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The correlation between intimate relationship, self-disclosure, and adaptability among colorectal cancer enterostomy patients

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Abstract

The postoperative physiological changes and psychological pressure of cancer patients affect the patient's adaptability to the disease, and thus affect the spousal intimate relationship. This study aimed to evaluate the correlation between spousal intimate relationship, self-disclosure, and adaptability among colorectal cancer (CCI) patients with enteric stoma.

This cross-sectional study selected patients with CCI in Henan Province from February 2018 to October 2020. The Marital Adjustment Test (MAT), the Distress Disclosure Index scale, and the Ostomy adjustment inventory-20 scale were used to collect relevant data of the participants. A Pearson correlation analysis was used to test the correlation between variables, and multiple stepwise regression analysis was used to test the influence of general information on the intimate relationship, self-disclosure, and adaptability.

Among the respondents, 42.6% had a spousal intimate relationship problem, 58.4% had a low or moderate level of self-disclosure, and 90.8% were at a low or moderate level of adaptation. Education background, self-care ability, and postoperative time were associated with a couple's intimate relationship. Average monthly household income, gender, and place of residence were associated with self-disclosure. Self-care ability, average monthly household income, postoperative time, and educational background were associated with adaptation.

Healthcare workers should provide more health education training to guide CCI enterostomy patients to express their thoughts and feelings with each other increase self-disclosure, so as to enhance their intimate relationship then improve their adoption to ostomy, finally elevate their quality of life.

Abbreviations: CRC = colorectal cancer, DDI = the distress disclosure index scale, MAT = the Lock–Wallace marital adjustment test, OAI-20 = Ostomy adjustment inventory-20 scale.

Keywords: adaptability, colorectal cancer, enterostomy, intimate relationship, self-disclosure

1. Introduction

Colorectal cancer (CRC) involves both the colon and rectum cancer. It is a relatively common malignant tumor of the digestive tract. In recent years, with the improvement of people's living standards, changes in dietary habits, and the aging of the population, the incidence of CRC is rising.[1] According to statistics from the World Health Organization in 2018, there were 1.8462 million new cases of CRC worldwide, accounting for 10.2% of all new cancer cases and an increase of 35.75% from 2012.[2] Besides, with the rapid development of medical technology, the survival rate of cancer patients has continued to increase. The 5-year survival rate of CRC patients in the United States is 64%, 41% in European countries, and 60% in China.[3] The increase in the five-year survival rate has made people gradually realize that CRC is a chronic disease that can be treated, controlled, and even cured. This change in understanding has had a positive impact on CRC tumor care, making nursing to involve not only anti-cancer treatment and care, but to pay more attention to the quality of life of patients with tumors.

A stoma is the externalization of the bowel wall from the anterior abdominal wall during a surgical operation, which is used to transfer or decompress the remaining bowel.[4] According to the annual report on CRC by the National Bowel Cancer Audit in 2018, 84% of the diagnosed cases of rectal cancer in the United Kingdom will have a stoma during surgery, and 52% of the patients will still retain the stoma after 18 months.[5] Among the survivors of CRC, a considerable part of the population needs to undergo an enterostomy and live with a stoma. Enterostomy can help patients with CRC alleviate symptoms and prolong life, but the normal physiological functions of the intestines and anus of patients with a stoma and the normal position of defecation are

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also changed.[6] Therefore, the quality of life of patients with a stoma is worthier of attention. The postoperative stoma may be permanent or temporary, depending on the condition of the patient.

Although for patients undergoing ostomy and those living with them, whether permanent or temporary, there will be multiple challenges after surgery. Especially for married patients, cancer and stomas bring tremendous pressure on the patients and their spouses.

The existence of a stoma has an inevitable impact on the quality of sexual life. A study from Sweden showed that 29% of women and 41% of men are sexually active after an enterostomy. It usually causes the patient cannot adapt for the new sexual life. Lubrication reduced while dyspareunia increased in women living with stomas, while erectile dysfunction increased from 46% to 55% in 1 year in men.[7] A Chinese study indicated that 63.1% of stoma patients have a moderate stigma in their sexual experience. It also demonstrates these patients cannot self-disclose their embarrassment and difficulties in their life behaviors, which leads to conflicts between husband and wife[8] These problems will affect the spousal intimacy and require professional guidance from healthcare workers.[9]

Multiple definitions of intimacy relationships were found in previous studies (e.g. Vangelisti & Beck, 2003; Ross & Mirowsky, 2013).[10,11] However, this study is closer to the definition of Sternberg et al as intimate relationship was a kind of relationship between people with a strong sense of closeness, connection and bonding physical and psychological experience.[12] Theoretically, the two sides who establish intimate relationship produce psychological states as attachment, elementary pragmatic, and selfhood through intimate behaviors such as sexual activities.[13]

Intimate relationship is not only an essential indicator for evaluating patients' subjective well-being and quality of life, but also a significant predictor of disease outcome.[14] Since the partner of a cancer patient is usually a husband-and-wife relationship, the intimate relationship referred to in this study is the spousal intimate relationship. Scholars like Walker proposed that establishing a good couple intimacy can bring support and comfort and cushion cancer patients' anxiety about death.[15] Although maintaining a good couple intimacy helps in alleviating the negative effects of cancer and stomas, many patients do not know how to adjust, which leads to unfavorable emotions, such as anxiety and depression.[16] While research on the couple's intimate relationship in the field of cancer has gradually deepened, the personal relationship model that helps couples adapt to cancer has gradually been applied to patients with a stoma. Nichols' research demonstrated that the adaptation level of stoma patients with a stable marital relationship is higher than that of patients with an unstable marriage, and intimacy is an essential factor in maintaining marital stability. Establishing intimacy can not only satisfy stoma patients' needs for love and belonging, but also relieve anxiety, enhance self-confidence and self-esteem, and improve the level of adaptation.[17] The conceptual model established by Manne et al. also demonstrated that the spousal intimate relationship was an important determinant of the psychological adaptation of patients and their partners to cancer.[18]

The process of an individual sincerely sharing his or her secret thoughts with others is defined as self-disclosure.[19] Individuals who have experienced traumatic events convert vague events and opinions into a specific language in the process of trauma-related self-disclosure, helping them rebuild their cognitive structure, reduce the negative impact of traumatic events, and promote individual recovery.[20] Studies showed that the process of self-disclosure would have a positive effect on the quality of intimate relationship, which in turn affects the meaning and content of self-disclosure.[21]

Adaptation is the response of people to their environment to promote survival, growth, reproduction, and manipulation to adjust the individual.[22] The level of adaptation is not only an important issue that patients with a stoma need to face in their survival, but is also one of the crucial factors affecting their quality of life.[9] Relevant research results indicate that the largest source of social support received by patients is the family. As the core relationship in the family relationship, the husband–wife relationship can have an impact on the long-term or short-term adaptation process of stoma patients.[23]

Through the literature review, spousal intimacy, self-disclosure, and adaptation level play a vital role in the quality of life of patients with CRC stoma, and there is an inevitable and complicated relationship between the three. Previous studies have shown that the various experiences and spousal intimate behaviors in intimate communication between breast cancer survivors and their partners are critical to the cancer adaptation of patients.[24] Besides, the interpersonal process model established for breast cancer patients also shows that the responsiveness of the patient's partner mediates the relationship between self-disclosure and spousal intimacy.[25] However, at present, studies on patient spousal intimacy, adaptation, and self-disclosure are more common in breast cancer patients, but related studies on patients with stoma are still relatively limited.

China's medical and health system divides hospitals into six levels. As the highest level, tertiary A hospitals are often the places where cancer patients receive the most treatment. These hospitals often have advanced diagnosis and treatment equipment and highly educated healthcare workers, but they bear a huge amount of inpatients. The heavy economic burden, psychological pressure and crowded medical environment brought by these hospitals pose challenges for the satisfaction and psychological adaptability of cancer patients after surgery.[26] Therefore, the patient's partner will play an auxiliary role in the postoperative adaptability and emotional recovery of the patient. At present, there are fewer similar studies in China, and more studies focus on the adaptability of cancer patients after surgery, but seldom focus on the spousal intimate relationship of cancer patients.

In the previous research on the spousal intimate relationship of cancer patients, the influencing factors of the intimate relationship have certain limitations, which limits the interpretation of the conceptual framework of the intimate relationship of cancer patients. However, in this study, the interaction between spousal intimate relationship, self-disclosure, and adaptability was explored. Therefore, this study aimed to evaluate the correlation between spousal intimate relationship, self-disclosure, and adaptability among CCI patients with enteric stoma.

In the conceptual model of this study, intimate relationship includes two behaviors: relationship strengthening and relationship compromise. Relationship strengthening includes self-disclosure, spouse response and relationship involvement, which can promote intimate relationship and increase patients' adaptation; relationship compromise includes avoidance, criticism and pressure exit, which is not conducive to the intimate relationship and weakens patients' adaptation. This view emphasizes the understanding of the adaptation level of cancer

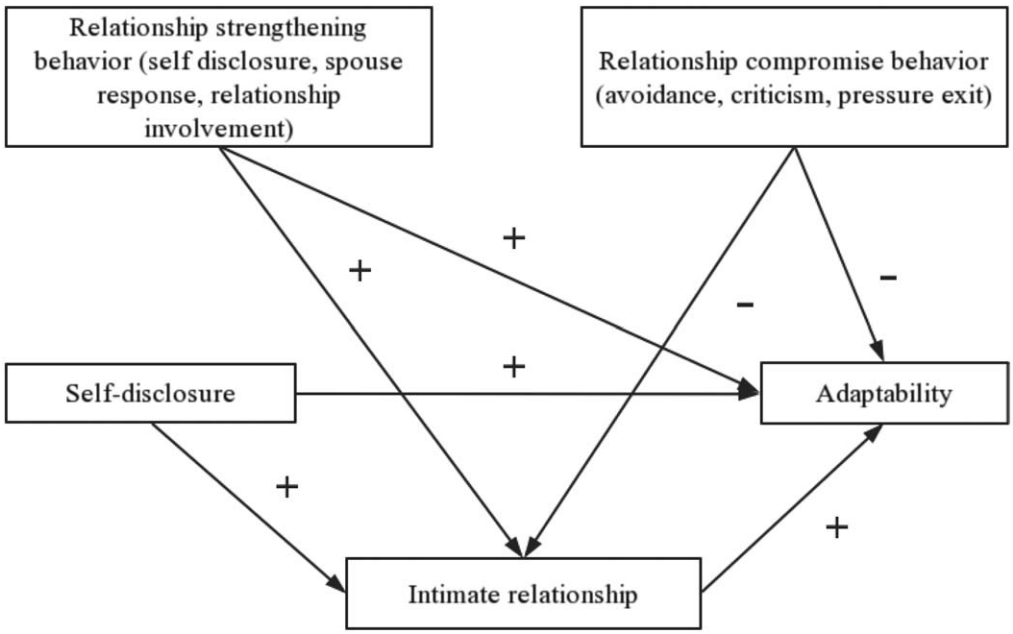

Figure 1. There are interactions among intimate relationship, self disclosure, and adaptability. Relationship strengthening and relationship compatibility have positive and negative effects on intimate relationship and adaptability respectively.

patients from the perspective of relationship, and regards the spouse relationship as a resource available to individuals to improve the adaptation level of patients. In addition, patients with CCI and colostomy in the face of the formation of two major stress events, will form new values and self-awareness. Self-disclosure can promote the recognition and evaluation of trauma experience. As a kind of intimate relationship strengthening behavior, it can have a positive impact on the adaptation level of CCI patients after colostomy. See details in Figure 1.

2. Methods

2.1. Study design

A cross-sectional survey was conducted in Henan Province, China from February 2020 to March 2021.

2.2. Participants and recruitment

In this study, convenience sampling was used to select patients after CRC enterostomy who participated in the stoma clinic and the stoma patients' association of a tertiary first-class hospital in Henan Province. The inclusion criteria were:

(1) married patients,
(2) patients who underwent a CRC enterostomy,
(3) patients with a clear mind and normal communication skills, and
(4) patients who voluntarily participated in this research.

The exclusion criteria were:

(1) patients with severe heart, liver, kidney, and other dysfunctions, respiratory failure, and other serious complications;
(2) patients with advanced tumor cachexia;
(3) patients whose spouses were deceased; and
(4) dying patients.

This study issued a total of 400 questionnaires; 390 were effectively recovered, and the effective recovery rate was 97.5%.

2.3. Research instruments

This study collected data from participants based on a general information questionnaire, the Lock–Wallace Marital Adjustment Test (MAT), the Distress Disclosure Index Scale (DDI), and Ostomy adjustment inventory-20 scale (OAI-20). MAT is one of the two most commonly used marriage satisfaction measurement methods (as of January 2017, the citation rate is 3322). DDI is a commonly used self-disclosure short self measure to measure an individual's tendency to disclose disturbing information. OAI-20 is developed in English to measure the individual social and psychological adaptability of patients undergoing colostomy. The research tools used in this study have been translated into Chinese and evaluated by the index of item objective congruence (IOC) of three experts. The results showed that each item was greater than 0.5. The test-retest reliability of the Chinese version of the scale was tested.

The general information questionnaire included two parts: sociodemographic data and disease-related information. Sociodemographic data included gender, age, education level, occupation, and per capita household monthly income. Disease-related information included postoperative time, presence or absence of stoma complications, history of chemotherapy, and whether to take care of the stoma by yourself.

The MAT test was used to assess the degree of marriage adjustment and the quality of marriage between couples in a certain period. The scale consisted of 15 items, and the scale ranged from 2 to 158 points. The higher the score, the better the marriage adjustment and the higher the quality of the marriage. Those with a score of less than 100 were considered to have marriage disorders, and those with a score of $\geq$100 were considered with good marriage adjustments. According to

reports, the Cronbach's alpha value of the scale was 0.92, which had a high internal consistency value.[27] The Cronbach's alpha value of the scale in this study was 0.697.

The DDI scale was used to measure the degree to which an individual tells others about his troubles and other private information. The scale had a total of 12 items and used the Litter 5-level scoring method. Among them, the 1/3/6/7/11/12 items were entitled to positive scores for positive entries, ranging from strongly disagree to strongly agree scoring 1–5 points, respectively. The 2/4/5/8/9/10 items were negative questions scored in reverse (5–1 points), from strongly disagree to strongly agree, respectively. The scale has a total score of 12 to 60 points, and the quartile of the total score is used as the critical value for level classification, that is, 12 to 29 points are considered low level, 30 to 44 are considered medium level, and 45 to 60 are considered high level. Previous research showed that the Cronbach's alpha range of 12 items ranged from 0.89 to 0.95 (Mean = 0.93).[28] The Cronbach's α for this scale in this study was 0.918.

The OAI-20 scale was used to measure the adaptation level of patients after an enterostomy. The scale included three dimensions: worry, acceptance, and positive attitude towards life. The Cronbach's α coefficients of the three dimensions were 0.704, 0.779, and 0.855, respectively.[29] The Cronbach's α coefficient of the scale was 0.886, and the Cronbach's α of the scale in this study was 0.826. The scale has a total score of 80 points; < 40 indicates a low adaptation level, 40–60 indicates a medium adaptation level, and ≥60 indicates a high adaptation level.

2.4. Data collection

The researchers strictly selected patients according to the inclusion and exclusion criteria, explained the purpose and significance of the survey face-to-face to the patients who met the requirements, and ensured that the data obtained was only used in this study. The questionnaire was collected at the home of the participants. After obtaining consent, the investigator personally issued the questionnaire. Uniform instructions were used to guide patients to complete the questionnaire, retrieve the survey date, and number the retrieved questionnaire.

2.5. Statistical analysis

IBM SPSS Statistics 23.0 (IBM Corp., Armonk, NY) was used for data analysis. Descriptive statistics were used to analyze the general information of the participants. The measurement data were described by the average ± standard, and the counting data were described by frequency and percentage. A Pearson correlation analysis was used to test the correlation between variables. Linear regression analysis was used to explore the variation of independent variables on the intimate relationship, self-disclosure, and adaptation level of couples with CRC patients.

2.6. Ethic consideration

This study was approved by the Academic Ethics Committee of *** (IRB: ***). This study fully respects the participants' right to informed consent.

3. Results

3.1. Study characteristics

The 390 patients participated in this study, the majority of participants were males (59.2%), and 60.2% of them were aged more than 60. More than half of the participants had an elementary school education and below (54.9%), and 52.8% of them were farmers.

3.2. The spousal intimate relationship

The score of the spousal intimacy was 109.7 ± 18.643 and the classification statistics showed that 224cases (57.4%) had a good marriage adjustment, and 166 cases (42.6%) had marriage disorders. The details are shown in Table 1.

3.3. Self-disclosure

The total score of self-disclosure of patients with CRC stoma was 39.74 ± 8.831. The classification statistics showed that 84 cases (21.5%) were at a low level of self-disclosure, 144cases (36.9%)

Table 1

Score of the couple's intimate relationship (n = 390, $\bar{X} \pm s$).

Items	Score range	Score
Total score	2–158	109.7 ± 18.643
1. Marital happiness	0–35	20.15 ± 6.430
2. Handing family finances	0–5	3.95 ± 1.001
3. Matters of recreation	0–5	3.62 ± 0.788
4. Demonstration of Affection	0–8	3.34 ± 0.956
5. Friends	0–5	4.27 ± 0.936
6. Sex relations	0–15	9.18 ± 3.144
7. Conventionality (right, good, or proper conduct)	0–5	3.40 ± 0.906
8. Philosophy of Life	0–5	3.48 ± 0.862
9. Ways of dealing with in-laws	0–5	3.41 ± 0.873
10. When disagreements arise, they usually result in	0–10	7.39 ± 3.941
11. Do you and your mate engage in outside interests together	0–10	7.44 ± 1.674
12. In leisure time do you generally prefer:	2–10	6.96 ± 3.582
13. Do you ever wish you had not married	0–15	9.80 ± 3.723
14. If you had your life to live over, do you think you would	0–15	13.91 ± 3.852
15. Do you confide in your mate	0–10	9.39 ± 2.190

Table 2

Score of each item of the self-disclosure scale (n = 162, $\bar{X} \pm s$).

Items	Score
1. When I feel upset, I usually confide in my friends.	3.42 ± 1.68
2. I prefer not to talk about my problems.	3.41 ± 1.114
3. When something unpleasant happens to me, I often look for someone to talk to.	3.39 ± 1.072
4. I typically don't discuss things that upset me.	3.37 ± 1.138
5. When I feel depressed or sad, I tend to keep those feelings to myself.	3.36 ± 1.110
6. I try to find people to talk with about my problems.	3.30 ± 1.061
7. When I am in a bad mood, I talk about it with my friends.	3.29 ± 1.200
8. If I have a bad day, the last thing I want to do is talk about it.	3.29 ± 1.140
9. I rarely look for people to talk with when I am having a problem.	3.24 ± 0.939
10. When I'm distressed I don't tell anyone.	3.23 ± 1.122
11. I usually seek out someone to talk to when I am in a bad mood.	3.17 ± 1.017
12. I am willing to tell others my distressing thoughts.	3.15 ± 1.144
13. Total score	39.74 ± 8.831

were at a medium level, and 162cases (41.5%) were at a high level (Table 2).

3.4. Adaptation level

The total score of adaptation level was 52.03 ± 7.066. Among the three dimensions of the adaptation level, the item with the highest average score was acceptance (2.99 ± 0.639), followed by positive attitude towards life (2.67 ± 0.648), and worry (2.34 ± 0.652). The classification statistics showed that 10.8% of patients were at a low adaptation level, 80.0% were at a moderate adaptation level, and only 9.2% were at a high adaptation level.

3.5. The influence of different factors on the spousal intimate relationship, self-disclosure, and adaptation level

The results indicated that there were significant differences between the spousal intimacy and age, education background, postoperative time, and self-care ability. In terms of self-disclosure, respondents had significant differences in gender, average monthly household income, and place of residence. Also, there were significant differences in the adaptation of the respondents in educational background, average monthly household income, postoperative time, and self-care ability (Table 3).

3.6. Correlation analysis results between variables

The results showed that the correlation coefficient between self-disclosure and spousal intimate relationship was 0.300, indicating that there was a significant positive correlation between them. The correlation coefficients between self-disclosure and adaptation level and worry, acceptance, and positive attitude towards life were 0.177, -0.157, 0.339, 0.280, respectively, indicating that self-disclosure had a significant positive correlation with the level of adaptation, and its dimensions of acceptance and a positive attitude toward life. Meanwhile, there was a significant negative correlation with continuous worry. The correlation coefficients between the spousal intimate relationship and the level of adaptation and worry, acceptance, and positive attitude towards life were 0.227, -0.208, 0.409, and 0.391, respectively, indicating that there was a significant positive correlation between spousal intimate relationship and the level of adaptation and the three dimensions of acceptance and positive attitude towards life, while there was a significant negative correlation with worry (Table 4).

Table 3

Score of each item of adaptation.

Item	Score	Item average score
Acceptation	14.96 ± 3.195	2.99 ± 0.639
Positive attitude towards life	16.01 ± 3.887	2.67 ± 0.648
Worry	21.06 ± 5.866	2.34 ± 0.652
Total score	52.03 ± 7.066	

3.7. Multiple linear stepwise regression of the couple's intimate relationship, self-disclosure, and adaptation

The final model for predictors of the spousal intimate relationship, self-disclosure and adaptation are shown in Table 5 respectively. Spousal intimate relationship contains three significant predictors and explained 46.3% of the variance. Self-disclosure contains three significant predictors and explained 18.7% of the variance. Adaptation contains four significant predictors and explained 28.8% of the variance.

Education background ($\beta = 0.676$, $P < .001$), self-care ability ($\beta = 0.887$, $P < .001$), and postoperative time ($\beta = 0.646$, $P < .001$) were associated with spousal intimate relationship. Average monthly household income ($\beta = 0.475$, $P < .001$), gender ($\beta = 0.848$, $P < .001$), and place of residence ($\beta = 0.512$, $P = .010$) were associated with self-disclosure. Self-care ability ($\beta = 0.388$, $P < .001$), average monthly household income ($\beta = 0.345$, $P < .001$), postoperative time ($\beta = 0.283$, $P < .001$), and educational background ($\beta = 0.295$, $P < .001$) were associated with adaptation (Table 6).

4. Discussion

4.1. Characteristics and associated factors of spousal intimate relationship

Intimacy between patients with a CRC stoma and their spouses is still a major challenge as seen in 42.6% of patients.[30] Whilst et al. reported that the intimacy of such couples was comparable with an American study by Reese.

Presently, research on the spousal intimate relationship in the medical field is more concentrated in patients with gynecological cancer and prostate cancer. In the study by Manne et al., 21.6% of the spouses of prostate cancer patients expressed dissatisfaction with their couple intimacy.[31] In a study on breast cancer, lack of spousal intimacy was also a factor related to the quality of life after breast cancer surgery.[32] The results of this study are significantly higher than those of the above scholars. This may be related to the location of the CRC and stoma in this study. Cancer damages the intimate relationship. According to reports, the risk of divorce for cancer patients is 1.77 times that of healthy people.[33] The changes in physiological function, self-image disorder, and its impact on the quality of sexual life brought about by the stoma will cause great harm to the spousal intimate relationship.[17] Moreover, several studies have also shown that cancer patients and their partners have lower scores in FACT and FACIT-SP scores, which increases the risk of depression, anxiety

Table 4

The influence of different sociodemographic and disease-related factors on the couple's intimate relationship, self-disclosure, and adaptation ability.

		Intimate relationship between couples			Self-disclosure			Adaptation ability		
Variables	**n (%)**	**Score**	**F**	***P*-value**	**Score**	**F**	***P*-value**	**Score**	**F**	***P*-value**
Gender			0.075	-3.422		-5.469	<.001		1.058	.291
Male	231 (59.2)	108.31±19.166			37.72±7.785			52.35±6.378		
Female	159 (40.8)	111.73±17.719			42.68±9.440			51.55±7.958		
Age			13.879	<.001		2.704	.068		1.778	.170
≤44	21 (5.4)	127.24±16.682			39.10±7.848			53.95±5.652		
45–59	134 (34.4)	111.96±18.951			41.17±8.373			52.59±7.446		
≥60	235 (60.2)	106.85±17.64			38.98±9.097			51.54±6.928		
Education background			92.484	<.001		2.222	.085		13.548	<.001
Elementary school and below	214 (54.9)	99.88±16.34			39.10±8.968			50.47±6.972		
Middle school	67 (17.2)	113.22±13.587			39.18±9.455			52.00±6.356		
High school	61 (15.6)	122.1±10.717			40.38±8.124			53.62±7.396		
University and above	48 (12.3)	132.83±7.594			42.56±7.765			56.98±5.196		
Occupation			1.275	.283		1.755	.155		2.333	.074
Farmer	206 (52.8)	108.24±17.843			39.56±8.763			51.89±6.650		
Staff	84 (21.5)	109.77±21.97			41.52±8.140			53.25±7.649		
Retire	87 (22.3)	112.54±17.572			38.51±9.899			51.77±7.272		
Others	13 (3.4)	113.46±12.862			39.38±4.682			48.00±7.106		
Average monthly household income			2.354	.072		23.004	<.01		7.511	<.001
<2000 RMB	142 (36.4)	107.66±17.796			37.01±8.804			50.59±6.978		
2000–4000 RMB	140 (35.9)	108.73±17.18			39.18±7.749			51.73±7.513		
4001–6000 RMB	90 (23.1)	113.86±21.112			42.41±7.709			53.69±6.029		
>6000 RMB	18 (4.6)	112.61±20.892			52.33±8.303			57.39±4.865		
Main caregiver			1.911	.127		1.233	.297		0.614	.606
Parents	19 (4.9)	111.37±25.58			37.32±5.447			52.11±8.869		
Child	153 (39.2)	106.91±17.545			40.59±7.745			51.46±7.788		
Spouse	191 (49.0)	111.43±18.437			39.21±9.169			52.34±6.386		
Others	27 (6.9)	112.15±19.676			40.37±13.045			53.00±6.164		
Place of residence			7.236	.001		11.000	<.001		1.880	.154
Village	214 (54.9)	106.55±17.56			37.90±8.488			51.42±6.502		
County town	88 (22.6)	112.61±19.584			41.65±8.585			53.00±6.445		
City	88 (22.6)	114.47±18.961			42.32±8.937			52.55±8.719		
Postoperative time (year)			17.350	<.001		0.979	.403		11.859	<.001
<1	89 (22.8)	98.11±16.987			38.81±8.719			48.57±7.178		
1–3	134 (34.4)	111.75±17.794			39.60±9.404			52.09±6.741		
4–6	64 (16.4)	113.2±14.626			41.27±7.194			53.20±5.779		
>6	103 (26.4)	114.88±19.341			39.79±9.073			54.20±7.072		
Complication			0.702	.483		1.190	.235		0.401	.689
Yes	89 (24.7)	110.92±18.679			40.72±9.543			52.29±6.375		
No	301 (77.2)	109.34±18.648			39.45±8.605			51.95±7.266		
History of chemotherapy			0.230	.818		-0.898	.370		1.815	.070
Yes	251 (64.4)	109.86±19.584			39.44±8.933			52.51±7.047		
No	139 (35.6)	109.41±16.875			40.28±8.651			51.16±7.041		
Self-care ability			21.279	<.001		0.729	.483		41.051	<.001
Completely self-care	89 (22.8)	99.74±19.352			38.94±9.914			46.72±7.399		
Partly self-care	115 (29.5)	109.41±18.43			40.44±10.038			52.70±6.213		
Cannot self-care	186 (47.7)	114.65±16.461			39.69±7.385			54.15±6.064		

Table 5

Correlation analysis results between variables.

Items	**Self-disclosure**	**Couple's intimate relationship**	**Adaptation**	**Worry**	**Acceptance**	**Positive attitude towards life**
Self-disclosure	1					
Couple's intimate relationship	0.300**	1				
Adaptation	0.177*	0.227**	1			
Worry	-0.157*	-0.208**	0.534**	1		
Acceptance	0.339**	0.409**	0.518**	-0.315**	1	
Positive attitude towards life	0.280**	0.391**	0.587**	-0.280**	0.595**	1

*** means $P<.001$; ** means $P<.01$; * means $P<.05$.

Table 6

multiple linear stepwise regression of the couple's intimate relationship, self-disclosure and adaptation.

Item	B	SE	Beta	*t*	*P*-value	*F*	R^2
Couple's intimate relationship							
Constant	76.718	2.544		30.161	<.001	110.994	0.463
Education background	9.848	0.676	0.574	14.575	<.001		
Self-care ability	4.117	0.887	0.177	4.643	<.001		
Postoperative time	2.219	0.646	0.132	3.436	.001		
Self-disclosure							
Constant	26.742	1.501		17.818	<.001	29.550	0.187
Average monthly household income	2.934	0.475	0.293	6.172	<.001		
Gender	3.582	1.848	0.200	4.225	<.001		
Place of residence	1.317	0.512	0.122	2.574	.010		
Adaptation							
Constant	36.775	1.284		28.637	<.001	38.996	0.288
Self-care ability	3.053	0.388	0.347	7.875	<.001		
Average monthly household income	1.198	0.283	0.189	4.235	<.001		
Postoperative time	1.702	0.345	0.213	4.932	<.001		
Education background	1.134	0.295	0.174	3.839	<.001		

and violence against partners.[34] The stigmatization of cancer and sex is the current challenge in home care for patients after cancer surgery.

More educated patients are better at using effective communication skills, better at resolving conflicts, having more ways to relieve stress, and more actively seeking outside help to promote agreement on certain issues.[35] The intimacy relationship of patients over one year is significantly higher than that of patients within one year. It may be that the pressure brought by the disease gradually weakened after one year. In addition, the husband and wife could have gradually adapted to the common pressure after constant running-in, and it is related to the establishment of a coping mechanism.[36] Furthermore, for patients with high self-care ability, because their self-satisfaction is better, their families feel less guilt, and their spouses feel less pressure and burden. These help in maintaining a closer spousal intimacy relationship.[37]

Therefore, in improving the sexual stigma of cancer patients, clinical and family nurses should give more health education to patients and their families during the return visit to promote their cognition of intimate relationship and sexual concept. Social support is also a good way to reduce stigma and promote adaptation. This requires more social assistance from local communities and psychological institutions to promote the psychological response ability and self-efficacy of patients and their families. Moreover, the civil affairs departments and marriage support institutions, as decision-makers and regulators of marriage system, need to provide necessary training and cognitive education for patients and their families in terms of social support, so as to promote the continuity and recovery of intimate relationship.

4.2. Characteristics and associated factors of self-disclosure

The overall self-disclosure level of the patients was moderate. Besides, Rabin's study also mentioned the self-disclosure rate of cancer patients is much lower than that of the general population $t(115) = -5.84$, $P < .001$.[38] According to specific items, the patients usually found someone to chat with when in a bad mood, when sad, or in pain, but they were unwilling to describe in detail the events leading to the bad emotions and express their true inner thoughts. This may be related to the unwillingness of their own illness and bad mood to increase the pressure on their spouses, or the belief that their spouses do not have effective measures to help them solve their problem.

The self-disclosure score of female patients was significantly higher than that of males, which may be related to the fact that female patients are more inclined to gain a sense of security, feel intimacy in self-disclosure, and the link between venting and expression and social identity of women's roles. However, the social role of men is linked with being mostly brave, firm, and steady.[39] The degree of self-disclosure of patients living in cities was significantly higher than that of patients living in villages and towns. Patients in villages and towns may be more conservative in their thinking; are restricted by their economic ability, living, and working environment; have fewer available social resources; a limited understanding of disease-related knowledge; more negative and pessimistic treatment of diseases; insufficient understanding and attention to self-disclosure; lack of learning of relevant knowledge; and limited help available.[40] Patients with a high average monthly household income had a higher level of self-disclosure because, patients with a high monthly income per capita have a lighter financial burden and do not need to worry about costs. They have a lighter psychological burden and are more willing to talk about self-expression and disease-related topics.

In fact, under the new normal of COVID-19, China is committed to promoting the improvement of public health policy. Regular healthcare workers' Rural visit program is promoting the health consultation service for rural patients in the convalescence period and the psychological disorder patients in the convalescence period. Male nurses as a new group of healthcare workers, their empathy ability is helpful to express the problems related to their own diseases to male patients in rural areas, and provide them with appropriate health promotion programs

4.3. Characteristics and associated factors of adaptation

In a Turkish study, patients with a stoma were at a moderate level of adaptation (Mean 49.39 ± 14.62 of the Ostomy Adjustment

Inventory Scale-23), which is like this study.[9] Several studies have shown that the higher the adaptation level of stoma patients, the better the quality of life.[17,41] Therefore, patients with CRC need healthcare workers to help them improve their adaptation level after an enterostomy.

In this study, higher adaptability exists in the highly educated population. This may be related to the fact that the more educated patients have more extensive information acquisition methods, a stronger understanding and adaptability, and are better at learning related stoma knowledge and skills.[29] Cancer survivors are more likely to report financial difficulties than the general population, which results in patients with less adaptability in terms of postoperative social relations, disease recovery, and medical burden[42] The adaptation level of patients with a stoma more than 1 year after surgery was significantly higher than that of patients within 1 year after operation, which may be related to the patient's need for sufficient time to recover and overcome the physical changes brought about by the operation, spiritual trauma, and recovery of family and social life.[43] In addition, the patient's level of adaptation is significantly related to self-care ability, because self-care with the help of healthcare workers can help colostomy patients make necessary daily and social adjustments, thereby building self-confidence and social relationships.[44]

4.4. Interaction between spousal intimate relationship, self-disclosure and adaptation

Several studies have shown that trauma-related self-disclosure can have a positive impact on individuals experiencing trauma and promote physical and mental growth. Sex-related self-disclosure can help improve the quality of the patients' sexual life; stress-related self-disclosure can reduce negative emotions, help release stress, form a positive cycle in the spousal relationship, and enhance mutual intimacy.[45,46] Self-disclosure is the basis for establishing spousal intimate relationships, which affects the formation and development of intimate relationships, and ultimately affects the quality of spousal intimate relationships and quality of life; spousal intimate relationships can in turn affect the content, meaning, and degree of individual self-disclosure.

For patients with a CRC stoma, the spousal intimate relationship has a significant positive effect on their adaptation level. As the core relationship in the family, the husband-wife relationship directly affects the social support that patients can obtain. Roy pointed out in his adaptation model that social support can neutralize the main stimulus during the patient's adaptation process and act as a positive stimulus to improve the level of individual adaptation.[47] A previous study indicated that the higher the degree of spousal intimacy between a husband and wife, the stronger the ability to cope and adapt to the two strong stressors of cancer and stoma. An increase in the level of adaptation often indicates an improvement in self-management behavior and the quality of life.[48]

In addition, clinicians and responsible nurses have less chance to get the active and beneficial patient's self-disclosure during patient visits. Studies have shown that most health workers share personal beliefs or experiences to guide patients in self-disclosure attempts, so as to understand patients' adaptability to the disease and family status. However, this has not effectively improved patient self-disclosure.[49] Health workers need to increase empathy, understanding and compassion to establish effective self-disclosure conditions to improve and understand the patient's adaptability, family and mental state.

Based on our knowledge, this might be the first study on the spousal intimate relationship, self-disclosure, and adaptability of stoma patients in China. The strength of this study lies in the cross-sectional methods of the interaction between spousal intimacy, adaptation and self-disclosure thereby laying the foundation for the conceptual model and theoretical research of intimacy among cancer patients. However, it also has certain limitations needing future research. The research questionnaires were designed as standard scales, failing to explore the subjective feelings of patients in depth. Therefore, future research can add qualitative research strategies. Moreover, due to the influence of time and funding, this study was unable to conduct a long-term dynamic observation of patients. Therefore, it is necessary to carry out longitudinal studies to further confirm and supplement the research results.

5. Conclusion

This study highlighted the association between spousal intimate relationship, self-disclosure, and adaptability of stoma patients. Health workers should focus on health education to strengthen the adaptability of patients, and social support departments should provide more social practice activities and psychological support to enhance and improve patients' self-disclosure levels. Health care institutions should provide more online and offline rehabilitation training to improve patients' self-care level, thereby improving the intimate relationship between couples.

Author contributions

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