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Factors Influencing Decision Regret in Patients Undergoing Permanent Colostomy for Colorectal Cancer

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Abstract: Objective: To explore factors influencing decision regret among colorectal cancer patients undergoing intestinal ostomy. Methods: A questionnaire survey was conducted among 102 colorectal cancer patients who underwent intestinal ostomy surgery and visited the ostomy clinic at a tertiary hospital in Baoding from July to September 2025. The Chinese version of the Ostomy Adaptation Inventory (OAI-20), Decision Regret Scale (DRS), Decision Conflict Scale (DCS), and Functional Assessment of Cancer Therapy-Colorectal (FACT-C) were used to measure patients' adaptation to stoma, decision regret, decision conflict, and quality of life. The Shared Decision-Making Questionnaire (SDM-Q-9) assessed patient involvement in ostomy surgery decisions, while the SSUK-8 evaluated social support. Additional items explored perceptions related to decision-making, participation, and outcomes. Results: Among 134 eligible patients attending the clinic, 120 participated in the questionnaire, with 102 completing all items. Stoma patients reported an average decision regret score of 60.83 (SD 28.43), an average coping ability score of 54.26 (SD 26.69), an average decision conflict score of 62.55 (SD 25.95), and a quality of life score of 56.93 (SD 27.46). In the multiple regression analysis, decision regret was associated with decision conflict, poor patient coping ability, low quality of life, and low social support. Conclusion: Decision regret is prevalent among Chinese CRC patients following ostomy surgery. Compared with similar studies in other regions, Chinese CRC patients exhibit a higher rate of regret. This may be related to lower patient involvement in decision-making, generally poorer quality of life, and heavier economic burdens.

Keywords: Decision regret; Colorectal cancer; Intestinal ostomy; Decision conflict; Quality of life

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1. Introduction

Colorectal cancer (CRC) is a major global health issue, ranking as the third most commonly diagnosed cancer and the second leading cause of cancer-related deaths [1]. The global incidence rates for CRC are 0.0224% for women and 0.0271% for men [2]. CRC treatment may involve surgery, with permanent colostomies occurring in

11.8–17.3% of cases (depending on surgical type) [3]. Stoma patients require adhesive pouches to collect waste and must replace these pouches regularly (sometimes more than twice daily). Post-stoma surgery, patients face multiple physical, psychological, and social negative consequences due to stoma self-care, body image disruption, odor concerns, complications, and long-term financial burdens [4,5], leading to feelings of regret [6]. Simultaneously, the selection of various colostomy types and pouches involves future risk-benefit tradeoffs, complicating patient-physician communication [7]. Furthermore, barriers to medical knowledge and the overwhelming influx of information within a short timeframe may increase patients' susceptibility to regretful decisions.

Decision regret refers to negative emotions based on cognition, experienced when individuals realize (or perceive) that alternative choices could have led to better outcomes [8]. Research on decision regret can further explore medical practices better suited to China's clinical context, enhance patients' physical and mental quality of life, and consistently uphold the core principle of patient-centered care. A multicenter cross-sectional study on the quality of life of ostomy patients in China revealed that patients' quality of life was generally suboptimal, influenced by multiple demographic and psychosocial factors [9]. Furthermore, psychological analysis indicated that patients who underwent permanent ostomy surgery may focus more on the negative aspects of the stoma rather than its functionality, thereby damaging self-image and reducing their ability to accept a new lifestyle and practice self-care [10]. Investigating factors contributing to decision regret among patients can help reduce their psychological burden post-surgery, shift their mindset, and improve their quality of life.

2. Research materials and methods

2.1. Study design

This study employed a multi-perspective cross-sectional design.

(1) Study population

The population sample was recruited from the stoma wound clinic of a tertiary hospital in Baoding. The principal investigator distributed questionnaires after patient visits, with patients completing them under the investigator's supervision. Inclusion criteria: (1) Patients aged 18 years or older; (2) Patients who underwent permanent ostomy surgery for CRC; (3) Patients capable of understanding questionnaire options and possessing intact consciousness. Exclusion criteria: (1) Patients with potential or diagnosed mental health issues or cognitive impairment; (2) Patients with organ damage or other severe complications; (3) Patients with distant metastases; (4) Patients with primary tumors in other organs.

Data collection will occur from July 2025 to September 2025. Questionnaire collectors received relevant training prior to data collection and were able to identify eligible participants based on inclusion and exclusion criteria. After obtaining consent from patients and their families, the responsible investigator explained the study objectives and requested written informed consent before granting access. Questionnaires were distributed to all participants. Collectors accompanied patients during questionnaire completion to supplement relevant background information, enhance patient comprehension, and ensure higher reliability of the questionnaire responses.

(2) Assessment tools

Key variables were collected, including patient adaptation to stoma, decision regret, decision conflict, and quality of life.

The Decision Regret Scale (DRS) Chinese version was uniformly adopted to assess decision regret. Developed and validated by Brehaut et al., the DRS measures regret regarding health-related decisions. The

Chinese adaptation was revised by Chen et al. The scale has demonstrated reliability [11]. It comprises five items using a five-point Likert scale, with total scores ranging from 0 to 100. Higher scores indicate greater decision regret severity is categorized as none (0 points), mild (1–25 points), and intense (> 25 points) [12].

Decision Conflict Scale (DCS) [13], developed by O'Connor et al., is the most widely used assessment tool for decision conflict. Similarly, a Likert scale is employed to generate scores ranging from 0 to 100. Higher scores indicate more severe decision conflict. This study utilizes the Chinese version of the DCS, which has been validated in a separate study of rectal cancer patients.

FACT-C is a specific quality of life assessment scale for patients with colorectal malignancies. It consists of the FACT-G scale and 9 colorectal cancer-specific items (colorectal cancer subscale, CCS), totaling 36 items across 5 dimensions. Scores range from 0 to 4 points, converted to standardized percentiles for statistical analysis. It is the most widely used scale in CRC and has demonstrated high specificity and reliability in the Chinese version [14–16]. Higher scores indicate a better quality of life.

Chinese version of the Ostomy Adaptation Inventory (OAI-20). The Chinese OAI-20 comprises 20 items using a 5-point Likert scale. Items with positive connotations are scored from 4 (strongly agree) to 0 (strongly disagree). Items with negative connotations are reverse-scored, ranging from 0 (strongly agree) to 4 (strongly disagree). Higher scores indicate greater adaptation.

The Shared Decision-Making Questionnaire (SDM-Q-9), developed by Scholl, Kriston et al., assesses patient involvement in ostomy surgery decisions [17]. This 9-item, single-dimensional self-report scale uses a 0–5 Likert scale, yielding total scores of 0–45. For comparative purposes, the original authors suggest converting raw scores to a 0–100 scale by multiplying by 20/9. Higher scores indicate greater patient involvement.

Social support assessment was conducted using the Social Support Rating Scale (SSUK-8) [18]. This scale was developed by Xiao Shui between 1986 and 1993. Higher scores indicate greater social support. Generally, a total score below 20 indicates low social support, 20–30 indicates moderate social support, and 30–40 indicates satisfactory social support.

2.2. Statistical analysis

Data entry and analysis were performed using SPSS software (version 26.0). Data were described and analyzed using means with corresponding standard deviations (SD), frequencies, and composition ratios, along with Pearson correlation analysis, standard t-tests, and analysis of variance (ANOVA). Multiple linear regression analysis was employed to explore factors influencing decision regret. Statistical significance was set at $p < 0.05$.

3. Results

3.1. Participant characteristics and their relationship with decision regret

During data collection, 120 patients agreed to participate, but only 102 completed the questionnaire, yielding a 100% response rate. The mean age at ostomy treatment initiation was 59.34 years old, with a male-to-female ratio of 1.3. Advanced-stage patients constituted 82.35%, and the postoperative time distribution was concentrated between 2 and 3 years. Demographically, significant associations were found between decision regret and being unpartnered (unmarried, divorced, or widowed) and low income. Educational attainment showed no significant correlation (**Table 1**).

Table 1. Univariate analysis of patient decision regret scores

Variable		Number	Decision regret questionnaire score (Mean ± SD)	Significance	Pearson Correlation
Gender	Male	58	58.88 ± 3.502	0.428	0.079
	Female	44	63.41 ± 4.632		
Educational Attainment	Junior high school and below	57	58.25 ± 3.747	0.174	
	High school and technical secondary school	16	57.81 ± 8.036		
	Bachelor's degree and above	29	67.59 ± 4.898		
Financial Situation	Low or no financial burden	43	43.95 ± 4.341	< 0.01	0.509
	Heavy burden or unable to afford	59	73.14 ± 2.780		
Marital Status	Unmarried, divorced, or widowed	52	66.25 ± 3.465	0.049	-0.195
	Married	50	55.20 ± 4.366		
Decision Regret Scale Score		102	60.83 ± 28.433	< 0.01	1
Decision Conflict Scale Score		102	62.5539 ± 25.9877	< 0.01	0.761
Quality of Life Score		102	56.9308 ± 27.46332	< 0.01	-0.899
Stoma Adaptation Score		102	54.461 ± 26.6895	< 0.01	-0.826
Social Support Score		102	48.9602 ± 28.74322	< 0.01	-0.765
Decision-making participation score		102	53.7255 ± 27.90735	0.02	-0.309

3.2. Adaptability, decision regret, decision conflict, and quality of life

Statistically, 84.3% of patients scored ≥ 25 on decision regret, indicating mild to severe regret. Decision conflict showed a positive correlation with decision regret, while total quality of life scores were negatively correlated with decision regret scores (**Table 1**). Notably, patients' ostomy adaptation ability scores were negatively correlated with decision regret but strongly positively correlated with quality of life. The total quality of life score and stoma adaptation ability score showed a significance level of < 0.01, with a Pearson correlation coefficient of 0.881.

3.3. Relationship between decision involvement and decision conflict

In the questionnaire survey, patients with low decision-making involvement scored worse on decision conflict, showing a significant correlation. This analysis revealed that patients lacked a detailed understanding of the decision options and knowledge of alternative solutions. The median decision-making involvement score was 51.1, with a mode of 35.56, indicating that treatment choices were entirely determined by physicians or physicians and family members, resulting in low patient involvement. The decision conflict scale score and decision participation score showed a significance level of < 0.01, with a Pearson correlation coefficient of -0.590.

3.4. Relationship between social support and post-decision regret

Statistical analysis of the social support scale revealed that patients receiving greater social support experienced less intense regret. Single and solitary patients frequently exhibited stronger decision regret.

3.5. Multivariate analysis

Variables showing significant differences in univariate and correlation analyses were included as dependent

variables in a stepwise multiple linear regression analysis. Results indicated that decision conflict (β = 0.277, p < 0.001) and quality of life (β = -0.693, p < 0.001) were significant predictors of decision regret. These factors—decision conflict, quality of life, decision involvement, and social support—explained 84.4% of decision regret records after model adjustment (**Table 2**).

Due to significant multicollinearity among ostomy adaptation ability scores, these variables were temporarily excluded from the data. Multivariate regression analysis was conducted on the remaining relevant variables, yielding the following results:

Table 2. Multiple regression analysis of factors influencing decision regret

Model Summary

Model	R	R-squared	Adjusted R-Squared	Standard Error of the Estimate	Change in Statistics				
					R-squared change	Change in F	Degrees of freedom 1	Degrees of freedom 2	Significance F-change
1	0.924[a]	0.854	0.847	11.127	0.854	112.703	5	96	< 0.001

a. Predictor variables: (Constant), Social Support Score, Decision Conflict Scale Score, Decision Participation Score, Quality of Life Total Score, Stoma Adaptation Ability Score

Coefficient[a]

Model		Unstandardized Coefficient		Standardized Coefficient	t	Significance
		B	Standard Error	Beta		
1	(Constant)	85.149	6.658		12.789	< 0.001
	Decision Conflict Scale Score	0.295	0.059	0.269	5.006	< 0.001
	Quality of Life Total Score	-0.648	0.091	-0.626	-7.093	< 0.001
	Stoma Adaptation Score	-0.222	0.131	-0.208	-1.688	0.095
	Decision Participation Score	0.112	0.108	0.109	1.030	0.306
	Social Support Score	0.004	0.041	0.005	0.109	0.913

a. Dependent variable: Regret Scale score

ANOVA[a]

Model		Sum of Squares	Degrees of Freedom	Mean Square	F	Significance
1	Regression	69768.480	5	13953.696	112.703	< 0.001[b]
	Residual	11885687	96	123.809		
	Total	81,654.167	101			

a. Dependent variable: Regret Scale score
b. Predictors: (Constant), Social Support Score, Decision Conflict Scale Score, Decision Participation Score, Quality of Life Total Score, Stoma Adaptation Ability Score

3.5.1. ANOVA (Analysis of Variance)

Used to test the overall significance of the regression model. The F-value for Model 1 is 137.544, with significance (Sig.) < 0.001. This indicates the regression model is significant overall, meaning the predictor variables (Constant, Social Support Score, Decision Conflict Scale Score, etc.) collectively have a significant predictive effect on the dependent variable (Regret Scale Score).

3.5.2. Coefficients

Used to analyze the influence and significance of each predictor variable on the dependent variable.

3.5.3. Collinearity diagnostics

Collinearity is assessed through Eigenvalues, Condition Index, and Variance Proportions. All Condition Index values are < 30, and the maximum VIF is 4.095 (for Quality of Life Total Score), which does not exceed 10. This indicates that collinearity issues in the model are not severe, and the results are relatively stable.

3.5.4. Summary of results

The multiple linear regression model is overall significant. “Decision Conflict Scale Score” and “Quality of Life Total Score” significantly predict “Regret Scale Score,” with “Decision Conflict Scale Score” having a positive predictive effect and “Quality of Life Total Score” a negative one. “Decision Participation Score” and “Social Support Score” show no significant predictive effect. The model exhibits no severe collinearity issues, and the results are reliable.

4. Discussion

This study aimed to explore factors influencing decision regret among Chinese CRC patients after ostomy surgery. Data collected from 102 patients at Hebei University Affiliated Hospital revealed widespread regret, with primary contributing factors being financial burden, poor quality of life, low social support, and limited decision participation.

Notably, as all participants were outpatient cases with varying and generally prolonged post-stoma surgery durations, the extent of decision regret may have shifted over time. Consequently, the statistical data may exhibit some deviation from actual experiences.

The study also revealed a significant correlation between patients’ economic status and decision regret. However, unlike other studies on decision regret, no significant association with educational attainment was observed among the study subjects. This discrepancy may stem from differences in information access and expectations regarding future prognosis. Patients with higher education levels likely have access to more diverse information channels, leading to increased awareness of relevant details and heightened expectations. Excessively high expectations may subsequently result in disappointment and regret.

Additionally, the generally low level of individual patient involvement in shared decision-making may contribute to this issue. Unmet information needs and unfulfilled desire for participation during the decision-making process further intensify patients’ decision regret. For patients with lower education levels, decision regret may be more closely associated with stoma care. The burden of overly complex stoma care and related complications exacerbates feelings of regret.

The total quality of life score for patients in this study was 56.93, with a standard deviation of 27.46. Relevant literature indicates that patients with permanent ostomies due to CRC experience numerous complications [19,20]. Although preoperative ostomy site planning can reduce incidence rates [21], complications associated with permanent ostomies [22] and the costs and energy required for daily care directly or indirectly diminish patients’ quality of life. Concurrently, studies indicate that while stoma patients’ body image improves over time, their subjective well-being declines [23]. Regret and coping strategies may perpetuate depression and anxiety.

Furthermore, data reveals that patients with high decision regret scores consistently exhibit lower social support ratings. Their negative emotions remain unmitigated within social or familial contexts, and this absence of subjective well-being significantly impacts quality of life [24].

Patients' decision regret showed a strong positive correlation with decision conflict, while decision conflict exhibited a strong negative correlation with shared decision-making participation. Within China's domestic context, physicians tend to discuss treatment plans primarily with family members, resulting in lower patient involvement in decision-making. This "inaction" may lead patients to develop counterfactual expectations, such as "choosing another approach might have been better," manifesting as decision regret.

5. Conclusion

Decision regret is prevalent among Chinese CRC patients following ostomy surgery, with regret rates higher than those reported in similar studies from other regions. This may stem from decisions in mainland China often being driven by attending physicians or family members, potentially increasing patient regret. Additionally, developing more effective complication prevention care protocols and enhancing patient education to improve stoma adaptation, while maintaining quality of life within manageable costs, remains a critical focus for healthcare providers to mitigate decision regret.

Disclosure statement

The author declares no conflict of interest.

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