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Exercise Experiences of Patients with Temporary Stomas before Reversal: A Qualitative Study

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Abstract: *This descriptive qualitative study explores the multifaceted factors influencing physical activity experiences during the pre-reversal stage in patients with temporary intestinal stomas to provide evidence for targeted exercise guidance. Semi-structured interviews were conducted with 13 patients who underwent colorectal cancer surgery with temporary stoma formation, and the data were analyzed using qualitative content analysis. The findings identified four primary themes: physical activity cognition, characterized by health belief–driven initiative but insufficient awareness of pre-reversal exercise value; dual physical and psychological burden, including symptom distress and stoma-related concerns; insufficient social support, manifested as economic strain and lack of assistance; and a significant deficit in professional guidance despite a high demand for stage-specific exercise protocols. The results indicate that physical activity in this population is shaped by complex interactions between cognitive, physical, social, and professional factors. Clinical practice should prioritize rehabilitation management during the pre-reversal interval by strengthening health education and providing structured, stage-based exercise guidance. Integrating family and social support is essential to foster active participation in physical activity, thereby optimizing preoperative functional reserve and facilitating successful stoma reversal and long-term recovery.*

Keywords: *Temporary intestinal stoma; Pre-reversal stage; Physical activity; Qualitative research*

1. Introduction

Colorectal cancer ranks second in incidence and third in mortality among all malignancies worldwide, posing a significant public health challenge [1].In clinical practice, a temporary stoma is frequently constructed during low anterior resection for rectal cancer to divert intestinal contents and alleviate distal pressure [2]. However, not all patients undergo successful reversal; the reversal rate of temporary ileostomy varies widely, with approximately 6%–26% of patients ultimately not undergoing reversal [3]. Multiple factors influence reversal outcomes, among which insufficient physical reserve is an important contributor. The physiological stress of subsequent reversal surgery requires patients to maintain an optimal baseline of cardiovascular and muscular health to minimize postoperative complications. Resuming regular exercise not only helps improve aerobic capacity but may also play a significant role in alleviating cancer-related fatigue and enhancing health-related quality of life [4]. For patients with a temporary stoma, appropriate physical activity can effectively enhance pre-reversal physical tolerance and psychological adjustment, thereby increasing their confidence in stoma reversal surgery and postoperative recovery [5]. However, patients with a stoma often experience stigma due to impaired self-image, which in turn reduces social participation and leads to a decline in overall activity levels [6]. Studies have found that only a small proportion of patients achieve the physical activity levels recommended by guidelines [7]. This discrepancy between guidelines and behavior suggests that current support fails to address the specific nuances of living with a stoma. Existing research has predominantly used quantitative methods and focused on permanent stomas, leaving a gap in understanding the pre-reversal exercise experiences of temporary stoma patients. The findings aim to provide theoretical and practical support for developing patient-centered exercise guidance.

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2. Participants and Methods

2.1 Study Design and Participants

Using purposive sampling, semi-structured interviews were conducted with colorectal cancer stoma patients at a tertiary Grade A hospital in Xi'an (October–November 2025). The inclusion criteria were as follows: (1) age ≥18 years; (2) diagnosis of colorectal cancer confirmed by imaging and pathological examination; (3) first-time undergoing radical resection for rectal cancer with temporary stoma formation; and (4) provision of informed consent and agreement to audio recording. The exclusion criteria were: (1) presence of severe comorbid physical diseases; (2) severe mental disorders; and (3) hearing impairment or communication difficulties. Sample size followed the data saturation principle, with recruitment ending when no new themes emerged. Thirteen post-colorectal surgery patients with temporary stomas were enrolled (assigned IDs P1–P13); their characteristics are in Table 1.

Table 1. Demographic and Clinical Characteristics of the Participants (n = 13).

Reference number	Gender	Age	Diagnosis	Place of residence	Chemotherapy (Yes/No)	Level of education
1	Male	52	Rectal cancer	Rural	No	Junior high school
2	Female	59	Sigmoid colon cancer	Urban	No	Senior high school
3	Female	45	Rectal cancer	Urban	No	University
4	Male	74	Rectal cancer	Urban	No	Junior high school
5	Female	77	Rectal cancer	Rural	No	Primary school
6	Male	51	Rectal cancer	Rural	No	Senior high school
7	Male	67	Rectal cancer	Rural	Yes	Junior high school
8	Female	55	Sigmoid colon cancer	Urban	Yes	Junior high school
9	Male	61	Rectal cancer	Rural	Yes	Primary school
10	Male	57	Rectal cancer	Urban	Yes	Senior high school
11	Female	72	Rectal cancer	Rural	No	Junior high school
12	Male	58	Rectal cancer	Urban	Yes	Junior high school
13	Female	48	Rectal cancer	Urban	Yes	University

2.2 Data Collection

2.2.1 Development of the Interview Guide

The interview guide was initially developed and refined through a review of relevant literature, consultation with domain experts, and pilot interviews. The final semi-structured interview guide included the following questions:①Do you think exercise is necessary before stoma reversal? When do you think it is appropriate to start? ②During the period with a stoma, have you attempted any physical activity? What types of exercise did you engage in, and what were the frequency and duration? ③What difficulties have you encountered during exercise, and how did you overcome them? ④What factors motivate or discourage you from engaging in physical activity? ⑤When you have questions about exercise, whom do you seek help from? What types of support would you prefer? ⑥Is there anything else you would like to share about your exercise experiences during the pre-reversal stoma period?

2.2.2 Data Collection Procedures

The interviews were conducted in a quiet, clean, and relatively private teaching room. Prior to the interviews, the researcher explained the study objectives, main content, and significance to the participants, and written informed consent was obtained. With participants' permission, the interviews were audio-recorded and supplemented with field notes, and all information was kept strictly confidential. Each interview lasted approximately 30–40 minutes.

2.2.3 Data Analysis

Within 24 hours after each interview, two researchers independently transcribed the audio recordings verbatim and cross-checked the transcripts to ensure accuracy. NVivo 11 software was used for data management, and content analysis [8] was employed for data analysis.

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3. Results

3.1 Theme 1: Exercise Cognition

3.1.1 Health Belief–Driven Initiative

Most participants demonstrated a positive awareness of exercise and had established exercise habits. They recognized the benefits of physical activity and maintained regular engagement. P4: “Exercise is vital for life; the more you exercise, the more energetic you feel.”P3: “I used to exercise regularly before getting sick, and I still can’t stay idle now. I believe I need to keep exercising.” P7: “I need to eat well, sleep well, and exercise more. The sooner I start exercising and improve my physical condition, the sooner I can undergo reversal and return to normal life.”

3.1.2 Perceived Benefits of Exercise

Exercise provided substantial physical and psychological benefits—including weight control, better sleep, and reduced chemotherapy side effects—which reinforced patients' motivation to stay active. P2: “Ever since I had the stoma, I’ve felt like there’s an extra burden on me, and I worry about being laughed at… it’s really distressing. But every time I exercise and sweat a bit, I feel mentally lighter and less suffocated.” P5: “Exercise really works—it improves my physical condition! When I checked my weight, I had actually gained a few pounds and felt stronger than before.”

3.1.3 Insufficient Awareness of the Value of Pre-reversal Exercise

Some participants perceived the temporary stoma as a short-term transitional state and lacked sufficient awareness of the importance of engaging in exercise before reversal. They generally believed that pre-reversal physical activity contributed little to overall recovery and therefore preferred rest over activity.P1: “I’m afraid that exercising might cause problems with the stoma. And since it’s only three or four months before reversal, I think I can just endure it. There’s no need to push myself to exercise—what if I get injured and delay things even more?”P8: “I don’t want to exercise. I don’t think it’s necessary. In a few months, the stoma will be reversed anyway. If exercising causes leakage or a parastomal hernia, that would be troublesome.”P12: “Why exercise? I don’t even know how to do it. I feel like I can’t do anything, so I’d rather just rest and wait until after the reversal to exercise properly.”

3.2 Theme 2: Dual Physical and Psychological Burden

3.2.1 Physical Symptom Burden Limiting Exercise Capacity

Prior to stoma reversal, patients commonly experienced multiple physical burdens, including chemotherapy-related side effects, chronic comorbidities, and delayed postoperative recovery. These factors substantially reduced their physical fitness and exercise tolerance, thereby limiting their daily activity range and willingness to engage in physical activity. P8: “After chemotherapy, I often feel very dizzy. It’s manageable when I stay still, but once I start moving, I feel the room spinning and even want to vomit. So I have no choice but to move less.” P12: “I didn’t exercise at first because I had to undergo chemotherapy—four cycles in total. I also have chronic obstructive pulmonary disease, and when the weather got colder, I couldn’t go outside, so I just didn’t exercise at all.” P13: “After chemotherapy, for more than 20 days, almost a month, I didn’t even go downstairs. When I started walking again, my legs felt weak and unsteady. It improved gradually over time. I used to do housework at home, but now, due to my poor physical condition, I no longer do it.”

3.2.2 Psychological Burden

Some participants developed a sense of stigma due to changes in body image caused by the stoma, which led them to avoid social interactions and reduce outdoor activities. P11: “With this stoma, I feel quite uncomfortable and embarrassed, so I don’t dare to go out and meet people. Living in a rural area, I just walk around in my own yard and don’t visit others, because I feel that people might find it unpleasant.”P9: “I’m not used to it and feel a bit awkward. I’m afraid others might laugh at me. In summer, I wear longer shirts just to cover the stoma bag when I go out.”

3.3 Theme 3: Insufficient Social Support

3.3.1 Financial Burden of Stoma Care

Some participants reported that concerns about increased costs associated with stoma care limited

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their willingness to engage in physical activity. In particular, leakage during exercise could increase the frequency of stoma appliance replacement, and the potential costs of managing complications further added to the financial burden. As a result, patients tended to be more cautious about participating in physical activity. P5: "I'm afraid that movement might cause leakage, which means I'd have to replace the stoma bag more often. And later, these supplies are no longer reimbursed… A set costs over a hundred yuan online—it's just too expensive to afford." P3: "I'm especially worried about summer. When exercising, I sweat a lot, and I'm afraid it might wet the stoma, which means I'd have to change it more frequently." P9: "At first, I was reluctant to change the stoma bag, so I only replaced it every five or six days. Then I developed some skin irritation. I had to go to a pharmacy, ask for advice, and buy anti-inflammatory medication to treat it myself—it was quite troublesome."

3.3.2 Passive Activity under Limited Support

In this study, many participants did not engage in physical activity as a result of intentional exercise, but rather out of necessity to maintain family responsibilities and social roles. Even in the presence of physical discomfort or psychological concerns, they were compelled to remain active to fulfill daily obligations. P9: "In rural areas, especially in summer, there's farm work that has to be done. No one else can do it, so I have to go to the fields, although I don't dare to exert too much effort." P6: "I have to go to work. I can only endure the discomfort and push myself to complete my job." P13: "I've already taken a month off, and I'll need more leave for the reversal surgery. My workplace is already unhappy about it. But this stoma is temporary—I can't let it disrupt my normal life plans."

3.4 Theme 4: Insufficient Exercise Guidance and Unmet Needs

3.4.1 Lack of Exercise-Related Knowledge

Participants generally reported a lack of systematic exercise guidance from healthcare professionals prior to stoma reversal. This deficiency in professional knowledge undermined their confidence in engaging in physical activity, leading them to avoid exercise or adopt a passive approach to recovery. P11: "I feel quite anxious about exercising. No one has clearly told me whether I should exercise or not. I'm afraid that exercising might cause complications, but staying in bed all the time doesn't seem right either. I want to seek help, but I don't even know whom to ask." P4: "I used to go to the stoma clinic to have my bag changed. The nurses were always very busy. They did their job carefully, but I didn't really ask about exercise."

3.4.2 Demand for Stage-Specific Postoperative Exercise Guidance

Participants expressed a clear need for structured, stage-specific exercise guidance after surgery. They expected healthcare professionals to provide detailed and practical recommendations tailored to different recovery phases. P1: "When I was discharged, the nurse just told me to 'exercise appropriately,' but I didn't know what that meant—does it mean walking or something else? If it were more specific, I wouldn't be so worried about doing something wrong." P3: "I really hope someone could give me a clear plan, like what exercises I can do in the first week, the second week, and the third week after surgery. Right now, I'm just figuring things out on my own."

4. Discussion

4.1 Enhancing Awareness of the Importance of Pre-reversal Physical Activity

The results of this study showed that most participants regarded the pre-reversal phase as a temporary transitional stage and did not fully recognize the necessity and importance of exercise during this period. Previous studies have demonstrated that physical activity has significant protective effects on intestinal health and long-term outcomes. Meanwhile, the American Cancer Society has clearly indicated that appropriate physical activity is closely associated with a significantly reduced risk of colon cancer [8]. The pre-reversal phase is not only a critical period for physical recovery but also a turning point for psychological adaptation. Implementing systematic exercise interventions during this stage can not only improve muscle strength and exercise tolerance but also reduce the risk of postoperative complications and enhance overall rehabilitation reserve. However, the level of physical activity among patients with a stoma is generally low[9]. The Chinese Enhanced Recovery After Surgery (ERAS) guidelines indicate that reduced perioperative physical activity is an independent risk factor for adverse postoperative outcomes, and recommend preoperative assessment of exercise tolerance and the development of exercise plans to improve functional reserve [10].

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4.2 Addressing Physical and Psychological Burdens and Providing Support Strategies

The interviews revealed that patients with temporary stomas experience a dual burden of physical symptoms and psychological stress during the pre-reversal phase, which in turn reduces their engagement in physical activity. Consistent with the findings of Krouse et al., treatment-related complications, concerns about stoma function, and persistent fatigue reduce patients' activity capacity and willingness to exercise [11]. Studies have shown that patients with temporary stomas have a relatively low level of self-care, which reduces their confidence in managing the stoma and handling unexpected situations, thereby diminishing their sense of safety and control during exercise and resulting in lower levels of physical activity [12]. Meanwhile, stigma associated with the stoma is closely related to patients' psychological and social adaptation, further reducing their participation in social activities [13].

4.3 Improving Social Support Systems to Alleviate External Constraints on Physical Activity

This study found that participants commonly faced a lack of social support during the pre-reversal phase, leading them to engage in physical activity in a passive manner. A cross-sectional study found that the level of perceived social support in patients with a stoma is significantly positively associated with their stoma self-efficacy, with higher levels of support linked to greater self-efficacy [14]. Social support and confidence are important factors in promoting the return to physical activity [15].Previous studies have shown that adequate family and social support can significantly promote psychological and functional adaptation in patients with a stoma, helping them to resume daily roles more smoothly and return to work more quickly [16]. Healthcare professionals should educate family members on stoma management and exercise safety to bolster patients' emotional and financial support. Additionally, flexible work arrangements and accessible community rehabilitation facilities are essential to deliver inclusive support, facilitating patients' reintegration into society.

4.4 Providing Exercise Guidance to Enhance Patient Exercise Self-Efficacy

Respondents lack professional guidance and clear exercise modalities, creating a strong demand for standardized instructions. Consequently, physical activity remains limited to domestic chores or walking rather than structured exercise .A foreign study found that the majority of enterostomy patients did not receive professional guidance from healthcare providers, a finding that aligns with the results of the present study [17]. Research has indicated that the absence of professional exercise guidance results in a significant decline in patients' willingness to exercise and their level of engagement, ultimately compromising the efficacy of the rehabilitation process [18]. Scientific exercise guidance boosts self-efficacy and reduces uncertainty, significantly improving postoperative recovery and long-term health outcomes [19]. Patients with temporary enterostomies exhibit a more urgent and specific demand for explicit postoperative exercise guidance compared to those with permanent ostomies, as they must optimize their functional reserve within a limited timeframe prior to stoma reversal surgery.

5. Conclusion

This study, based on semi-structured interviews with temporary enterostomy patients, identifies multifaceted factors influencing physical activity, including cognitive, psychological, and social support factors. The findings highlight the need for clinical practice to prioritize rehabilitative needs before stoma reversal. It is essential to assess barriers early, strengthen exercise guidance, and enhance stoma self-care. Furthermore, providing sustained psychological support is critical to fostering proactive rehabilitation and improving preoperative functional reserve.

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