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Research on the Foot Care Journey Map for Patients with Diabetic High-Risk Feet

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Abstract: *Objective:* To explore the full-cycle foot care experiences and real needs of patients with high-risk diabetic feet based on patient journey maps, providing a reference for optimizing the entire preventive care model and delaying the onset and progression of diabetic foot. *Methods:* A phenomenological research method from qualitative research was employed. From September to December 2025, 15 patients with high-risk diabetic feet were selected as the study subjects. Longitudinal semi-structured interviews were conducted on the first day of admission, the day before discharge, three months after discharge, and six months after discharge. Content analysis was used to extract themes and construct and draw a foot care journey map for patients with high-risk diabetic feet. *Results:* The patients' full-cycle care experiences were summarized into three stages: examination and diagnosis, hospitalization, and home care after discharge. A total of 21 themes were extracted, revealing significant stage-specific differences in care tasks, emotional states, distressing issues, and care needs across different treatment stages. *Conclusion:* Foot care for patients with high-risk diabetic feet spans the entire treatment process. Clinical healthcare professionals should establish a phased, continuous, and individualized foot preventive care system to effectively prevent and control the onset and progression of diabetic foot.

Keywords: High-risk diabetic foot; Foot care; Journey map; Self-management; Continuous care; Qualitative research

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1. Introduction

The prevalence of diabetes mellitus (DM) among adults in China has reached 11.2%. Diabetic foot (DF) is a severe complication of DM, characterized by long treatment duration, high difficulty, and high cost, and is the primary cause of disability and death in DM patients [1]. High-risk diabetic foot (HDF) represents the pre-DF stage, referring to DM patients with severe diabetic peripheral neuropathy (DPN) and/or peripheral vascular disease (PAD) and other risk factors, such as foot deformities or a history of ulcers, who are at risk

of developing foot ulcers but do not currently have diabetic foot ulcers (DFU) [2].

Research both domestically and internationally indicates that approximately 85% of diabetic foot amputations can be avoided through scientific intervention, with the core being to strengthen patient disease awareness education, cultivate standardized daily foot care habits, and maintain stable blood glucose control [3,4]. Studies have shown that patients with high-risk diabetic feet lack self-management abilities, particularly in daily foot care, leading to an increased risk of progression from high-risk feet to diabetic foot [5]. Therefore, foot care is a key strategy for reducing the incidence of diabetic foot ulcers and amputations. Timely screening, intervention, and treatment can effectively reduce the incidence of DFU and amputation rates [6].

Patient journey maps are tools and methods that visually present the interactions between patients and various elements in the healthcare system. In recent years, they have been used in the health management of chronic disease patients [7]. Currently, this method has been widely applied in international clinical practice and has demonstrated significant effectiveness [8]. However, no relevant research on foot care journey maps for patients with high-risk diabetic feet has been retrieved [9]. Therefore, this study aims to explore in-depth the experiences and needs of patients regarding foot care at different stages of their disease, providing a reference for optimizing foot care for patients with high-risk diabetic feet.

2. Objects and methods

2.1. Study objects

Using purposive sampling with the principle of maximum variation sampling, semi-structured interviews were conducted with patients with high-risk diabetic feet from the endocrinology department of a tertiary grade A hospital in Hebei Province from September to December 2025.

2.1.1. Inclusion criteria

(1) Patients meeting the diagnostic criteria for type 2 diabetes (T2DM) established by the World Health Organization (WHO) in 1999 [10,11];
(2) Patients classified as grades 0–3 according to the IWGDF risk factor grading system (IWGDF 2023) [12];
(3) Patients with peripheral neuropathy and/or peripheral vascular disease and/or autonomic neuropathy, accompanied by at least one other risk factor;
(4) Patients aged 18 years and above;
(5) Patients with clear consciousness who can cooperate in completing the survey;
(6) Patients who are informed and voluntarily participate in this study.

2.1.2. Exclusion criteria

(1) Patients with severe impairment of auditory and visual functions;
(2) Patients with a history of mental illness;
(3) Patients with concurrent severe diseases or complications, such as malignant tumors, severe infections, or severe damage to heart, liver, or kidney function.

2.1.3. Study design

The sample size for this study followed the “information saturation” principle in qualitative research, meaning data collection and analysis continued until no new themes or viewpoints emerged. Additionally, 2–3

more interviews were conducted to avoid the impact of sample attrition on the study results during follow-up. Data saturation was reached after interviewing the 13th patient, and two more patients were interviewed, resulting in a total of 15 patients interviewed 59 times (one patient missed the interview at the three-month post-discharge stage due to distance constraints). This study has been approved by the hospital's ethics committee. General information about the interviewees is shown in **Table 1**.

Table 1. General information of interviewees (n = 15)

ID	Gender	Age (years)	Education level	Marital status	Residence	Living arrangement	Diabetes duration (years)	Payment type
P1	Female	66	University	Widowed	Urban	Living alone	30	Medical insurance
P2	Female	54	Secondary school	Married	Rural	Living with others	9	Medical insurance
P3	Male	48	University	Married	Urban	Living with others	12	Medical insurance
P4	Female	72	University	Married	Urban	Living with others	13	Medical insurance
P5	Male	56	Secondary school	Married	Rural	Living with others	7	Medical insurance
P6	Female	34	University	Married	Urban	Living with others	9	Medical insurance
P7	Female	65	University	Married	Urban	Living with others	15	Medical insurance
P8	Male	28	University	Unmarried	Urban	Living alone	6	Medical insurance
P9	Male	39	University	Married	Urban	Living with others	11	Medical insurance
P10	Male	55	Secondary school	Married	Urban	Living with others	5	Medical insurance
P11	Female	45	University	Married	Urban	Living with others	8	Medical insurance
P12	Female	56	Primary school	Married	Rural	Living with others	7	Medical insurance
P13	Male	70	Primary school	Married	Rural	Living with others	16	Medical insurance
P14	Male	59	Secondary school	Married	Urban	Living with others	16	Medical insurance
P15	Female	60	University	Married	Urban	Living with others	11	Medical insurance

2.2. Methodology

2.2.1. Establishment of the research team and development of the interview outline

A research team was formed based on the research content and objectives. Following the methodological steps for constructing a patient journey map and incorporating relevant expert consensus, the research team divided the patient's disease journey into three main stages: the evaluation and diagnosis phase, the inpatient treatment phase, and the post-discharge home care phase [13–15]. The interview outline was determined through literature review, group interviews, and pre-interviews.

2.2.2. Data collection and quality control methods

Based on the interview outline, patients were provided with standardized explanations and informed about the purpose, significance, content, and confidentiality of the study. After obtaining patient consent, informed consent forms were signed, and interviews were conducted and recorded. The questioning approach and sequence were flexibly adjusted based on the interview context, with the sample size determined by the principle of information saturation, meaning interviews ceased when no new themes emerged. Each interview lasted between 30 and 45 minutes.

2.2.3. Data organization and analysis methods

NVivo15.0 software was used to manage the interview data. Within 24 hours after patient interviews, two researchers employed directed content analysis to analyze the interview content. Finally, the researchers, together with two patient representatives, reviewed the themes and discussed and refined the map content according to thematic data categories to ensure its completeness and consistency.

3. Results

3.1. Construction of the foot care journey map for patients at high risk of diabetic foot

A patient journey map typically includes a horizontal axis (time axis) and a vertical axis (task axis) [13]. In the preliminary stage, the research team reviewed relevant expert consensus literature and collected patient medical records through desktop research methods for discussion [10,11,16]. It was determined that the horizontal axis of the journey map for patients at high risk of diabetic foot would be divided into three stages. From the four dimensions of foot care tasks, emotions, pain points, and satisfaction points, 21 themes were identified (7 in the evaluation and diagnosis phase, 9 in the inpatient treatment phase, and 5 in the post-discharge home care phase), forming the foot care journey map for patients at high risk of diabetic foot, as shown in **Figure 1**.

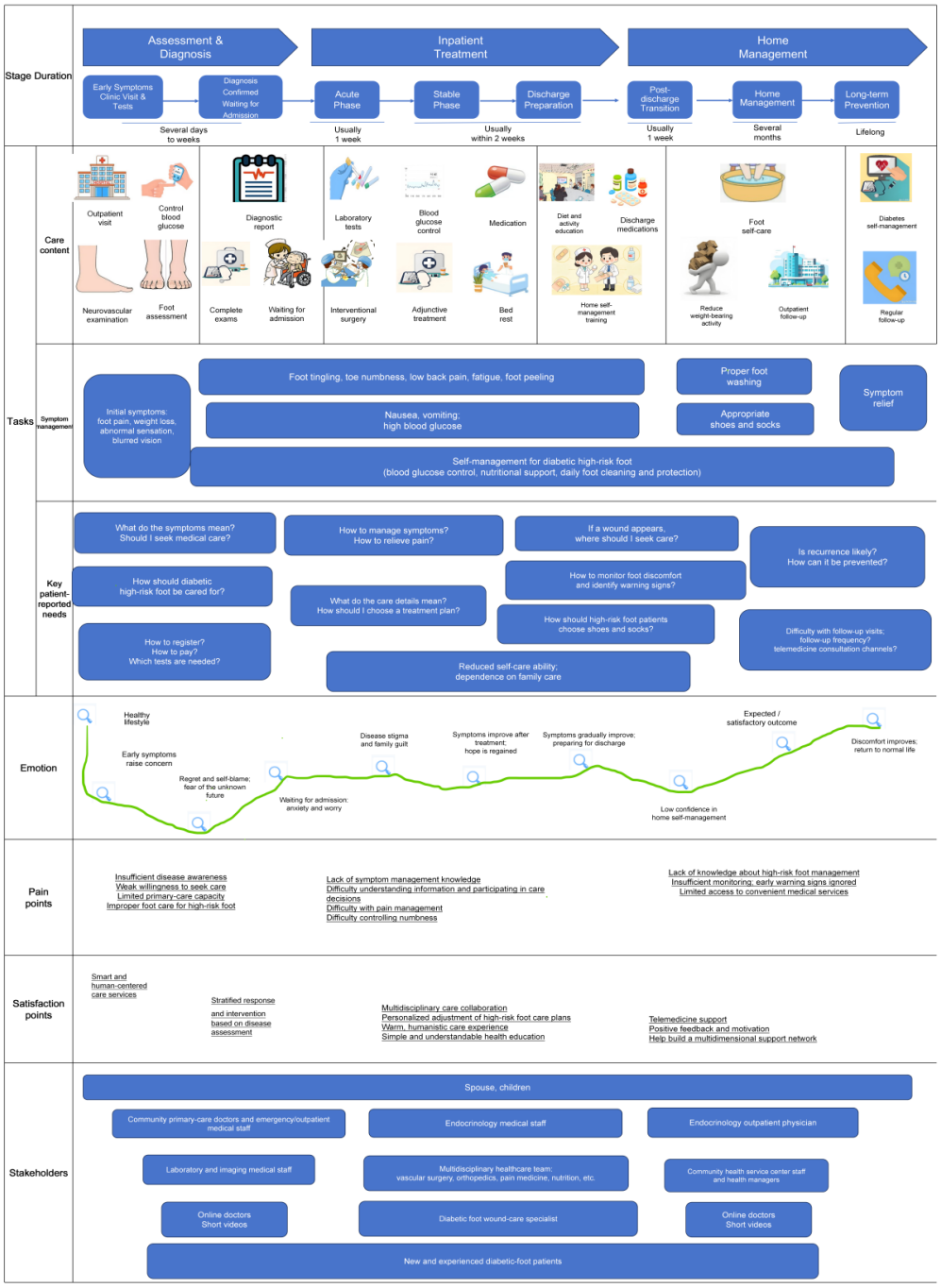

Figure 1. Foot care journey map for patients at high risk of diabetic foot.

3.2. Evaluation and diagnosis phase

3.2.1. Tasks

(1) Identification of early symptoms

P1: “The first time, I felt my feet were always cold, as if they couldn’t warm up, and they were always numb. I came to the hospital to check, and later found out I had diabetes with peripheral vascular disease”.

P3: “My blood sugar has always been poorly controlled. One morning, while washing my face, I suddenly noticed blurred vision in my left eye. I went to the hospital for an examination and was told I had diabetic

retinopathy".

(2) Assessment and foot screening

P3: "My feet are often numb, with occasional needle-like stabbing pain. The doctor performed nerve sensation tests on me". P5: "I had urine and blood tests to check for ketones, CT scans, and fundus photography".

3.2.2. Emotions

(1) Anxiety

P1: "My waist hurts, and so does my heel". P2: "This time, my glycated hemoglobin was high, and I have neuropathy. I feel uncomfortable". P6: "After giving birth, no one took care of me, and I went back to work after three months".

(2) Fear

P1: "I'm afraid of the pain from daily blood sugar tests". P8: "At first, I didn't know much about diabetes and was scared it would get worse. After learning more, I'm not as tense".

(3) Self-blame

P9: "This disease never gets better, and my children are busy with work. I'm a burden to them". P14: "I can't see my feet clearly and feel embarrassed to bother others all the time".

3.2.3. Pain points

(1) Insufficient knowledge about the disease

P1: "I don't understand diabetes-related knowledge and have no concept of a blood sugar level of 12". P3: "I cut my foot while trimming my nails, and the wound didn't heal well. I didn't know it was caused by diabetes".

(2) Reluctance to seek medical help

P2: "I was discharged home after the second hospitalization because I couldn't adjust well during the New Year". P6: "Because my child is young, my family can't take care of me, and I'm busy with work and can't come to the hospital".

(3) Failure to diagnose at the hospital

P1: "The surgeon didn't understand either. They still gave me glucose infusion despite my high blood sugar". P3: "I was hospitalized for pneumonia, and my blood pressure was measured inaccurately. Insulin was added to the infusion without my knowledge, causing hypoglycemia".

(4) Neglect and self-treatment

P9: "I kicked something while walking and didn't expect it to become purulent and infected". P15: "I got a blister on my foot from walking too much in the park in summer and didn't pay attention. I just wiped it with alcohol and thought it would be fine".

3.2.4. Satisfaction points

(1) Professionalism of medical staff

P1: "I'm very satisfied with the doctors in the hospital's endocrinology department". P2: "The nurses and doctors in the hospital are all good".

(2) Convenience of medical services

P11: "Now, I can handle hospitalization procedures directly on my phone without queuing". P14:

"Discharge procedures can be handled in the ward area. Previously, I had to go to the hospitalization office and queue up. Now it's much more convenient".

(3) Service attitude

P5: "There are many service personnel in the hospital now, and they are enthusiastic about solving problems". P12: "The doctors and nurses in the hospital have a very good service attitude".

3.3. Inpatient treatment phase

3.3.1. Tasks

(1) Alleviation of discomfort symptoms

P1: "The relief is not obvious". P3: "My blood sugar is well-regulated, very standardized, and effective. It became normal in about 3-4 days, below 10, and I was hospitalized for about ten days". P5: "I came for treatment due to recent foot numbness, but the relief is not obvious so far". P10: "Occasionally, my foot goes numb".

(2) Cooperation with treatment

P5: "At first, my blood sugar was around sixteen or seventeen when hospitalized, but it decreased with treatment". P6: "My foot's sense of touch and sensitivity are not as strong as before". P7: "During hospitalization, I found diathermy (infrared therapy) very comfortable and good".

3.3.2. Emotions

(1) Anxiety

P2: "I'm slightly anxious due to poor blood sugar control". P6: "I've been hospitalized several times this year, each time due to blood sugar and the presence of ketones". P7: "I'm in a bad mood, quite depressed. I have to watch what I eat, fearing complications. I feel a bit burdened. This comprehensive examination shows that my health is not good, and I'm prone to chest tightness".

(2) Fear

P8: "I was very anxious when I first came in, worrying that my foot would deteriorate severely and eventually require amputation". P13: "During hospitalization, I attended lectures by doctors and nurses and saw patients in the same ward with foot ulcers requiring daily dressing changes. I'm afraid I'll end up like that".

3.3.3. Pain points

(1) Poor blood sugar control

P1: "At first, my blood sugar control fluctuated greatly, not particularly good or bad, just okay, with significant fluctuations". P10: "I don't monitor my blood sugar enough at home, can't control my mouth, and don't pay attention to my diet, resulting in poor blood sugar control".

(2) Occurrence of complications

P4: "My hands and feet are numb, and I get blisters on my feet without any special reason. I have pain and itching all over my body". P5: "I have problems with my eye fundus, nerves, and blood vessels, which are complications of diabetes. I had arm and leg numbness during my last hospitalization".

3.3.4. Satisfaction points

(1) Satisfaction with medical staff

P1: "The doctors and nurses took good care of me during hospitalization, with a good manner and

attitude". P7: "I'm particularly satisfied with the attending doctor. I always look for her because she understands my condition and follows up with me after discharge".

(2) Blood sugar regulation

P3: "The treatment is very acceptable, including insulin injections, pump therapy, and indwelling needles. The attitude is very good". P7: "My blood sugar is well-regulated, better than at home".

3.4. Post-discharge home care phase

3.4.1. Tasks

(1) Mastery of foot self-care methods

P3: "I wash my feet with water at around 40 degrees Celsius, dry them with a towel, lift them to check, or touch them with my hands to inspect my feet". P5: "I trim my nails after soaking my feet at night. I soak them for about 20 minutes, use nail clippers, and cut my big toes with scissors. Sometimes I cut myself and bleed, but it heals on its own".

(2) Proper selection of suitable shoes

P5: "I don't have a specific time to buy shoes, morning or afternoon. I just buy regular socks". P10: "Now, I buy loose-fitting shoes that are easy to put on and take off, don't squeeze my feet, and don't require bending over to put them on. They're comfortable for walking".

(3) Necessity of follow-up visits

P7: "I need to be hospitalized 1-2 times a year for the doctor to adjust my medications. It's necessary". P12: "Problems can be detected and treated early if discovered in time. Delaying treatment makes it harder to cure".

3.4.2. Emotions

(1) Anxiety

P6: "I've been very careful since returning home, afraid to eat too much, fearing high blood sugar and complications". P11: "Now, I'm afraid to trim my nails when washing my feet and have my children do it for me, which is also a bother to others".

(2) Fear

P6: "I'm afraid to walk barefoot now, fearing foot injuries, infections, and purulence". P14: "The numbness in my feet hasn't relieved yet. I'm afraid I won't be able to walk or go out in the future".

3.4.3. Pain points

(1) Impact of lifestyle or personal factors on the condition: P5: "My blood sugar control at home has been unsatisfactory recently, with levels above 12 in the morning and after meals". P10: "I love eating sugar, but I can't now. I love drinking porridge, but I know I shouldn't".

3.4.4. Satisfaction points

(1) Important people providing help: P2: "Both myself and my children remember to monitor the glycated hemoglobin time and check it every three months. My spouse bought a water temperature gauge, saying the water temperature should be 40 degrees Celsius. I wash my feet every other day". P9: "The attending doctor plays an important role in blood sugar control and is very responsible. She even sends messages after work".

4. Discussion

4.1. Evaluation and diagnosis phase

The evaluation and diagnosis phase is the first line of defense for intervention in patients at high risk of diabetic foot. The study found that patients generally have problems such as weak risk awareness, non-standardized screening, and fragmented health education during this phase [17]. Most patients only have a superficial understanding of foot risk factors and lack alertness to early signals such as skin temperature changes, abnormal sensations, and toenail deformities, resulting in the failure to identify high-risk states in a timely manner. The above results suggest that the evaluation and diagnosis phase should not only complete physiological indicator measurements but also establish an early assessment model for patients at high risk of diabetic foot that integrates "risk screening + cognitive assessment + demand judgment" [18]. Quantitative grading of the risk of high-risk foot occurrence should be carried out using standardized tools, and health education should be conducted simultaneously to enable patients to shift from passive acceptance of examinations to active identification of risks, truly achieving early detection, early intervention, and early management [19].

4.2. Inpatient treatment phase

The inpatient treatment phase is a critical stage for controlling the condition and preventing ulcer progression [20]. The study shows that patients have the highest demand for professionalism in wound care, pain management, and blood sugar control during this phase and are relatively satisfied with the standardization of nursing operations and the timeliness of condition observation [21]. Health education during hospitalization is mostly conducted through unified propaganda and education, lacking individualized guidance for patients of different ages, educational levels, and self-care abilities, resulting in poor knowledge and skill mastery among some patients [22]. This suggests that during the inpatient treatment phase, in addition to strengthening the quality of specialist nursing, humanistic care and psychological support should be integrated. Rehabilitation training, foot protection skills, and complication warning knowledge should be incorporated into the daily care process to achieve integrated services of "treatment + nursing + education + psychology" and lay a foundation for patients' smooth transition to the home care phase.

4.3. Home care phase

The home care phase is the core link for maintaining therapeutic effects, preventing high-risk foot progression to ulcers and amputations, and is also the phase with the most concentrated problems and prominent needs in this study [23]. The results show that patients generally face difficulties such as insufficient self-care ability, limited family support, discontinuous community follow-up, and inconvenient follow-up visits after discharge, directly increasing the risk of foot injuries [24]. At the same time, there is insufficient information exchange between hospitals and communities, and continuity of care has not been truly implemented. Patients lack timely and professional guidance channels when problems arise during the home care phase [25]. This indicates that the management of patients at high risk of diabetic foot cannot stop at the hospital level. A long-term care system based on the "hospital-community-family" tripartite collaboration must be established to provide patients with continuous, stable, and accessible foot care services through home follow-up, online consultations, home nursing, and health monitoring, truly achieving full-cycle and closed-loop management.

5. Conclusion

The foot care journey map for patients at high risk of diabetic foot drawn in this study takes the three time-based phases as the horizontal axis and tasks, emotions, pain points, and satisfaction points as the core vertical axis dimensions. It clearly presents the real journey, care pain points, and unmet needs of patients at high risk of diabetic foot during the evaluation and diagnosis, inpatient treatment, and home care phases. In future clinical practice, service processes should be optimized based on the nursing journey map: strengthening early screening and risk education during the evaluation and diagnosis phase; improving specialist care and psychological support during the inpatient treatment phase; and perfecting continuity services and self-management support during the home care phase. Ultimately, a patient-centered, full-cycle-covered, and multidisciplinary-collaborative integrated nursing model for patients at high risk of diabetic foot should be constructed. This study has certain limitations in terms of sample size and interview subjectivity. Future research can be further expanded to multi-center, large-sample groups of patients at high risk of diabetic foot and integrate multiple perspectives of patients, medical staff, and caregivers to comprehensively refine and improve the nursing service journey map, thereby formulating a more scientific, precise, and comprehensive patient experience optimization plan.

Disclosure statement

The authors declare no conflict of interest.

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