Belitung Nursing Journal
E-ISSN: 2477-4073 | P-ISSN: 2528-181X

Original Research Article

Volume 12(1), 89-96

https://doi.org/10.33546/bnj.4214

Health needs of patients with permanent colostomy in North China: A longitudinal qualitative study based on the "Timing It Right" framework

Baoyu Liu[1†], Liyan Wang[2*†], Qingqing Li[1], and Xiaoli Pang[2]

[1]School of Graduate, Tianjin University of Traditional Chinese Medicine, Tianjin, China
[2]School of Nursing, Tianjin University of Traditional Chinese Medicine, Tianjin, China

***Corresponding author:**
Liyan Wang, MSN, RN
School of Nursing, Tianjin University of Traditional Chinese Medicine, No.10, Poyanghu Rd, Jinghai District, Tianjin 301617, China
Email: wlyhh1006@163.com

†These authors contributed equally to this work and are considered co-first authors

Article info:
Received: 12 August 2025
Revised: 18 September 2025
Accepted: 28 November 2025

How to Cite:
Liu, B., Wang, L., Li, Q., & Pang, X. (2026). Health needs of patients with permanent colostomy in North China: A longitudinal qualitative study based on the "Timing It Right" framework. *Belitung Nursing Journal, 12*(1), 89-96. https://doi.org/10.33546/bnj.4214

Abstract

Background: Colostomy surgery is the most common method used for the radical treatment and prolongation of life in patients with intestinal diseases. However, patients who undergo a colostomy face various physiological, psychological, and social challenges after the procedure. This necessitates that nurses deliver targeted care tailored to the specific needs of different stages and individual patients.

Objective: This study aimed to understand the experiences of health needs of patients with colostomy in order to effectively improve their quality of life across different phases.

Methods: A longitudinal qualitative study was conducted. Data were collected between July 2022 and March 2023. A total of 15 patients with permanent colostomy were selected to participate in unstructured interviews, guided by the "Timing It Right" framework. Data analysis was conducted using NVivo 12 software following Colaizzi's methods.

Results: The findings were organized according to the five distinct phases of the "Timing It Right" framework. Three key themes were revealed from the analysis: (1) Meeting physiological needs is the basis for patients with colostomy to recover; (2) Satisfying psychological needs is a necessary condition for improving the quality of life of patients with colostomy; (3) Social adaptation needs are effective ways to improve the quality of life of patients with colostomy.

Conclusions: Based on the "Timing It Right" framework, the health status and needs of patients with colostomy differ across the following phases: diagnosis period, perioperative period, discharge preparation period, adjustment period, and adaptation period. This study not only provides a preliminary conceptual model for in-depth investigation of these patients' health needs at each phase but also offers directional guidance for the future development of phase-specific, patient-centered nursing intervention strategies to better address their dynamic health demands.

Keywords

colostomy; health needs; qualitative study; Timing It Right; quality of life; China

Background

Colorectal cancer is a common malignant tumor of the digestive tract. With the improvement of Chinese people's living standards and the change of diet structure, the incidence of colorectal cancer also presents an increasing trend (Tang et al., 2023). The global cancer research institute survey in 2023 showed that colorectal cancer is the third most common cancer worldwide (8%), and the case fatality rate ranked second (9%) (Siegel et al., 2023). Colostomy surgery is the most commonly used method for radical treatment and life extension of patients with intestinal diseases (Wu et al., 2014). It has the advantages of surgical effect and low recurrence rate, which is currently the preferred method for radical treatment of colorectal cancer. With the widespread use of surgical treatment, surgeons have been committed to colostomy technology and to preventing postoperative complications. But they often ignore the real experiences of various physiological and psychological problems due to the operation (He et al., 2021). Studies have found that depression and anxiety are common in patients after colostomy surgery and then affect their quality of life, which will

be the biggest obstacle for them to return to society (Jin et al., 2019).

Health is "a state of physiological, psychological, and social well-being", which is also the core idea of the modern health concept. The National Health Commission's Action Plan for Further Improving Nursing Services (2023-2025) points out that Chinese nursing services should actively strive to accurately meet the diverse and differentiated health needs of the people, which can be achieved by gradually establishing an institution-supported, community-based, and home-cared nursing service system. Foreign studies have shown that patients require more physiological, psychological, and social support to meet their health needs (Ayaz Alkaya, 2019). In clinical practice, there is often a large gap between health needs and service quality (Vonk-Klaassen et al., 2016). Permanent colostomy is a special treatment method, and these patients frequently face more difficulties. Research has pointed out that patients with permanent colostomy face significant life changes that are experienced in a traumatic way (Stavropoulou et al., 2021). The quality of life of these patients is generally poor after surgery (Boraii, 2017; Davis et al., 2020). Multiple studies have shown that patients undergoing permanent colostomy experience varying degrees of psychological and social behavioral responses, with a high incidence of anxiety and depression (He et al., 2021; Jin et al., 2019; Zewude et al., 2021). This may be because the stoma led to feelings of stigma, worries about disclosure, a need for control, and self-imposed limits. Furthermore, patients cannot adapt to the new life after surgery. Many patients often choose to self-impose isolation to cope with this sudden lifestyle change (Danielsen et al., 2013). Therefore, nurses should recognize that these patients have profound and extensive psychological and social needs. They need more comprehensive and meticulous care. Studies have shown that the disease is dynamic, so patients with a permanent colostomy have different nursing care needs at different stages (Zhang et al., 2020). The Timing It Right (TIR) framework provides a powerful perspective for understanding this dynamic demand. This theory was proposed by Cameron and Gignac (2008), which argues that the health needs of patients are not static, but dynamically evolve with the rehabilitation process.

However, most of the existing studies on the needs of colostomy patients in China is limited to cross-sectional surveys and lacks a longitudinal tracking perspective to reveal the dynamic change trajectory of the needs, resulting in the failure to capture how the needs transform between these stages and the inability to systematically classify and promptly address the needs. More importantly, most current studies lack a systematic theoretical framework, such as TIR, to guide the categorization and interpretation of needs or to inform the timing of interventions. As a result, research findings are difficult to translate into timely clinical practice, thereby limiting their practical value for nursing care.

Therefore, based on the theoretical framework of TIR, this study aimed to explore the health needs of patients with colostomy at different stages to effectively improve their quality of life.

Methods

Study Design

This study is longitudinal qualitative research aimed at describing and exploring the health needs of patients with permanent colostomy at different stages. This research adhered to the Comprehensive Standard Guide for Qualitative Research Reports (COREQ) (Tong et al., 2007)

Theoretical Framework

This study adopts the Theory of TIR as its conceptual framework. Initially developed to capture the support needs of caregivers during the critical transitional phase of rehabilitation for stroke survivors, the TIR theory's core tenet is that patients progress through distinct disease stages as their condition progresses, with each stage corresponding to unique support needs (Cameron & Gignac, 2008). Building on this, this study applies the TIR theory's five-stage division (disease diagnosis period, condition stabilization period, discharge preparation period, implementation period, and adaptation period) to analyze the health needs of patients with permanent colostomy.

By analyzing patients' unique needs across different phases of the illness, this study develops a preliminary conceptual model to guide future care. However, during data collection and analysis, we adopted an initially inductive analytical approach. We adhered to open-ended questioning and employed Colaizzi's phenomenological analysis (Colaizzi, 1978) to derive themes directly from participants' lived experiences, thereby avoiding the forced guidance or categorization of data by theoretical presuppositions. In the final interpretation stage, the TIR framework fulfilled a dual function: organizing and comparing results, which allowed us to validate the fit of our data with the model while ensuring our conclusions were rooted in patient experiences and substantive dialogue with established theory.

The analysis was primarily inductive, following Colaizzi's phenomenological method to derive themes directly from participants' lived experiences. The TIR framework was then applied deductively at the interpretation stage to compare and align emergent themes with the theoretical phases, ensuring a balance between data-driven insight and theory-informed understanding.

Participants

The purposive sampling method was used in our study. Patients were hospitalized and discharged from a Grade-A general hospital in Tianjin, North China, between July 2022 to March 2023. The sample size was determined based on data saturation at the first time point, which denotes the point in data collection at which no new themes or information are observed, and additional data no longer provide new insights to the research questions (Saunders et al., 2018).

The study's inclusive criteria included (a) Colostomy was confirmed and retained permanently according to the Chinese guidelines for the diagnosis; (b) Received routine postoperative treatment; and (c) Good understanding ability and willingness to share the real experiences of health needs. Individuals with a past or present mental illness or disorder of consciousness or who have other serious physical diseases were excluded.

Data Collection

The interviews were conducted by the corresponding author. She is an experienced qualitative researcher and nursing educator with a Master of Medicine, having received systematic training in qualitative research. Her research focuses on colorectal cancer care. After a literature review and discussion by the research group, a semi-structured interview outline was initially developed under the guidance of experts in qualitative research (Table 1).

Before the study, the researchers had no prior relationship with the participants. A pilot test was first conducted with two eligible patients with permanent colostomy to refine the interview outline and verify the clarity of informed consent content, with no pilot data included in the formal analysis. Nurses from the anorectal department of the cooperating hospital first contacted eligible patients with permanent colostomy. Subsequently, researchers explained the study's purpose, procedures, and informed consent requirements to potential participants and committed to properly managing the data and audio obtained.

Face-to-face interviews were conducted during the diagnosis period (1-2 days before the operation), the perioperative period (1-2 days after the operation), and the discharge preparation period (1 day before discharge). The interviews were conducted in the wards. The respondents were contacted through the dedicated follow-up phone during the adjustment period (1 month after discharge) and the adaptation period (3 months after discharge). After the patients signed the informed consent form, interviews were conducted and recorded. Each interview lasted 30-40 minutes and ended when no new information emerged.

Table 1 Interview guide

Time	
Diagnosis period	How did you feel when you were diagnosed with colorectal cancer and informed that you might need to undergo stoma surgery?
Perioperative period	What discomfort did you have after the operation? What bothers you the most?
Preparation period for discharge	How do you feel about being discharged from the hospital soon? Is there anything you would like to know?
Implementation period	How do you feel overall after the stoma surgery? What impact does it have on your life? Which measures do you think will be difficult to implement after you get home?
Adaptation period	What aspects of support and guidance do you still need?

Data Analysis

All interviews were transcribed verbatim by the corresponding author (WLY) within 24 hours after the interviews. During transcription, information such as subjects' intonation, pauses, facial expressions, and body language was recorded to minimize information loss. Considering that participants needed to focus on post-operative recovery and long-term colostomy care, additional requests for reviewing and providing feedback on records might increase their physical and mental burden. Thus, interview records were not returned to participants.

To ensure data credibility, the interview audio recordings and transcripts were reviewed by an independent qualitative research expert (PXL) to confirm transcription accuracy and consistency with the original interview content, and the verified data were included in the formal analysis. After the review was completed, the verified transcripts were imported into NVivo 12 software. Then, two authors (LBY and LQQ) independently conducted line-by-line reading of the transcripts in NVivo 12 to generate initial codes and organize data into potential themes. If any differences arose during this process, the corresponding author was consulted until consensus was reached. The analysis followed Colaizzi's step analysis (Colaizzi, 1978), involving systematic extraction of significant statements, formulation of meaningful units, and consensus-based interpretation of participants' lived experiences, thereby ensuring methodological rigor in capturing the essential characteristics of participants' health needs across different postoperative stages.

Rigor

Credibility, transferability, reliability and consistency follow the rigor standards outlined by Lincoln and Guba (1985). In terms of credibility, two strategies were adopted: First, the corresponding author personally conducted timely word-by-word transcription of interviews to ensure the accuracy of data expression to the greatest extent to ensure data quality; Second, considering that the "no prior relationship" between researchers and most participants may have led to slightly reserved responses in the first interview, researchers scheduled follow-up interviews for the longitudinal study to allow participants to become more comfortable sharing, thereby improving the depth and authenticity of data. To ensure transferability, heterogeneous samples with different demographic characteristics were selected through purposeful sampling, and in-depth interviews were conducted using semi-structured questions to collect rich primary data. In terms of reliability, the data analysis was independently completed by two researchers, and a consensus on coding was reached through team discussions. In terms of consistency, researchers strictly followed the subject analysis process and maintained reflective records to minimize the impact of personal biases on research results.

Ethical Considerations

This study complies with the ethical principles outlined in the Declaration of Helsinki and the ICH-GCP regulations for the protection of clinical research participants. Ethical approval was formally obtained from the Institutional Review Board of Tianjin University of Traditional Chinese Medicine (certified on 17 March 2022).

Results

A total of 15 patients with permanent colostomy completed the interviews, including eight males and seven females, aged 37 to 79 years. The majority of participants lived in towns (11/15), and most were married (11/15). Regarding occupational status, most of the participants were either retired (6/15) or engaged in farming (4/15), and the average monthly income of most of the participants was 1,000-3,000 (7/15). The participant characteristics are shown in Table 2, and the analyzed themes and sub-themes are presented in Table 3.

Table 2 Participant demographic characteristics

ID	Sex	Age (years)	Family residence	Educational level	Marital status	Employment status	Average monthly income (CNY)
P1	Male	67	Town	Senior high school	Divorced	Retired	3000-5000
P2	Female	65	Town	Primary school or below	Married	Retired	1000-3000
P3	Male	71	Town	Senior high school	Married	Retired	3000-5000
P4	Male	48	Town	Junior college	Married	Staff	⩾5000
P5	Male	57	Rural	Junior middle school	Married	Farmer	1000-3000
P6	Female	59	Rural	Primary school or below	Married	Farmer	1000-3000
P7	Female	45	Town	Senior high school	Divorced	Unemployed	1000-3000
P8	Male	47	Town	Undergraduate degree or above	Married	Staff	⩽1000
P9	Female	66	Town	Primary school or below	Widowed	Retired	1000-3000
P10	Male	40	Town	Junior college	Divorced	Worker	1000-3000
P11	Male	66	Town	Senior high school	Married	Retired	⩾5000
P12	Male	62	Town	Junior middle school	Married	Retired	1000-3000
P13	Female	64	Rural	Primary school or below	Married	Farmer	⩽1000
P14	Female	37	Town	Senior high school	Married	Staff	3000-5000
P15	Female	79	Rural	Junior middle school	Married	Farmer	⩽1000

Table 3 The main and sub-themes of the results

Period	Main themes	Sub-themes
Diagnosis period	Initial adaptation of passive acceptance and psychological conflict	(1) Patient knowledge loss and social avoidance (2) Body image disturbance and self-stigma
Perioperative period	Inadequate self-care capacity and financial burden	(1) Insufficient coping capacity (2) Economic pressure
Preparation period for discharge	Psychological dependence, reluctant acceptance, and social reintegration anxiety	(1) Psychological uncertainty (2) Passive acceptance (3) Inferiority complex
Implementation period	Anxiety, self-image struggles, and social withdrawal	(1) Anxiety and worry (2) Body image concerns and withdrawal
Adaptation period	Progressive adaptation and social reintegration	(1) Gradual adaptation (2) Take the initiative to accept

Diagnosis Period: Initial Adaptation of Passive Acceptance and Psychological Conflict

The diagnostic period refers to the clinical decision-making stage from disease diagnosis to the recommendation for stoma surgery. This stage mainly presents the dual characteristics of passive acceptance and psychological conflict: On the one hand, patients passively accept surgical suggestions due to the certainty of the treatment plan; on the other hand, they have a strong psychological resistance due to the unknown postoperative life.

Patient knowledge loss and social avoidance

Patients are prepared to perform a colostomy without relevant knowledge, so they need a basic understanding of the colostomy and its care in a short time.

> P1: *"The doctor said there's no other way."*
> P2: *"I saw the bag model, and then it stuck to me, and the stool was there."*

At this stage, patients' desire for social communication is not strong, which may be related to the uncertainty of follow-up rehabilitation, and they usually conceal the condition and prognosis from others.

> P4: *"I dare not tell others that I have such an operation. Only a few relatives and friends know about it."*

Body image disturbance and self-stigma

Although medical and nursing staff introduce medical and nursing knowledge, patients often have a preliminary understanding of colostomy due to the diversion of feces, changes in body shape, and the specificities of colostomy care.

> P5: *"Why me? Why did it fall on me?"*
> P6: *"How did this happen to me?"*

Perioperative Period: Inadequate Self-Care Capacity and Financial Burden

The perioperative period encompasses the critical phase from the patient's surgical decision to postoperative stabilization, typically lasting seven days. This stage is characterized by two coexisting challenges: practical care difficulties where preoperative training proves inadequate for real stoma management, and financial concerns.

Insufficient coping capacity

After stoma surgery, patients are faced with a series of nursing problems, such as the replacement of the stoma pocket.

Although preoperative education has been provided, real stoma care still leaves patients feeling at a loss.

> P3: *"It's very good for nurses to change them now, but it's still a little painful"*
> P7: *"I dare not to look at it"*
> P9: *"I dare not think about the future life"*
> P12: *"I can't take care of myself"*

Economic pressure

Patients face dual challenges of stoma care and its financial burden. The cumulative cost of daily necessities like creams and powders, concluding with palpable anxiety, was expressed by the participant:

> P13: *"The cost is too high. I can't afford it."*

Preparation Period for Discharge: Psychological Dependence, Reluctant Acceptance, and Social Reintegration Anxiety

Patients will end treatment upon discharge after the usual three-day hospital stay. At this stage, the patients with colostomy need to master nursing knowledge and practice. The most prominent problem is that they worry themselves and their caregivers can't complete the nursing work, leaving them feeling inadequate.

Psychological uncertainty

Patients with a stoma have adapted to the care of medical staff during hospitalization and have a certain degree of dependence on medical staff.

> P8: *"Can I have your number to contact you after discharge?"*
> P11: *"I always ask the nurse, 'Can I eat this?'—I'm afraid of causing pocket trouble."*

Passive acceptance

At this stage, the patients accept the stoma physiologically and begin to deal with the emotional problems caused by the stoma, which is related to the existence of the stoma and nursing problems caused by the stoma.

> P6: *"I can't help it. If you don't want to accept it, you have to accept it. It's better to live than to die."*
> P13: *"I'm very irritable, especially when I see feces coming out of it."*

Inferiority complex

Patients began to anticipate their daily life after discharge, and the most concerning issue was whether their social abilities would be affected.

> P4: *"I'm afraid it has a smell. If you walk in front of people, others will smell it."*
> P7: *"The biggest impact on life is that it's inconvenient to go anywhere. It's really suffering."*

Implementation Period: Anxiety, Self-Image Struggles, and Social Withdrawal

The one-month implementation period following hospital discharge represents a critical transition phase where patients with colostomy and their families must independently adapt to the physical and psychosocial challenges of stoma care while establishing sustainable daily routines. During this adjustment period, patients commonly experience persistent anxiety about unpredictable bowel function and leakage risks, alongside profound struggles with altered body image and self-identity. Then fears of stigma and rejection often lead to increasing social withdrawal as they navigate their new reality of living with a stoma.

Anxiety and worry

Patients with a stoma focus most of their attention on the stoma itself, so their life state is often too tense.

> P3: *"Now defecation is irregular. And defecation is also not controlled. We always need to pay attention to it all the time. I was worried that the clothes and bed sheets were wet again. Sometimes when I went to bed, the bag leaked, and I could not sleep well."*
> P10: *"I can't sleep at night. I'm afraid of soiling my bed and pants. I can't turn over. I'm afraid of leakage, so I have to maintain one posture."*
> P14: *"The stoma bags on the Internet are not very reliable. The antileakage paste is dry."*

Body image concerns and withdrawal

In the adjustment period, patients begin to face the image problem of a stoma, and they will have an inferiority complex because of the nursing behavior of stoma care. This can lead to a sense of inferiority and social withdrawal.

> P1: *"I used to care a lot about my image—How can I go out with a bag now?"*
> P8: *"I used to be so clean, now I don't even care about myself. I feel like a burden."*
> P5: *"I mostly stay at home and don't go out."*

Adaptation Period: Progressive Adaptation and Social Reintegration

The adaptation period is from 1 month to 3 months after discharge. In this period, with the rehabilitation of the stoma, patients with a stoma gradually pay attention to more life-oriented contents to cope with their new lifestyle.

Gradual adaptation

Patients with a stoma have experienced a period of adjustment and tend to form a new lifestyle, including diet, activities, stoma care, and so on.

> P14: *"I'm particularly concerned about eating, especially when eating indiscriminately causes diarrhea or a blocked stoma."*
> P6: *"I can't do anything at home."*
> P9: *"I failed several times, and now I don't want to touch it."*
> P2: *"I adapted to it slowly. My relatives, friends, and neighbors help me and encourage me all the time."*

Take the initiative to accept

Patients at this stage are in the postoperative period and have gradually received the stoma from all aspects.

> P15: *"I used to drive a taxi, but now the people around me don't allow me to drive. They care about me very much. My son and daughter are very considerate."*

At the same time, patients at this stage are gradually returning to their social status, but most patients feel inadequate.

> P10: *"I didn't go anywhere. Now my lifestyle has changed, and I don't travel anymore. I can't even choose public transportation. When sitting for half an hour, I have to go home to defecate. I feel embarrassed when they ask me what's wrong."*

Discussion

To provide a coherent narrative linking patients' evolving experiences with their broader clinical and psychosocial implications, the results are organized around five sequential phases of the colostomy journey. These phases, from diagnosis with its passive acceptance and inner conflict, through perioperative self-care struggles and financial pressure, preparation for discharge with reluctant acceptance and social anxiety, implementation marked by self-image concerns and

social withdrawal, to adaptation involving gradual adjustment and social reintegration, reflect dynamically changing health needs consistent with the TIR framework. The TIR framework emphasizes that effective interventions must be tailored to the specific phase of an individual's evolving needs. The empirical insights derived from the five stages of the ostomy journey will be synthesized with three core aspects of the discussion: the foundational importance of physiological recovery, the essential role of psychological support, and the critical contribution of social adaptation to long-term well-being. Therefore, patients can benefit most from targeted interventions at specific periods.

Meeting Physiological Needs is the Basis for Patients with Colostomy to Recover

At present, patients with permanent colostomy generally face a significant problem of insufficient information support throughout the diagnosis and treatment process. In the diagnosis stage, although patients will receive relevant consultations and independently choose whether to undergo stoma surgery, they often find it difficult to effectively understand and remember the information obtained in the face of the shock of "surgery is necessary" and the outcome of "establishing a stoma" (van der Storm et al., 2023). At the same time, with the popularization of enhanced recovery after surgery, the length of stay for stoma patients has been significantly shortened (Madan et al., 2023). Data shows that 29% of stoma patients are unable to self-care upon discharge (Goldblatt et al., 2018). The lack of discharge guidance can lead to related complications in up to 70% of stoma patients, further exacerbating their predicament (Root & Rehfeldt, 2021). In addition, patients' mastery of self-care knowledge about the stoma will directly affect their psychological and social adaptation (Doucette et al., 2023).

With advances in treatment and changes in the patient's condition, the required treatment information will also be adjusted accordingly. Therefore, nurses need to timely assess the condition and implement a phased, accurate intervention plan. During the diagnostic period, visual educational tools can be used alongside psychological counseling services. After the perioperative period, colostomy skills training should be carried out to stimulate the enthusiasm for self-care by affirming and encouraging the progress of patients (Goldblatt et al., 2018). Structured skills training has been confirmed by Khalilzadeh Ganjalikhani et al. (2019) to significantly enhance patients' independence in self-care. After patients are discharged, it is recommended to provide personalized follow-up support using a smart nursing platform, and this approach has also been shown to be effective in several studies (Qiao et al., 2024; Soares-Pinto et al., 2023).

Satisfying Psychological Needs is a Necessary Condition for Improving the Quality of Life of Patients with Colostomy

The results indicated that patients display a dynamic psychological progression: while early stages are marked by passive acceptance, anxiety, and low self-esteem resulting from altered elimination mechanisms and complication risks, this psychological state evolves into active adaptation as time progresses, consistent with the research results of a longitudinal study (Wang et al., 2025). Psychological state directly affects the rehabilitation and quality of life of patients with a stoma (Boraii, 2017). Older adult patients show more pronounced dependence on care due to declines in physiological function (Blackwood et al., 2020).

Based on these observations, we propose the intervention strategy comprising three key components: (1) implementation of systematic screening protocols to facilitate early identification of psychological distress in enterostomy patients (Zhou et al., 2025); (2) establishment of a multidisciplinary care team incorporating ostomy therapists, mental health professionals, and social workers to deliver stage-specific interventions, particularly targeting stigma reduction in the acute phase and self-efficacy enhancement during adaptation; and (3) exploration of mobile health applications for psychological support, with special consideration for adapting these technologies to meet the unique needs of elderly populations and resource-limited rural communities.

Social Adaptation Needs are Effective Ways to Improve the Quality of Life of Patients with Colostomy

During the recovery process, patients with colostomy have the goal of leading a normal life, so they pay attention to diet, exercise, and other everyday activities, which help them build the confidence and determination to rejoin society. Stoma not only imposes physical and psychological burdens on patients, but also affects partners/family members who must undertake complex care responsibilities and deal with emotional challenges (Bodschwinna et al., 2020). Based on the social ecological framework, we suggest building a comprehensive support system that spans multiple intervention levels. At the individual level, the focus should be on strengthening family care capacity and enhancing the professional care and psychological support skills of primary caregivers through systematic training (Ho et al., 2022). At the meso level, efforts should be made to improve the hospital-community collaboration mechanism, establish an efficient referral network, and provide continuous care services. At the macro level, it is suggested that inclusive medical policies and social support programs be formulated from three dimensions: policy guarantee, employment support, and public education.

Limitations of the Study

There are some limitations in this study. Firstly, all participants were recruited from a Grade-A general hospital in North China for qualitative research, which limited the sample's representativeness. Therefore, it is suggested that future research conduct large-sample, multi-center mixed studies on this basis, recruiting participants from different provinces to enhance the external validity of the results and better capture the diverse health needs of such patients across the country. This will also provide more robust evidence for optimizing the above-mentioned comprehensive support system. Meanwhile, future research applying the TIR framework can also be considered to be extended to different characteristic groups (such as groups of different ages, care models, or medical resource accessibility), further verifying the universality of the phased change patterns of health needs, thereby providing

better evidence to support optimizing the comprehensive support system.

Conclusion

Based on the TIR framework, this study revealed dynamic changes in patients' health needs through longitudinal follow-up interviews with 15 patients with permanent colostomy. The results showed that patients' nursing needs gradually shifted from technical needs in the early postoperative period to psychosocial needs in the rehabilitation period. It is suggested that a dynamic evaluation mechanism be established in clinical nursing practice, with a focus on patients' health needs at different stages, and that targeted interventions be implemented. A hospital-community-family linkage continuous care system can be constructed to promote patients' social re-adaptation and improve quality of life. Meanwhile, future research using the TIR framework can also explore multi-center large-sample mixed studies among different populations to further verify the universality of these phased changes in health needs.

Declaration of Conflicting Interest

No conflict of interest to declare in this study.

Funding

This study was funded by the Youth Foundation for Humanities and Social Sciences Research of the Ministry of Education, China (Grant number: 20YJCZH156). Recipient: Liyan Wang.

Acknowledgment

The authors are grateful to the patients who participated in this study and to all the health care professionals and researchers who helped with it.

Author Contribution

Baoyu Liu, Liyan Wang, Qingqing Li, and Xiaoli Pang contributed to the study's conception and design, data acquisition, and data analysis, wrote the first draft of the manuscript, revised the final draft, and gave final approval of the version to be published.

Author Biography

Baoyu Liu, BSN, RN, is a graduate student at Tianjin University of Traditional Chinese Medicine, Tianjin, China.

Liyan Wang, MSN, RN, is a Lecturer of the School of Nursing, Tianjin University of Traditional Chinese Medicine, China.

Qingqing Li, BSN, RN, is a graduate student at Tianjin University of Traditional Chinese Medicine, Tianjin, China.

Xiaoli Pang, PhD, RN, is a Master's Supervisor and Dean of the School of Nursing, Tianjin University of Traditional Chinese Medicine, Tianjin, China.

Data Availability

The underlying data generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of Use of AI in Scientific Writing

Nothing to declare.

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