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The experiences of Chinese colorectal cancer survivors in marital intimacy after ostomy creation: A qualitative study

Xixi Du^{1,2} , Suchira Chaiviboontham^{1*} , and Bualuang Sumdaengrit¹ 

¹Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand

²General Surgery Department, Puyang People's Hospital, Puyang, China

Abstract

Background: Colorectal cancer (CRC) ranks as the third most prevalent cancer globally. The disease and its treatment significantly impact marital intimacy, particularly among individuals who have undergone ostomy creation. Therefore, it is necessary to explore their experiences.

Objective: This study aimed to explore the experiences of colorectal cancer survivors in marital intimacy after ostomy creation and clarify the domain and sub-domain of marital intimacy in CRC survivors with ostomy.

Method: This study used a qualitative descriptive design, and participants were selected by purposive sampling from two hospitals in Henan province, China. Sixteen patients participated in this research, and the data were collected through an in-depth interview from June 27 to September 27, 2023. Colaizzi's method was used to analyze the data.

Results: Five themes emerged from data analysis, including physical intimacy, psychological intimacy, social intimacy, spiritual intimacy, and operational intimacy.

Conclusion: By profiling the experiences of CRC survivors in marital intimacy after ostomy creation, the domain and sub-domain of marital intimacy were clarified in this cohort and revealed that ostomy had a severe effect on marital intimacy among colorectal cancer survivors. The results from this study could be used by nurses, midwives, and other healthcare professionals to design specific interventions covering all aspects of marital intimacy. Also, the findings will guide the development of a particular instrument for marital intimacy in CRC survivors with ostomy.

Keywords

China; colorectal cancer; ostomy; marital intimacy; experience; qualitative research

*Corresponding author:


Suchira Chaiviboontham, PhD, RN,
Associate Professor
Ramathibodi School of Nursing, Faculty of
Medicine Ramathibodi Hospital, Mahidol
University, 270 Rama VI Road, Ratchathewi
District, Bangkok, Thailand 10400
Email: suchira.cha@mahidol.edu

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Background

Colorectal cancer (CRC) represents a significant global health challenge, encompassing both colon and rectum cancers, ranking as the third most prevalent cancer worldwide (Sung et al., 2021). There were 1.93 million new cases of CRC worldwide and 0.56 million in China, accounting for 29% (Sung et al., 2021). Following the aging and the growth of the population as well as the economic development, the incidence of colorectal cancer is rapidly growing; in China, there was a 7.4% annual increase from 2015-2020 (Sung et al., 2021; Zeng et al., 2018). For the treatment of CRC patients, 18%–35% have received temporary or permanent ostomy (Banaszkiewicz et al., 2015) to replace the anus for defecation and relieve obstruction symptoms. One million individuals are estimated to live with a stoma, and there are approximately 100,000 new ostomy cases each year in China (Lu & Wan, 2009).

Living with a stoma affects patients' lives, particularly in the marital intimacy for married patients (Jayarajah & Samarasekera, 2017; Vonk-Klaassen et al., 2016; Zewude et al., 2021). Marital intimacy refers to two persons experiencing an intense physical and emotional encounter, exchanging

content, affect, and behaviors at both verbal and non-verbal levels, which means a deep form of acceptance of the other and a commitment to the relationship (Gilbert, 1976). It is a process that occurs and adjusts over time (Schaefer & Olson, 1981). Ostomies prolong the patient's life but pose a challenge to their marital intimacy.

One research in China has shown that more than 60% of patients experience sexual dysfunction after ostomy creation (Qin et al., 2019). Other research also indicated that more than 70% of ostomates reported dissatisfaction with their sex lives (Vonk-Klaassen et al., 2016; Zewude et al., 2021), with more than 20% of partners expressed dissatisfaction with the sexual performance of ostomates (Silva et al., 2014). Among men, the most common issues are erectile dysfunction and ejaculatory disorders (Davidson, 2016; Vural et al., 2016; Wiltink et al., 2014), while women commonly experience dyspareunia and vaginal dryness (Den Ouden et al., 2012; Vural et al., 2016; Wiltink et al., 2014).

Additionally, coping with a life-threatening illness and accepting ostomy surgery can lead to emotional and psychological problems (Ayaz Alkaya, 2019; Davidson, 2016). Such as anxiety, depression (Knowles et al., 2013), fear of recurrence (Custers et al., 2016), low self-esteem relevant to

poor body image (Jayarajah & Samarasekera, 2017), stigma (Yuan et al., 2018), social isolation (Ji & Yan, 2022), or post-traumatic stress disorder (Shin & Choi, 2021). These problems can impact patients' ability to engage in intimate relationships. Furthermore, managing an ostomy requires significant adjustments to daily routines encompassing various aspects such as diet, clothing choices, travel plans, employment considerations, and self-care practices (Hu et al., 2014; Lopes & Decesaro, 2014). These changes can impact the distribution of household responsibilities and potentially introduce strains into marital intimacy.

Marital intimacy is an important indicator that predicts and influences quality of life (Manne et al., 2011; Robinson et al., 2014). However, previous studies among CRC ostomy patients mainly focused on sexual problems, psychological experience, and social engagement (Albaugh et al., 2017; Petersén & Carlsson, 2021; Smith et al., 2017) without comprehensively addressing all dimensions of marital intimacy or exploring the psychological and social problems linked to the challenges and influences on marital intimacy. A comprehensive and in-depth understanding of the experience of marital intimacy is necessary for improving the quality of life of CRC ostomy patients. Qualitative research is preferable to quantitative research when exploring experiences and delving into depth to explain a phenomenon (Kim et al., 2017), especially when there is no specific marital intimacy instrument for CRC ostomy patients.

Therefore, this study aimed to utilize a qualitative research method to explore the experiences of marital intimacy and the management of CRC ostomy patients. The results can offer valuable evidence to understand and be utilized for developing marital intimacy instruments in nursing research. Additionally, the findings can assist clinical nurses or community health workers in formulating specific intervention plans to improve marital intimacy, ultimately enhancing the quality of life of patients and their partners.

Methods

Study Design

This study employed a qualitative descriptive research method to explore and understand the marital intimacy experience of CRC survivors after ostomy creation. A qualitative descriptive study is a form of qualitative research in which studies are descriptive in nature (Polit & Beck, 2009; Polit & Beck, 2014). The philosophical underpinning is rooted in capturing and presenting an in-depth understanding of a specific phenomenon, suitable for providing straightforward descriptions of experiences and perceptions or exploring a relatively uncharted area (Kim et al., 2017; Sandelowski, 2010).

Participants and Setting

The patients discharged from the tertiary care hospitals in Henan province, China, were recruited. Purposive sampling was employed, and the inclusion criteria were: aged 18-59 years old; diagnosed with CRC by pathological biopsy; received ostomy operation more than three months ago; being married for more than one year or living with a heterosexual

partner for more than one year; no sexual dysfunction prior ostomy operation. Patients or partners with cognitive impairment, hearing impairment, psychiatric disorders, and serious diseases such as severe cardiopulmonary or liver disease were excluded from this study. Data saturation was discussed with the research team and deemed as a criterion for sample size.

Data Collection

Data were collected through semi-structured interviews from June 27 to September 27, 2023. The individual interviews were face-to-face, lasting about 30-45 minutes on the 5th floor of the inpatient department meeting room of Puyang People's Hospital, with no one else besides the participants and researchers. The first author, who acted as the interviewer, is a Ph.D. student and supervising nurse in the hospital. She underwent a specific training course on qualitative research, possessed the necessary research experience and skills, and was keenly interested in this research topic.

The researcher interviewed patients from three aspects: patients' understanding of marital intimacy, patients' experience of marital intimacy, and patients' coping with the problems. An example of interview guide questions was: "How do you describe 'marital intimacy' and its 'components'? How do cancer and ostomy influence your marital intimacy? Which situations are difficult for you to handle in your 'marital intimacy' aspect? Which strategies do you use to manage or overcome them?" A pilot test was conducted among 2 CRC ostomy patients.

The interview data were recorded one by one through audio, field notes, and observations. Moreover, the patient's demographic characteristics and disease-related information were also collected.

Data Analysis

The study employed data analysis as outlined by Colaizzi (1978), a well-established approach that systematically investigated the fundamental structure of an experience clearly and logically. The detailed steps of this process included: 1) Reading and re-reading the transcribed interviews to make sense of participants' understanding and experience, 2) Extracting significant statements from each patient's interview to generate information directly related to their understanding and experience, 3) Assigning meaning to the statements, 4) Creating themes and subthemes based on the formulated meaning, 5) The research team discussing the codes until a consensus was reached, 6) Generating a structure of the content of the interviewed patients' experience of marital intimacy, 7) Contacting four participants again to review and confirm the data analysis results via phone. In this process, the software Nvivo 10 was used.

Rigor

To uphold the accuracy and rigor of this study, credibility, transferability, reliability, and confirmability (Korstjens & Moser, 2018; Speziale et al., 2011) were ensured according to the criteria outlined by Lincoln and Guba (1985). The detailed measures are presented in Table 1.

Table 1 Measures to uphold accuracy and rigor

Criterion	Action
Credibility	<ul style="list-style-type: none"> The researcher spent sufficient time in this field and had the necessary experience and skills. The researcher introduced herself and established a trusting relationship with the participants before the interview. A team meeting was held to discuss the data analysis process. The transcript was returned to participants for comment, and four participants reviewed the final results.
Transferability	<ul style="list-style-type: none"> Provided detailed information on participants, context, and sampling strategy. A thick description of all the interviewed details. A detailed description of the procedures of data collection and analysis.
Reliability	<ul style="list-style-type: none"> The external experts were invited to be evaluated in each research phase and provided ideas as needed. The external experts were asked to evaluate whether the data supported the findings.
Confirmability	<ul style="list-style-type: none"> Triangulation and reflexivity techniques were used to ensure the content and prevent the researcher's biases. Reviewed the data, analysis, and interpretations to assess whether the findings accurately showed the data and provided a detailed description of each research process.

Ethical Consideration

This study was Phase 1 of the major study titled "Development and Validation of the Chinese Marital Intimacy Scale for Colorectal Cancer Survivors with an Ostomy (Ch-MIS-CRCS)," which was conducted in accordance with the Declaration of Helsinki. It was approved by the Research Ethics Committee at the Faculty of Medicine Ramathibodi Hospital (MURA-2023-600) and the Research Ethics Committee at Puyang People's Hospital (IEC-2023-EA-14). All participants were carefully informed about the researcher's background, the aim of the study, and their rights. They volunteered to participate and signed consent forms. Consequently, this study was granted publication approval using Phase 1 data under approval number MURA-2024-131.

Results

Two CRC ostomy patients refused to participate due to a lack of interest in this research. Finally, 16 patients were recruited for the present study, and data saturation was achieved with clear interview content; therefore, no repeat interviews were conducted. All patients had permanent stomas, and detailed participants' characteristics are presented in **Table 2**.

From the data analysis, five themes emerged, including physical intimacy, psychological intimacy, social intimacy, spiritual intimacy, and operation intimacy. A comprehensive description of each theme and sub-theme is presented in **Table 3**. Each theme is explained as follows:

Theme 1: Physical intimacy

The presence of a stoma not only directly impacted the individual's physical intimacy but also gave rise to psychological challenges that, in turn, had an indirect effect on their ability to engage in physical intimacy. "Physical intimacy" referred to the physical aspects of communication, including non-sexual touch, the experience of sex (feeling sexual interest/attraction decrease, difficulty engaging in sex, and evaluation of their sexual life), and taking measures to cope with sexual problems led by CRC and ostomy.

Sub-theme 1.1: Non-sexual touch

Patients stated that non-sexual touch, which referred to embracing, holding hands, and touching, was essential in physical intimacy. These contacts were not regarded as sexual, but they were an important expression of marital intimacy that helped patients cope with psychological stress and adapt to stoma. But in cases where the spouse had not

fully accepted the stoma, the non-sexual body contact with the patient was reduced, which was harmful to their relationship.

"When I was sad, he usually hugged me silently and patted my back to comfort me. Although he didn't say anything, I could feel him, and I would slowly calm down." P2

Table 2 Demographic characteristics of the participants (N = 16)

Characteristics	n / Mean (SD) Min-Max
Age (years)	Mean = 48.94 (SD = 5.579) 39-57
Marital time (years)	Mean = 23.62 (SD = 8.547) 4-39
Gender	
Male	7
Female	9
Education	
Elementary or below	3
Secondary school	5
High school	5
University or higher	3
Residence	
Urban	4
Country	8
Rural	4
Main caregiver	
Parents	0
Spouse	16
Children	0
Family average income (yuan/month)	
2,000	4
2,000-4,000	8
4,001-6,000	4
>6,000	0
Occupation	
Farmer	4
Employee	4
Retire	6
Others	2
Ostomy time	
3-6 months	3
6-12 months	7
>12months	6
Ostomy self-care	
Complete self-care	10
Partial self-care	6
Complete dependent	0
Stoma complication	
Yes	10
No	6

"I like the intimate contact between us, such as holding hands, hugging, and touching, which makes me feel that he is beside me; he is not away from me due to ostomy. These close physical contacts made me feel that he had already accepted my body and the stoma. These contacts made me feel better and helped me adapt to my stoma and accept myself a lot." P5

"After the ostomy, I feel he doesn't want to have too much intimate contact with me, even don't want to be near me." P6

Sub-theme 1.2: The experience of sexual

More patients considered the libido to be decreased after ostomy. It was due to the operation itself or psychological factors. Some patients mentioned that cancer fatigue, psychological stress, and worries about stoma made it difficult to enjoy the sexual process, and they often suppressed their desire. In addition, some patients said their sexual attractiveness decreased, and their partner showed no interest in them. All these problems were challenges to their intimate relationship, but few patients stated that sex did not play an essential role in their relationship, so the sexually relevant problems did not show severe harm to their intimate relationship.

"I felt that I had not fulfilled my obligation in this regard because I was very resistant to other people being close to me after ostomy. To be honest, I cannot accept myself. So, I don't want to be close to others; I don't want to be rejected by others." P8

"I always feel very weak, very tired, rarely have the feeling of sexual." P1

"When I have sex, I feel nervous. I hate the sound of the ostomy bag shaking; I'm afraid that the ostomy will make a farting sound, I'm afraid that the bag will suddenly leak, I'm afraid that the smell will come out, and I'm embarrassed about that. So, it's hard for me to fully devote myself to the sexual process and enjoy the sexual process." P2

"I feel that he is not interested in me; I think he is disgusted with my body, so I feel sad and inferior." P6

"After ostomy, the sexual frequency is less, but this change didn't affect our marital relationship. I think sex is not very important in our marital life; emotional and spiritual are more important. So, in this situation, I think we are satisfied with our sex life; at least I did not feel dissatisfied, and she did not show dissatisfaction." P1

Sub-theme 1.3: Coping with sexual problems

Some participants stated that positively communicating, asking for professional advice, and seeking other stoma patients' help were essential for resolving sexual problems.

"I think communication is very important, as are some concerns about the leakage of the ostomy bag and shame on the body. Only with communication can further measures be taken to solve it. I feel embarrassed to ask a doctor's advice for the sexual thing." P2

"We made an appointment with a professional ET and asked her help. ET gave us professional advice for our sexual intercourse." P16

"I always communicate with other patients via WeChat; we know each other from the stoma cohort. They share the experience and give me valuable advice." P14

Theme 2: Psychological intimacy

Psychological challenges were a common occurrence in CRC survivors with an ostomy, impacting their capacity to sustain

intimate relationships. In this study, "Psychological intimacy" was defined from the patient's perspective, encompassing intimate feelings (such as feeling cared for, understood, loved, comforted, and accepted) and intimate expression (such as sharing, trust, and dependence) on a psychological level.

Sub-theme 2.1: Psychological intimate feeling

Some patients mentioned in this stage that psychological intimacy meant they felt cared for and loved; when they were anxious and depressed, they could understand and be comforted by their partner and felt accepted by their partner to the stoma. However, some patients felt they were alienated and neglected by their spouses after ostomy creation.

"I always have a lot of bad thoughts and emotions. Depression, anxiety, restlessness, feeling upset or losing my temper. But she understands me, she accompanies me, and comforts me. You know, company and understanding are important for me in this state and understand." P7

"She cares about my feelings, cares about what I think, and always tries to meet my needs." P11

"I feel that our feelings have faded a lot; although he is taking care of me, I feel that I cannot feel his love; I always feel that there is some unspeakable sense of distance." P9

Sub-theme 2.2: Psychological intimate expression

Some patients shared feelings to express their intimacy. They could share their bad emotions and worry about the future with their partner. Some patients mentioned trust and dependence are also intimate expressions.

"I often tell him what I think and sometimes feel nervous about it. You know, I even said to him, 'I'm afraid of dying; if I die, will you stay with me?' I know that this idea of mine is not allowed; it is wrong. Because that's what I was thinking, so I told him. He didn't say anything, but he cried, too. Sometimes, I told him very calmly, I hope you leave me to find a healthy person." P15

"I don't know how long I can live with this disease, although I accept ostomy surgery, but the cancer is still incurable, maybe soon metastasized. I don't know how long I can live, but I trust him. I believe that if I die, he will take care of our children, and I know he will do his best to take care of my parents. It was worth it for me to marry him. Today, such good men are rare." P2

"I relied on him and couldn't have taken this hit without him." P2

Theme 3: Social intimacy

Social intimacy revolved around shared activities and experiencing life together as a couple. A couple's activities must be identified and engaged more frequently to foster this intimacy. Many patients suffered from social intimacy problems. "Social intimacy" could be defined as the frequency of interaction between couples and shared socializing.

Sub-theme 3.1: Interaction between couples

Some patients stated that having frequent interactions could lead to better social intimacy. More patients mentioned that the original interest-relevant interaction reduced after ostomy, but disease-related interaction increased.

"I think that in considering social intimacy, first, two people need to have common interests, such as singing, playing the piano, playing chess, and so on. But now we pay more time focus on cancer treatment and stoma care." P12

Sub-theme 3.2: Shared socializing

Some participants mentioned that sharing social activities was social intimacy. However, after ostomy creation, some patients refused to go to social events together with their partners regarding stoma management, stigma, or fatigue. By the way, some patients considered their partner also felt ashamed and reduced their shared social with them.

"Since I got a stoma, we have rarely been out socializing. When his friends brought their families to attend a party, he wouldn't bring me along. He said he was afraid I was too tired, but I think he might be embarrassed because of my stoma." P3

"I always reject socializing with her because I feel socializing is tiring; you know, after the operation, I always feel tired. Stoma care is difficult and embarrassing outside. To be honest, I feel a little ashamed of my stoma, and I worried I'm going embarrass her." P4

Theme 4: Spiritual intimacy

Living with an ostomy could affect individuals' self-image, relationships, and sense of identity. The spiritual intimacy experience of ostomy patients was easily overlooked by healthcare providers despite its significant impact on their well-being. In this study, "Spiritual intimacy" referred to a partner's support on a spiritual level, including spiritual healing and rediscovering the self-value and meaning of life.

Sub-theme 4.1: Spiritual healing

Participants stated that partners doing something to make up for regrets and seeking inner peace was spiritual healing for them and could improve their spiritual intimacy. Doing

unfinished things could make up regrets, and experiencing nature and religious faith could help achieve inner peace.

"We didn't take any wedding photos when we got married, so we went and did a reshoot together. I don't want to go, and I don't know how long I can live. Why leave so many things? But he insisted, saying he hoped I didn't have regrets in my life." P15

"I believe in Buddhism, he doesn't believe, but he will accompany me to the temple. Sometimes, we find ourselves sitting under the tree, listening to the temple bell, chanting; at this time, I feel my heart very calm. I believe in causal, and I've accepted it all. Look how good it is that I'm still alive and can feel everything in the world, the wind, the sun; what a happy day. Now I am not afraid of death; death may be a change of body to live again." P13

Sub-theme 4.2: Rediscover self-value and the meaning of life

More participants felt that life had no meaning and it was difficult to find their self-value. Some participants mentioned that setting goals, heartfelt recognition, and encouragement were essential from their partners and were necessary to help them cope with this feeling.

"We planned three goals together. First, we should keep a good diet; second, we should keep doing fitness; and third, we should travel to a place every two months. We agreed that I would be happy every day if I am alive." P7

"He often shared inspirational stories of other ostomy patients with me, and he made me understand that although I had a stoma, I was no different from others. I could work, study, climb mountains, and see the sea as well. My life has not stopped, nor should it. I still deserve a good life." P5

Table 3 Themes and sub-themes

Themes	Sub-themes	Meaning
Physical intimacy	1) Non-sexual touch	Touch, hold hands, embrace
	2) The experience of sexual	Sexual interest decreases Sexual attraction decreases Difficulty engages the process
	3) Coping with sexual problems	Positive communication Expert consultation
Psychological intimacy	1) Psychological intimate feeling	Feel cared for, be understood, be loved Feel comforted, be accepted
	2) Psychological intimate expression	Share feelings Trust, dependence
Social intimacy	1) Interaction between couples	Frequency interactions
	2) Shared socializing	Initiatives reduce shared socializing Passively reduce shared socializing
Spiritual intimacy	1) Spiritual healing	Make up for regrets Looking for inner peace
	2) Rediscover self-value and the meaning of life	Plan or set goals for the future Heartfelt recognition and encouragement
Operational intimacy	1) Caregiver role	Ostomy care skills
	2) Daily life cooperation	Adaption of new family role
	3) Resolve conflict	Positive communication A peaceful of mind

Theme 5: Operational intimacy

Operational intimacy was the ability to work together effectively in daily life tasks and responsibilities, such as the role expectation as a "carer" and conflict resolution. In this study, "operational intimacy" referred to the ability to perform the caregiver role, cooperate daily, and resolve conflict.

Sub-theme 5.1: Caregiver role

More patients stated that their partner was the vital caregiver who had to perform and be willing to actively learn regarding knowledge and skills of stoma care. They considered that the stoma care skills were difficult to understand and handle.

"After ostomy creation, she actively studied the knowledge of ostomy care. She helped me clean my skin for the first two months and change the ostomy bag. It is very difficult and troublesome to change the ostomy bag step by step, but she is very patient while learning. Now she's good at the caring stoma." P4

Sub-theme 5.2: Daily life cooperation

More participants said that the stoma influenced their daily cooperation, whether reassigned satisfactory family roles were essential to their intimate relationship.

"I used to manage everything at home, but now I don't want to manage anything; everything I let go, my body is the most important." P5

Sub-theme 5.3: Resolve conflict

Some participants stated that ostomy increased contradiction, positive communication, and a peaceful mind, which were essential to coping with conflict.

"After I got sick, all of us didn't have a good mood. Treatment costs a lot of money. As the saying goes, for poor couples, nothing goes well. Fact is such; I feel everything is not going well for us; the conflict is becoming more and more." P10

"We actively communicate and solve problems between us, and we will reach a consensus on most problems." P12

"After the stoma, I got a lot of things off my mind. What can't be solved? If you can't solve it, leave it there. Let it go. Time will solve it. Everything is a small thing except life and death." P13

Discussion

Summary of the Findings

The discussion is described according to the themes:

Theme 1. Physical intimacy

Numerous researchers have advocated physical intimacy as an essential dimension in the concept of marital intimacy (Bagarozzi, 1997; Mills & Turnbull, 2001; Schaefer & Olson, 1981). However, some scholars opted to categorize physical intimacy into distinct subdomains, including sexual and non-sexual components (Bagarozzi, 1997; Turnbull et al., 2018). Certain researchers have exclusively examined sexual intimacy as a standalone domain within marital intimacy (Schaefer & Olson, 1981; Walker et al., 2014). The findings of this study reveal that for CRC survivors after stoma creation, physical intimacy can be further subdivided into three subdomains, which include non-sexual touch, experience of sexual and coping with sexual problems. Non-sexual touch is healing and calming and creates warmth; it is important for connection and promotes well-being (Jakubiak & Feeney, 2017), but due to the partners or patients not accepting the stoma from the inner, some patients may experience the non-sexual touch reduced. Therefore, the nurse suggested educating patients on the healing power of non-sexual touch. Refers to the sexual experience, some research promoted that stoma patients experienced sexual dysfunction, such as reduced libido, decreased sexual attraction, and suppression of libido (Albaugh et al., 2017; García-Rodríguez et al., 2021). Nurses emphasize the importance of seeking healthcare advice, and active discussion with the partner helps cope with sexual problems (Che Ya et al., 2021). It is the same with this study. However, this study found how deep the sexual experience of marital intimacy depends on their recognition of

the importance of sexuality in their relationship; it reminds the nurse to consider couples' recognition of the importance of sexuality when assessing patients' physical intimacy. Additionally, for improved physical intimacy, facilitating joint counseling sessions and constructing a guidance scheme or path is necessary (Kardan-Souraki et al., 2016).

Theme 2. Psychological intimacy

Many studies refer to the psychological intimacy dimension in the marital intimacy concept (Mills & Turnbull, 2001; Olson, 1975; Walker et al., 2014). They promote some characteristics of psychological intimacy, such as understanding, trust, openness, experiencing a closeness of feelings, sharing emotional needs, etc. In this study, patients' perspectives are used to define psychological intimacy, so psychological intimate feelings and expressions are generated in two sub-domains. In CRC survivors with an ostomy, their expression of psychological intimacy refers to sharing, trust, and dependence; intimate expression refers to being cared for, being understood, being loved, being comforted, and being accepted. After ostomy, patients suffer body image, self-esteem, anxiety, and depression (Sivero et al., 2022). These psychological problems influence patients' expression of psychological intimacy and their partner's responses. Finally, it leads to psychological distance between couples. It is recommended that nurses strengthen the psychological evaluation of patients and partners (Sivero et al., 2022) and integrate mindfulness and relaxation techniques into the couple's education to help manage anxiety and depression (Hofmann & Gómez, 2017). Organize therapy activities to boost self-esteem, provide resources for patients to share experiences with their partner, and guide the partner to make a valid response.

Theme 3. Social intimacy

Previous studies have shown that social intimacy is one of the important dimensions of marital intimacy, but it lacks a clearer division of its sub-domains (Mills & Turnbull, 2001; Olson, 1975). In this study, social intimacy was divided into two sub-domains, including interaction between couples and shared socializing. More patients after ostomy experienced social function deterioration (Mäkelä & Niskasaari, 2006), performance in avoidance of social activities, and staying away from friends (Aktas, 2015) because of changes in appearance and the potential for visibility of fecal material. In addition, the spouse's attitude toward ostomy affects their willingness to socialize with the patient and their intimacy performance in social situations. The nurses should encourage the development of coping mechanisms, including educating spouses on the psychological impact of ostomies and their role in supporting social engagement (Danielsen et al., 2013). Encourage shared activities and provide ostomy management strategies for social situations to boost social self-confidence.

Theme 4. Spiritual intimacy

Olson (1975) first proposed the Spiritual intimacy domain for marital intimacy. However, this domain was deleted in his later research on scale development due to the unclear conceptual and empirical nature of the topic (Schaefer & Olson, 1981). After that, Mills and Turnbull (2001) referred to

this domain in their marital intimacy research. With the progress of society and the abundance of material life, people are more and more pursuing spiritual health, and they are also pursuing spiritual compatibility when seeking a partner. The results of this study reveal that among CRC survivors with ostomy, spiritual intimacy has two sub-domains, including spiritual healing and rediscovering self-value and meaning of life. Research has shown that patients accept stoma from the heart (Bulkley et al., 2013), recognize themselves, and feel the meaning of life (Ayik et al., 2021), which are performances of spiritual well-being. Based on these findings, the nurses are suggested to encourage patients and partners to reflect on their feelings and thoughts about accepting a stoma. Guide partners in sharing inspiring stories or resources on acceptance and embracing life with a stoma with the patients and assist patients in finding meaning and purpose in their stoma experience. Encourage couples together to do something to find inner peace, such as mindfulness and meditation practices (Hofmann & Gómez, 2017).

Theme 5. Operational intimacy

From the literature review, only Mills and Turnbull (2001) mentioned the concept of operational intimacy. In this study, the participants do not directly propose this domain, but the patient mentioned the caregiver role, working together in daily life and conflict. According to Mills's definition of operational intimacy, this domain was synthesized and divided into three sub-domains in this study, which include the caregiver role, daily life cooperation, and resolving conflict. Following ostomy surgery, the active acquisition of stoma care knowledge, proficiency in relevant skills, and the successful adaptation to the caregiver role by the spouse are critical indicators of positive support (Altschuler et al., 2009). During this period, patients often encounter challenges maintaining their work-related functions (Knowles et al., 2013; Liao & Qin, 2014). Hence, redistributing daily household responsibilities becomes essential for establishing operational intimacy. The presence of an ostomy can further introduce conflict into the relationship. Therefore, it is suggested that nurses support the caregiver role of spouses, provide family-centered training programs, and build their confidence in performing care tasks (NasiriZiba & Kanani, 2020). Involve other healthcare professionals or social workers for practical support, such as helping develop strategies to redistribute household responsibilities effectively and providing relationship counseling services to navigate conflicts related to the ostomy.

Implications of this Study for Nursing

The study results have implications for nursing practice and research. Healthcare providers could assess and manage the CRC survivors with ostomy in terms of marital intimacy, which affects their quality of life. The results could be used in nursing research to design and examine specific intervention programs covering all aspects of marital intimacy. The result could also be used for developing the specific instrument in CRC survivors with ostomy.

Limitations

This research did not incorporate the perspective of spouses, which offers an opportunity for deeper exploration in future studies. It is essential to acknowledge that this study was

conducted in Henan Province, located in the central region of China. It is the birthplace of Chinese civilization and has inherited more historical and traditional culture. In family relationships, the importance of hierarchical relationships, family unit, and courtesy, as emphasized by Confucianism, is influenced more profoundly than in the south of China. However, the southern area has a higher level of economic development. Given China's vast geographical expanse and the resulting diversity in cultural and economic development, there may be variations in how patients perceive and manage marital intimacy across different regions. Future research efforts should consider gathering data from multiple geographic locations to explore potential differences linked to economic and cultural disparities. In addition, when foreign scholars refer to this research results, it is necessary to consider not only the cultural characteristics of Henan Province but also the cultural background of China, should pay special attention to the "spiritual intimacy" theme because China is an atheist state, therefore in this study without specific religion be considered in this theme.

Conclusion

In this study, the domain and sub-domain components constituting marital intimacy in CRC ostomy patients were clarified. The identified effects of CRC diagnosis and ostomy surgery highlight its profound impact on marital intimacy, spanning diverse dimensions, including physical, psychological, social, spiritual, and operational intimacy. These findings serve as a crucial foundation for healthcare professionals to develop the specific assessment instrument of marital intimacy among CRC ostomy patients and craft targeted interventions to enhance marital intimacy, subsequently improving their overall quality of life. Although there are some cultural differences, there are still great commonalities among this study population. This study can still provide a cultural-wide research basis for scholars from various countries to conduct research in this field.

Declaration of Conflicting Interest

The authors declare no conflict of interest.

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Authors' Contributions

Xixi Du contributes to conceptualization, methodology, resources, investigation, data curation, software, formal analysis, and writing -original draft. **Suchira Chaiviboontham** contributes to conceptualization, methodology, formal analysis, validation, project administration, supervision, and writing - review & editing. **Bualuang Sumdaengrit** contributes to conceptualization, methodology, formal analysis, validation, project administration, supervision, and writing - review & editing. All authors contributed to writing and finalizing the manuscript, and all authors have read and agreed to the published version of the manuscript.

Authors' Biographies

Xixi Du, RN is a PhD student in Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand.

Suchira Chaiviboontham, PhD, RN is an Associate Professor, Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand.

Bualuang Sumdaengrit, PhD, RN is an Associate Professor, Ramathibodi School of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand.

Data Availability

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of Use of AI in Scientific Writing

The authors have declared that no generative AI was used in writing.

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