostly the elderly, have weakened psychological defense and poor coping ability, thereby at high risks of negative emotions. A large number of studies abroad have revealed that care interventions for cognitive behavior, home care, and other care modes can effectively relieve the anxiety and depression of inpatients and reduce the psychological burden [22, 23]. Then we scored negative emotions (anxiety and depression) in patients and noted a sharper reduction in scores of negative emotions in patients receiving humanistic care interventions than in patients receiving conventional care interventions. This is because nurses of humanistic care interventions mainly guide the ASO patients from the psychological level, listen carefully to the main complaints of the patients, assess their psychological state in time, and encourage families to give joint care to patients. A previous study has demonstrated that rapid rehabilitation care can effectively reduce pain intensity and the postoperative VAS score in patients with colorectal cancer [24], suggesting that care interventions can relieve pain to a certain extent. Insufficient blood supply to the lower limbs often causes severe and long-lasting pain in patients with LEASO [3, 25], which decreases the quality of life of patients. The pain intensity is generally measured by the VAS score in clinic trials. In this study, nurses gave humanistic care based on conventional care interventions to distract patients from pain by exposing patients to the music they were interested in and instructing

them to exercise for physical relaxation, thereby reducing the pain intensity.

LUAN et al. [26] suggested that comprehensive care interventions can reduce the risk of postoperative complications in patients with otorhinolaryngologic diseases. Clinical studies have shown that LEASO patients are susceptible to various complications after treatment, which attenuate treatment efficacy and impair recovery [27]. Here we found that humanistic care interventions efficiently reduced risks of complications after interventional therapy and improved the condition of patients by understanding the complications in advance and taking adequate preventive measures. It is generally believed that care interventions can reduce the incidence of postoperative complications, enhance the quality of life, increase the treatment compliance, and strengthen the self-care ability of patients, thereby improving prognosis. In this study, we assessed the care compliance of patients from four dimensions: medication compliance, positive changes in living habits, self-monitoring, and regular review. We noted better care compliance in patients receiving humanistic care interventions because nurses communicated friendly and frequently with patients to build mutual trust. A previous study [28] suggested that among diabetic patients with peripheral arterial disorder of the lower extremities, the walking distance was longer in patients relying on diet to control disease progression than in patients relying on drugs to control disease progression. In this study, the walking distance was longer in patients receiving humanistic care interventions than in patients receiving conventional care interventions alone. We speculate that this is because nurses of humanistic care interventions strictly controlled the diet of patients and instructed patients to do functional exercises to control blood sugar and blood pressure and increase walking distance. Assessment of the quality of life can effectively reflect the recovery of patients after treatment [29]. Care interventions can affect the quality of life of patients after treatment [30]. In this study, we evaluated the quality of life of patients with the SF-36 survey and found that humanistic care interventions enhanced knowledge and skills of medical staff, increased the communication efficiency, and hence improved the quality of life of LEASO patients after treatment. The humanistic care model requires medical staff to be

decent, compassionate, and dedicated so that medical staff and patients can forge a harmonious and friendly relationship with mutual understanding [31]. Here we also assessed the patient satisfaction level with care. In this study, patients receiving humanistic care interventions showed higher satisfaction with care because nurses enhanced mutual trust and the nurse-patient relationship and improved the medical experience of patients.

In summary, this study illustrates that humanistic care interventions can effectively relieve negative emotions, reduce risks of complications, and improve the quality of life in LEASO patients undergoing interventional therapy. However, as the prognosis of patients is affected by many factors such as complications, hospital environment and family factors, the design of this study has certain limitations. In future studies, prognostic risk factors of LEASO patients will be explored, so as to better improve the treatment efficacy and the quality of life of patients.

### Disclosure of conflict of interest

None.

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