Application of Humanistic Nursing in the Treatment of Lower Extremity Deep Vein Thrombosis

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Abstract: Humanistic nursing has emerged as a patient-centered approach that addresses the psychological and emotional needs of patients undergoing interventional procedures. This study aimed to evaluate its effectiveness in managing patients with lower extremity deep vein thrombosis (DVT) undergoing interventional therapy. A total of 100 patients treated at The First Hospital of Hohhot between January and August 2025 were randomly assigned to either a control group receiving standard perioperative care or an intervention group receiving systematic humanistic nursing, which included preoperative psychological counseling, intraoperative emotional support, postoperative rehabilitation guidance, and a supportive clinical environment. Anxiety levels, pain intensity, puncture-site complications, and nursing satisfaction were assessed and compared between groups. Patients receiving humanistic nursing demonstrated significantly lower anxiety scores and reduced postoperative pain compared with those receiving standard care. Additionally, the intervention group exhibited a lower incidence of puncture-site complications and reported significantly higher overall satisfaction with nursing services. These findings indicate that integrating humanistic nursing into DVT interventional care effectively alleviates psychological distress, minimizes procedural complications, and enhances patient experience, supporting its broader implementation in clinical practice.

Keywords: Humanistic Nursing; Lower Extremity Deep Vein Thrombosis; Interventional Therapy; Nursing Satisfaction

1. Background

Venous thromboembolism (VTE) is the third most common cardiovascular disease worldwide, following acute myocardial infarction and stroke in terms of incidence [1]. Its prevalence continues to rise, particularly with the accelerating aging of the global population. VTE encompasses DVT and pulmonary embolism (PE). DVT can lead to limb swelling, pain, tissue necrosis, and post-thrombotic syndrome, significantly impairing patients' survival rates and quality of life [2]. In recent years, endovascular interventional therapy has emerged as the preferred surgical approach for DVT due to its minimally invasive nature, rapid symptom relief, and ability to preserve venous valve function. Despite significant technical advances in interventional procedures, patients often experience considerable anxiety, fear, and pain during the perioperative period. Their psychosocial needs, however, remain inadequately addressed in current clinical practice. Contemporary DVT nursing care predominantly emphasizes procedural coordination, monitoring for complications, and adherence to standardized protocols. Although nurses recognize their critical role in VTE management, there remains insufficient attention to psychological assessment, individualized humanistic care, and optimization of the patient experience [3–5]. Consequently, nursing interventions may lack empathy, warmth, and personalization.

With the ongoing paradigm shift toward a "patient-centered" healthcare model, enhancing patients' sense of well-being, satisfaction, and overall quality of life has become a central objective of modern nursing. Humanistic nursing integrates respect, compassion, and empathy throughout the care process, aiming to meet patients' multidimensional physical, psychological, and social needs through emotional support, psychological counseling, and a healing-oriented care environment. Accordingly, this study aims to investigate the application value of humanistic nursing in patients undergoing interventional therapy for

lower extremity DVT, with the goal of informing the development of a more compassionate and holistic nursing model for DVT management.

2. Materials and Methods

2.1 General Information

From January 2025 to August 2025, a total of 100 patients who underwent interventional treatment for DVT at the Interventional Catheterization Room of The First Hospital of Hohhot were selected. Patients were randomly assigned into two groups using a random number table: an intervention group (n=50) and a control group (n=50). The control group received standard perioperative care, while the intervention group received additional humanistic nursing interventions on top of routine care. All participants provided written informed consent.

2.2 Inclusion and Exclusion Criteria

2.2.1 Inclusion criteria

Age between 18 and 75 years, gender not restricted; Confirmed diagnosis of lower extremity DVT via color Doppler ultrasound or venography, meeting criteria for interventional therapy; Undergoing their first interventional procedure; Clear consciousness with the ability to communicate normally and independently complete assessment scales; Voluntary participation in this study with signed informed consent.

2.2.2 Exclusion criteria

Known allergy to thrombolytic drugs or contrast agents; Recent active bleeding (e.g., severe intracranial hemorrhage, gastrointestinal bleeding, urinary tract bleeding) within 2-4 weeks; Major surgery, biopsy, cardiopulmonary resuscitation, or any procedure that cannot be controlled by compression hemostasis within recent time;

Severe trauma or open injuries recently; Uncontrolled high-risk hypertension (systolic blood pressure ≥160 mmHg and/or diastolic blood pressure ≥110 mmHg); Severe liver or kidney dysfunction (Child-Pugh C grade or creatinine clearance rate <30 mL/min);

Acute or subacute bacterial endocarditis; History of hemorrhagic or ischemic stroke;

Vascular lesions such as aneurysms, aortic dissection, or arteriovenous malformations;

Pregnant or lactating women; Severe mental illness or cognitive impairment preventing cooperation with the study.

2.3 Methods

Participants were divided into two groups using a random number table. Both groups received standard perioperative care including health education, preoperative preparation, intraoperative cooperation, and postoperative observation. The intervention group additionally received humanistic nursing interventions:

Preoperative Cognitive and Psychological Interventions: Preoperative bedside visits by specialized nurses to build trust, reduce unfamiliarity through visual aids and videos, and address misconceptions about surgical risks.

Intraoperative Accompaniment and Comfort Care: Continuous presence and support from the responsible nurse, ensuring patient comfort and privacy, and maintaining body temperature.

Immediate Postoperative Care and Seamless Transfer: Immediate reassurance after surgery, detailed handover to ward staff, and emphasis on postoperative limb care instructions.

Humanistic Environment Creation: Soft background music, visible clocks, and informative brochures to alleviate anxiety.

Symptom Dynamic Assessment and Immediate Intervention: Regular pain and anxiety assessments using VAS and SAS, timely adjustment of analgesia and sedation protocols.

Family Support Coordination: Updates to family members every 30 minutes during surgery, postoperative education on care and potential complications.

Continuity of Care and Rehabilitation Guidance: Follow-up calls and WeChat communications providing guidance on medication, rehabilitation exercises, and recognizing signs of recurrence.

2.4 Outcome Measures

Preoperative Anxiety Levels: Assessed using the Self-Rating Anxiety Scale (SAS).

Postoperative Pain Incidence and Severity: Evaluated using the Visual Analog Scale (VAS).

Incidence of Puncture Site Complications: Observed and recorded by blinded specialist nurses at specific intervals. Overall Patient Satisfaction with Nursing Care: Assessed through a questionnaire covering various aspects of care satisfaction.

2.5 Statistical Analysis

Data analysis was performed using SPSS 26.0 software. Normality tests (Shapiro-Wilk test),

homogeneity of variance tests (Levene's test), t-tests for normally distributed data, Mann-Whitney U tests for non-normally distributed data, chi-square tests or Fisher's exact test for categorical data, and Wilcoxon rank-sum tests for ordinal data were used. A P-value <0.05 was considered statistically significant.

3. Results

3.1 Baseline Characteristics

There were no statistically significant differences between the two groups in terms of age, sex, or body mass index (BMI) (all P > 0.05), indicating good comparability (Table 1).

3.2 Postoperative Pain Outcomes

The intervention group reported significantly lower intraoperative VAS pain scores compared to the control group (P < 0.001). The overall incidence of pain was also lower in the intervention group (68.0% vs. 92.0%, P = 0.003). Furthermore, a higher proportion of patients in the intervention group experienced only mild pain, while fewer reported moderate-to-severe pain (P < 0.05) (Table 2).

3.3 Preoperative Anxiety Levels

After the intervention, the mean SAS standard score in the intervention group (45.2 ± 6.8) was significantly lower than that in the control group (53.6 ± 7.4), with a statistically significant difference (P < 0.001) (Table 2).

Table 1. Comparison of Baseline Characteristics between the Two Groups

Variable	Intervention Group (n=50)	Control Group (n=50)	t/x2	P
Age (years, mean ± SD)	58.6 ± 12.3	59.2 ± 11.8	0.249	0.804
Sex (male/female, n)	28/22	26/24	0.167	0.683
BMI (kg/m2,mean ± SD)	24.2 ± 3.1	23.9 ± 2.8	0.509	0.612

Table 2. Comparison of Pain and Anxiety Outcomes between the Two Groups

Outcome Measure	Intervention Group (n=50)	Control Group(n=50)	t/Z	P
VAS score (mean ± SD)	2.4 ± 1.1	4.6± 1.5	8.372	<0.001
Pain incidence, n (%)	34 (68.0)	46 (92.0)	8.575	0.003
SAS standard score(mean± SD)	45.2± 6.8	53.6± 7.4	5.923	<0.001

3.4 Puncture Site Complications

The total incidence of puncture site complications was significantly lower in the intervention group (4.0%) than in the control group (20.0%) (P = 0.014). Specifically, the rates of hematoma and bleeding were reduced, although individual comparisons for each complication type did not reach statistical significance due to low event counts (Table 3).

Table 3. Comparison of Puncture Site Complications [n (%)]

Complication Type	Intervention Group (m=50)	Control Group (n=50)	x2	P
Bleeding	1 (2.0)	4 (8.0)		0.362
Hematoma	1 (2.0)	5 (10.0)		0.205
Infection	0 (0.0)	1 (2.0)		1.000
Total	2 (4.0)	10 (20.0)	6.061	0.014

3.5 Nursing Satisfaction

The intervention group achieved significantly higher total satisfaction scores (93.5 ± 4.2 vs. 76.0 ± 6.8, P < 0.001) and a higher overall satisfaction rate (98.0% vs. 76.0%, P = 0.001) compared to the control group (Table 4).

Table 4. Comparison of Nursing Satisfaction between the Two Groups

Dimension	Intervention Group (n=50)	Control Group (n=50)	t	P
Total satisfaction score	93.5 ± 4.2	76.0 ± 6.8	15.423	<0.001
Overall satisfaction rate, n (%)	49 (98.0)	38 (76.0)	10.698	0.001

4. Discussion

4.1 Integration Value of Humanistic Nursing in the Care Practice for Interventional Treatment of Lower Extremity Deep Vein Thrombosis

This study integrated humanistic nursing into the perioperative care for interventional treatment of lower extremity DVT, demonstrating significant reductions in preoperative anxiety, pain levels, and puncture site complications, while enhancing patient satisfaction. Guidelines for the care practice of interventional treatment of DVT

emphasize comprehensive assessments, position care, rest and activity management, dietary care, condition monitoring, and catheter care, with particular attention to patients' psychological states and limb symptom evaluations[6]. Preoperative cognitive and psychological interventions, as well as intraoperative accompaniment and comfort care, combined humanistic care with specialized technical recommendations, embodying a patient-centered holistic nursing philosophy[7]. Furthermore, humanistic nursing significantly reduced puncture site complication rates, consistent with the concept of comfort care in catheter-directed thrombolysis.

4.2 Temporal and Spatial Echoes with Medical Humanities Policies

The implementation of this study coincided with the enhancement of medical humanities initiatives, which call for creating safe, convenient, warm, and comfortable healthcare environments, especially emphasizing care services for key populations such as middle-aged and elderly individuals. Psychological counseling, environmental optimization, and family support measures for DVT patients are concrete practices aligning with policies aimed at improving doctor-patient communication and fostering a humane care environment[8]. Medical humanities serve as a bridge for harmonious doctor-patient relationships, enhancing patient experiences and satisfaction. This study quantitatively confirmed that humanistic nursing significantly alleviates negative emotions, reducing anxiety and fear. In high-stress, high-risk procedures like DVT intervention, humanistic nursing not only represents service quality but also critically influences treatment outcomes.

4.3 Guiding Significance of Evidence-Based Nursing Models in Implementing Humanistic Nursing

The systematic humanistic nursing interventions used in this study conform to the framework of knowledge translation models, covering knowledge generation, problem identification, localization adaptation, and application. Emphasizing knowledge, skills, outcome beliefs, and environmental resources as core elements for behavior change, preoperative visits to establish trust, dynamic pain assessment and intervention during surgery, and postoperative continuity of care exemplify evidence-based nursing concepts applied in the realm of humanism[9-10]. Additionally, expert consensus on risk assessment and preventive care for venous thromboembolism in general surgery highlights the importance of continuous risk evaluation throughout hospitalization, focusing on patients' emotional needs and psychological changes[11]. This study supplemented traditional risk assessments with preoperative anxiety evaluations and patient satisfaction assessments, addressing the lack of a humanistic dimension in conventional risk assessments, thereby forming a comprehensive physiological-psychological-social assessment system.

4.4 Extension of Humanistic Care in the Prevention of Post-Thrombotic Syndrome

While this study primarily focused on acute phase interventional care, humanistic nursing holds long-term significance for preventing post-thrombotic syndrome[12]. Preventing post-thrombotic syndrome requires attention to patient self-management compliance, closely related to psychological state and disease understanding. Postoperative micro-education and telephone follow-ups after discharge enhance patients' awareness and adherence to anticoagulation therapy, compression stockings use, and ankle pump exercises, theoretically reducing the incidence of long-term post-thrombotic syndrome.

4.5 Study Limitations

This was a single-center study with a relatively limited sample size, and the observation period covered only the perioperative period without long-term follow-up to assess the impact of humanistic nursing on thrombus recurrence and post-thrombotic syndrome. Future research should involve multi-center, large-sample randomized controlled trials using standardized scoring tools to evaluate long-term prognosis and explore "Internet + humanistic care" models utilizing digital tools for post-discharge psychological support.

5. Conclusion

This study systematically integrated humanistic nursing principles into the entire cycle of interventional treatment for lower extremity DVT, implementing preoperative cognitive psychological interventions, intraoperative

comfort care, seamless postoperative handovers, and continuity of care. These measures significantly reduced patient anxiety and pain levels, decreased puncture site complications, and enhanced nursing satisfaction. The study confirms that in high-risk, precision-demanding care scenarios like DVT intervention, humanistic care complements technical nursing, forming essential components of high-quality care.

References

[1] Raskob GE, Angchaisuksiri P, Blanco AN, et al. Thrombosis: a major contributor to globaldisease burden. Arterioscler Thromb Vasc Biol. 2014. 34(11): 2363-71.

[2] Li Xiaoqiang, Zhang Fuxian, Wang Shenming. Guidelines for the Diagnosis and Treatment of Deep Vein Thrombosis (3rd Edition). Chinese Journal of Vascular Surgery (Electronic Version), 2017, 9(4): 250–257.

[3] Surgical Nursing Specialty Committee of the Chinese Nursing Association, Nursing Group of the Surgery Branch of the Chinese Medical Association. Expert Consensus on Risk Assessment and Preventive Nursing for Venous Thromboembolism in General Surgical Patients. Chinese Journal of Nursing, 2022, 57(4): 444–449.

[4] Cardiopulmonary Resuscitation Professional Committee of the Chinese Research Hospital Association. Guideline on Venous Thromboembolic Cardiac Arrest: Part of the “Chinese Expert Consensus on Cardiopulmonary Resuscitation”. Chinese Critical Care Medicine, 2018, 30(12): 1107–1116.

[5] Wang Yu, Ma Yufen, Deng Haibo, Yang Xu, Wang Lei, Wang Xiaojie, Xu Yuan, Zhu Lijun, Liu Ge, Liu Ying, Wu Xinjuan. Co-word Cluster Analysis of Research Hotspots in Venous Thromboembolism Nursing in China. Chinese Journal of Nursing, 2020, 55(7): 1001–1005.

[6] Li Yan. Clinical Practice Guideline for Nursing Care in Interventional Treatment of Lower Extremity Deep Vein Thrombosis. Journal of Interventional Radiology, 2025, 34(1): 5–17.

[7] Nursing Professional Committee of the China Section of the International Union of Angiology. Expert Consensus on Catheter-Directed Thrombolysis Nursing for Peripheral Vascular Thrombotic Diseases. Journal of Interventional Radiology, 2022, 31(11): 1045–1051.

[8] Action Plan for Enhancing Medical Humanities Care (2024–2027). Peking Union Medical College Hospital Journal, 2025, 16(2): 534–536.

[9] Zhang Can. Reflections on the Value Basis and Key Focus Areas for Implementing the Medical Humanities Care Enhancement Initiative. Chinese Journal of Medical Ethics, 2025, 38(4): 522–530.

[10] Wang Yu, Hao Yufang, Ma Yufen, Xu Yuan, An Ranxun, Deng Haibo, Wang Lei, Wang Xiaojie, Sun Jianhua, Liu Jia, Zhu Lijun, Wu Xinjuan. Development of an Evidence-Based Nursing Practice Model for Deep Vein Thrombosis Prevention. Chinese Journal of Nursing, 2024, 59(15): 1804–1811.

[11] Surgical Nursing Specialty Committee of the Chinese Nursing Association, Nursing Group of the Surgery Branch of the Chinese Medical Association. Expert Consensus on Risk Assessment and Preventive Nursing for Venous Thromboembolism in General Surgical Patients. Chinese Journal of Nursing, 2022, 57(4): 444–449.

[12] Lü Liqiong, Peng Renmei, Liu Huagang, Deng Hongping, Chen Qiuxiang. Advances in Nursing Research on the Prevention of Post-Thrombotic Syndrome Following Deep Vein Thrombosis. Journal of Nursing Science, 2024, 39(19): 120–123.

