

## ASSESSMENT OF SEXUAL FUNCTION IN PATIENTS WITH INTESTINAL STOMAS

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### ABSTRACT

**Introduction and Purpose:** The formation of a stoma is associated with changes in physical appearance, which affects the image of one's own body. Given the high prevalence of sexual dysfunction and limited research on the possible association of body image with sexual function among patients with intestinal stomas, this study aimed to determine the correlation between body image and sexual function and the effect of adjuvant therapy on sexual functioning in patients with stomas.

**Methods and Results:** Data were collected from 201 stoma patients using the Patient Identification Form, Body Esteem Scale (BES), Female Sexual Function Index (FSFI), and International Index of Erectile Function (IIEF). The FSFI total scale score correlated significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the sexual attractiveness scale, weight control scale, and physical condition scale. Among men, the general satisfaction IIEF scale score correlated significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the physical attractiveness scale, body strength scale, and physical condition scale. Additionally, men who had not undergone adjuvant therapy after colorectal cancer surgery had significantly higher erectile function scores than those who had received follow-up therapy. Women who did not receive adjuvant therapy had significantly higher scores in desire, lubrication, and the total FSFI scale.

**Conclusion:** This study demonstrated that both women and men with a positive body image had higher sexual function valuation compared to those with a negative body image. Moreover, adjuvant therapy in patients with colon cancer contributed to the development of sexual dysfunction.

**Keywords:** Body image, sexual function, stoma, adjuvant therapy, colorectal cancer

### INTRODUCTION

The formation of an intestinal stoma is a common surgical procedure for many elective and emergency pathologies. The main reasons for the creation of a faecal stoma are colorectal cancer (CRC), inflammatory bowel disease (IBD), acute diverticulitis and trauma [1]. An intestinal stoma is defined as the surgical exteriorization of small or large bowel through the anterior abdominal wall. The two most common types of faecal stomas are colostomy and ileostomy, which can be temporary or permanent [2].

The formation of a stoma is associated with changes in physical appearance, which affects the image of one's own body. The stoma used to remove feces together with the stoma bag is located on the front wall of the abdomen, a place that is visible and often plays an important role in the intimate life of a couple. What's more, a person with a stoma has no control over defecation. This is often a cause of shame and lowers the self-esteem and self-confidence of the stoma patient. Low self-esteem causes fear of lack of acceptance from the sexual partner and a decrease in sexual drive. Therefore, people with a newly created stoma are

afraid to start an intimate life after the surgery. Acceptance of the changes resulting from the formation of a stoma takes time and occurs at different rates [3, 4].

Surgical procedures involving the creation of a stoma can significantly affect the sexual activity of patients. It turns out that decreased sexual drive and problems with sexual functioning occur in almost half of people undergoing this type of procedure. In women, this manifests itself as frigidity, vaginal dryness and pain during intercourse, while in men, it manifests as erectile dysfunction, retrograde ejaculation or its absence. During the surgery, damage may occur to both the innervation (pelvic plexus) responsible for erection and ejaculation, as well as the vascularization of the genitals. Perioperative adjuvant treatment, including radiotherapy, especially in the pelvic area, may additionally contribute to damage to the nerves and vessels of the urogenital system [5, 6]. Sexual dysfunction is common in stoma patients but often has been underestimated in post-stoma care. A descriptive study of patients with enterostomy in China has indicated that 63.1% of participants suffered from sexual dysfunction [7]. Sexual dysfunction directly impacts life satisfaction. It can also cause emotional relationships between patients and their spouses, leading to family tensions and reducing patients' quality of life with stomas [8].

In order to improve the quality of life of patients with a stoma, sexual issues must be identified and addressed. Given the high prevalence of sexual dysfunction and limited research on the possible association of body image with sexual function among patients with intestinal stomas, the present study aimed to determine the correlation between body image and sexual function and the effect of adjuvant therapy on sexual functioning in patients with stomas.

## METHODS

This was a descriptive, cross-sectional study. Data were collected from 201 stoma patients at the Clinical Hospital in Poznań and at the Department of General and Colorectal Surgery at the hospital in Łódź and at the Lower Silesian Oncology Center in Wrocław and Świętokrzyskie Oncology Center in Kielce (Poland). Some of the survey questionnaires were obtained using the CAWI method (Computer-Assisted Web Interviewing). The research was conducted between April 2021 and June 2023 after obtaining necessary permissions. Those who agreed to participate in the study aged between 20 and 70 years, who had a sexual partner and who underwent ileostomy and/or colostomy were involved in the study. People who had a urostomy, people without sexual initiation and patients diagnosed with mental disorders were excluded from the study. The Patient Identification Form, Body Esteem Scale (BES), Female Sexual Function Index (FSFI), and International Index of Erectile Function (IIEF) were used to compile and evaluate data.

### ETHICAL APPROVAL

This study was approved by the Bioethics Committee of the Medical University of Silesia in Katowice, Poland (PCN-CBN/0022/KB1/95/21).

### THE PATIENT IDENTIFICATION FORM

This form consisted of three sections: (1) sociodemographic characteristics (e.g., age, education level, marital status, chronic disease, medicine use, employment status), (2) stoma characteristics (e.g., type of ostomy, indication, stoma status, stoma care), and (3) treatment characteristics (e.g., type of surgery, type of adjuvant treatment).

### BODY ESTEEM SCALE (BES)

The Body Esteem Scale (BES) allows determining the respondents' attitudes toward their bodies in three subscales: Sexual Attraction (SA), Weight Concern (WC), and Physical Condition (PC). The scale consists of 35 items that can be answered on a 5-point Likert scale, scoring from 1 to 5, where 1 means I have strong negative feelings, 5 means I have strong positive feelings, and 3 means a neutral attitude. The scale takes into account 3 areas related to self-assessment of one's body: sexual attractiveness, weight concern, and physical condition. The score is obtained after adding all the points, and as the number of points increases, the body evaluation increases.

### FEMALE SEXUAL FUNCTION INDEX (FSFI)

Female Sexual Function Index (FSFI), a 19-item questionnaire assessing sexual function and satisfaction across five domains including sexual desire, arousal (both subjective and physiological), lubrication, orgasm, satisfaction, and pain. Women with a total score above 26.55 should be classified as sexually functional, with those scoring below the cutoff indicating sexual dysfunction.

### INTERNATIONAL INDEX OF ERECTILE FUNCTION (IIEF)

This index includes 5 subscales for a total of 15 questions: erectile function (questions 1 through 5 and 15), sexual satisfaction (questions 6 through 8), orgasm (questions 9 and 10), sexual desire (questions 11 and

12), and overall satisfaction (questions 13 and 14). Each question on the IIEF is scored from 1 to 5 points, where 1 = severe dysfunction and 5 = no dysfunction. The total score range is 5 to 75. Based on this score, the degree of erectile dysfunction (ED) is classified as normal (>25), mild (17 to 25), moderate (11 to 16), or severe (0 to 10).

### STATISTICAL ANALYSIS

Since BES, IIEF-15 and FSFI results were not normally distributed (Shapiro-Wilk test):

- Mann-Whitney test was used for comparisons of quantitative variables between two groups.
- Kruskal-Wallis test (followed by post-hoc Dunn test) was used for three or more groups.
- Spearman’s correlation coefficient was used to assess correlation between two quantitative variables.

Significance level was set to 0,05. All the analyses were conducted in R software, version 4.4.2.

## RESULTS

### SURVEY PARTICIPANTS

A total of 201 subjects participated in the study, including 107 women (53.2%) and 94 men (46.8%). The average age of the participants was 47.98 ± 12.56 with 39,8% of them received a secondary education and 32.8% a master's degree.

*Table 1. Sociodemographic characteristics of participants at baseline*

	<b>Parameter</b>	<b>Total (N=201)</b>
Gender	Female	107 (53.23%)
	Male	94 (46.77%)
Age [years]	Mean (SD)	47.98 (12.56)
	Median (quartiles)	48 (39-58)
	Range	22-77
	n	201
Place of residence	Rural area	53 (26.37%)
	Town up to 50k inhabitants	38 (18.91%)
	City with over 50k to 100k inhabitants	38 (18.91%)
	City with over 100k to 200k inhabitants	30 (14.93%)
	City with more than 300k inhabitants	42 (20.90%)
Education level	Primary	6 (2.99%)
	Lower secondary	2 (1.00%)
	Vocational	1 (0.50%)
	Secondary	80 (39.80%)
	Post-secondary	20 (9.95%)
	Higher – bachelor's degree	26 (12.94%)
	Higher – master's degree	66 (32.84%)
Marital status	Single	7 (3.48%)

	Informal relationship	31 (15.42%)
	Married	139 (69.15%)
	Separated	3 (1.49%)
	Divorced - single	1 (0.50%)
	Divorced - in relationship	16 (7.96%)
	Widowed	4 (1.99%)
Employment	Employed	124 (61.69%)
	On disability	37 (18.41%)
	Retired	29 (14.43%)
	Unemployed	5 (2.49%)
	In training	3 (1.49%)
	Other	3 (1.49%)

### STOMA CHARACTERISTICS OF THE SURVEYED PATIENTS

Table 2 shows the distribution of patient responses relating to the characteristics of their stoma and life after surgery.

*Table 2. The nature of the stoma emerged in patients and its management*

Parameter		Total (N=201)
Stoma type	Ileostomy	99 (49.25%)
	Colostomy	98 (48.76%)
	Both	4 (1.99%)
Type of the stoma surgery	Emergent surgery	81 (40.30%)
	Elective surgery	120 (59.70%)
Stoma duration	Permanent	104 (51.74%)
	Temporary	93 (46.27%)
	Both	2 (1.00%)
	I don't know	2 (1.00%)
Reasons for performing stoma	Cancer	94 (46.77%)
	Inflammatory Bowel Disease	61 (30.35%)
	Intestinal obstruction	22 (10.95%)
	Abdominal injury	3 (1.49%)
	Familial Adenomatous Polyposis	1 (0.50%)

	Other	20 (9.95%)
Follow-up therapy after surgery	Yes	74 (36.82%)
	No	127 (63.18%)
Use of a psychological services	Yes	44 (21.89%)
	No	155 (77.11%)
	n/d	2 (1.00%)
Use of a stoma clinic services	Yes	103 (51.24%)
	No	98 (48.76%)
Participating in ostomy support groups	Yes	81 (40.30%)
	No	119 (59.20%)
	n/d	1 (0.50%)

Table 3 shows the distribution of patients' responses relating to their sex life after stoma surgery.

*Table 3. Distribution of the participants' responses regarding post-surgery sexual activity*

Parameter		Total (N=201)
Change in sexual activity after surgery	Limited sexual activity to a significant degree	101 (50.25%)
	Limited sexual activity to a small extent	51 (25.37%)
	No changes	40 (19.90%)
	Increased sexual activity to a small extent	4 (1.99%)
	Increased sexual activity to a significant degree	2 (1.00%)
	Sexually inactive before stoma	3 (1.49%)
Less interest in sex from the partner	Strongly agree	18 (8.96%)
	Agree	37 (18.41%)
	Undecided	51 (25.37%)
	Disagree	64 (31.84%)
	Strongly disagree	30 (14.93%)
	n/d	1 (0.50%)
Acceptance of body appearance	Strongly agree	60 (29.85%)

change by the partner	Agree	84 (41.79%)
	Undecided	34 (16.92%)
	Disagree	19 (9.45%)
	Strongly disagree	3 (1.49%)
	n/d	1 (0.50%)

### BODY IMAGE AND SEXUAL FUNCTIONING IN FEMALES

The results of the FSFI questionnaire were correlated with the BES questionnaire to determine the relationship between body image and sexual functioning among women.

Table 4. Correlations between the FSFI and BES questionnaire

	Sexual attractiveness	Weight concern	Physical condition
<b>Desire</b>	r=0.36, p<0.001 *	r=0.187, p=0.059	r=0.211, p=0.032 *
<b>Arousal</b>	r=0.433, p<0.001 *	r=0.275, p=0.005 *	r=0.317, p=0.001 *
<b>Lubrication</b>	r=0.418, p<0.001 *	r=0.243, p=0.013 *	r=0.314, p=0.001 *
<b>Orgasm</b>	r=0.338, p<0.001 *	r=0.221, p=0.025 *	r=0.268, p=0.006 *
<b>Satisfaction</b>	r=0.434, p<0.001 *	r=0.261, p=0.008 *	r=0.325, p=0.001 *
<b>Pain</b>	r=0.338, p<0.001 *	r=0.159, p=0.109	r=0.259, p=0.008 *
<b>FSFI Total</b>	r=0.452, p<0.001 *	r=0.277, p=0.005 *	r=0.344, p<0.001 *

*r* - Spearman's correlation coefficient

\* statistically significant ( $p < 0.05$ )

The score on the desirability scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women) and the score on the physical condition scale (women).

The score on the arousal scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women), the score on the weight control scale (women) and the score on the physical condition scale (women).

The lubrication scale score correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the physical attractiveness scale score (women), the weight control scale score (women) and the physical condition scale score (women).

The score on the orgasm scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women), the score on the weight control scale (women) and the score on the physical condition scale (women).

The score on the satisfaction scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women), the score on the weight control scale (women) and the score on the physical condition scale (women).

The score on the pain scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women) and the score on the physical condition scale (women).

The score on the total scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (women), the score on the weight control scale (women) and the score on the physical condition scale (women).

### BODY IMAGE AND SEXUAL FUNCTIONING IN MALES

The results of the IIEF questionnaire were correlated with the BES questionnaire to determine the relationship between body image and sexual functioning among men.

Table 5. Correlations between the IIEF and BES questionnaire

	<b>Physical attractiveness</b>	<b>Upper body strength</b>	<b>Physical condition</b>
<b>Erectile function</b>	r=0.22, p=0.033 *	r=0.285, p=0.005 *	r=0.243, p=0.018 *
<b>Orgasmic function</b>	r=0.175, p=0.091	r=0.226, p=0.028 *	r=0.169, p=0.103
<b>Sexual desire</b>	r=0.312, p=0.002 *	r=0.382, p<0.001 *	r=0.354, p<0.001 *
<b>Intercourse satisfaction</b>	r=0.276, p=0.007 *	r=0.341, p=0.001 *	r=0.277, p=0.007 *
<b>Overall satisfaction</b>	r=0.334, p=0.001 *	r=0.412, p<0.001 *	r=0.347, p=0.001 *

*r* - Spearman's correlation coefficient  
 \* statistically significant ( $p < 0.05$ )

The score on the erection scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (men), the score on the body strength scale (men) and the score on the physical condition scale (men).

The score on the orgasm scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the body strength scale (men).

The score on the desire scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (men), the score on the body strength scale (men) and the score on the physical condition scale (men).

The score on the satisfaction with intercourse scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (men), the score on the body strength scale (men) and the score on the physical condition scale (men).

The score on the general satisfaction scale correlates significantly ( $p < 0.05$ ) and positively ( $r > 0$ ) with the score on the physical attractiveness scale (men), the score on the body strength scale (men) and the score on the physical condition scale (men).

### FOLLOW-UP THERAPY AND SEXUAL FUNCTIONING IN FEMALES

A comparison was made between the mean scores of the FSFI questionnaire in females with regard to whether or not they had received additional therapy after surgery.

Table 6. Comparison of FFSI dimensions between groups

Parameter	Follow-up therapy after surgery	N	Mean	SD	Median	Min	Max	Q1	Q3	p
Desire	Yes	39	2.83	1.25	3	1.2	5.4	1.8	3.6	p=0.004 *
	No	66	3.65	1.35	3.6	1.2	6	3	4.8	
Arousal	Yes	39	3.04	2.01	3.3	0	6	1.2	4.5	p=0.071
	No	66	3.75	1.86	4.2	0	6	3	5.4	
Lubrication	Yes	39	3.28	2.05	3.6	0	6	2.25	4.8	p=0.039 *
	No	66	4.02	2	4.2	0	6	3.3	5.7	
Orgasm	Yes	39	3.24	2.1	3.6	0	6	2	4.8	p=0.133

	No	66	3.84	1.98	4.4	0	6	2.9	5.6	
Satisfaction	Yes	39	3.96	1.56	4.8	0.8	6	2.8	5.2	p=0.273
	No	66	4.24	1.57	4.8	0.8	6	2.8	5.6	
Pain	Yes	39	3.38	2.07	3.6	0	6	2.4	4.8	p=0.371
	No	66	3.81	1.88	3.8	0	6	2.9	5.6	
FSFI Total	Yes	39	19.74	10	21.3	2	35.4	13.05	27.3	p=0.045 *
	No	66	23.3	9.45	25.95	3.4	35.6	18.38	30.68	

*p* - Mann-Whitney test, *SD* - standard deviation, *Q1* - lower quartile, *Q3* - upper quartile  
\* statistically significant ( $p < 0.05$ )

The score on the desire scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".

The score on the lubrication scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".

The score on the total scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".

### FOLLOW-UP THERAPY AND SEXUAL FUNCTIONING IN MALES

A comparison was made between the mean scores of the IIEF questionnaire in males with regard to whether or not they had received additional therapy after surgery.

Table 7. Comparison of IIEF dimensions between groups

Parameter	Follow-up therapy after surgery	N	Mean	SD	Median	Min	Max	Q1	Q3	p
Erectile function	Yes	34	14.24	10.11	16	1	29	3	24.25	p=0.002 *
	No	60	20.26	10.15	24	1	30	14.75	29	
Orgasmic function	Yes	34	4.88	3.93	6	0	10	0	9	p=0.009 *
	No	60	6.92	3.6	8.5	0	10	5	10	
Sexual desire	Yes	34	6.15	2.34	6	2	10	5	7.75	p=0.053
	No	60	7.12	2.38	8	2	10	6	9	
Intercourse satisfaction	Yes	34	6.65	5.67	7.5	0	15	0	11.75	p=0.012 *
	No	60	9.62	5.6	12	0	15	7	15	
Overall satisfaction	Yes	34	6.15	2.32	6	2	10	4	8	p=0.077
	No	60	7	2.18	8	2	10	6	8	

*p* - Mann-Whitney test, *SD* - standard deviation, *Q1* - lower quartile, *Q3* - upper quartile  
\* statistically significant ( $p < 0.05$ )

The score on the erection scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".



The score on the orgasm scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".

The score on the satisfaction with intercourse scale was significantly higher in the group without "follow-up therapy" than in the group with "follow-up therapy".

## DISCUSSION

According to Humphreys, data shows that 67% of men with stoma experience sexual dysfunction, and 74% of women with stoma experience sexual dysfunction. Approximately half of the patients with a stoma who were sexually active prior to stoma creation did not resume sexual activity following surgery [9]. Sexual problems may not necessarily be a result of the surgical procedure but may be related to low self-esteem and body image issues.

In the study, as many as 75.7% of patients reported limited sexual activity after stoma surgery. It has been observed that reduced sexual activity is associated with the lack of acceptance of the body image by the partners of patients with intestinal stomas [6]. In our study, the vast majority of patients (71,7%) admitted that their partners accepted the change in body image caused by the formation of a stoma. Acceptance of a partner's body image is important, but it is the personal feelings about one's own body that mainly influence sexual function. Based on the literature linking body image and sexuality, it has been shown that body image concerns play a significant role in the development of sexual dysfunctions, which impairs the quality of sexual life. Appearance-related distracting thoughts during sexual activity were related to lower levels of sexual satisfaction [10, 11].

Relationships between body esteem and sexual functioning, as assessed by validated questionnaires, showed that body esteem was positively related to sexual functioning. In addition, sexual attractiveness scores were positively related to the FSFI components of desire, sexual arousal, lubrication, orgasm, satisfaction, pain and weight concern scores were positively related to the FSFI components of arousal, lubrication, orgasm, satisfaction. The physical condition scores were positively related to the FSFI components of desire, sexual arousal, lubrication, orgasm, satisfaction, pain. Studies have identified an association between body image and aspects of women's sexuality and have explored the connection between women's body image and their sexual functioning [12, 13]. To date, no study has assessed the association between multiple body image domains and domains of sexual functioning in patients with intestinal stomas, which allows conclusions to be drawn about which aspects of body image have the greatest impact and which domains of sexual functioning are most susceptible to body concerns. This is the first study to link different aspects of body esteem to sexual functioning among stoma patients using validated measures.

The results of our study show that low body image ratings were associated with decreased sexual desire and arousal in women. Because desire and arousal are interrelated, it is important to note that negative body appraisals may interfere with sexual functioning. Body dissatisfaction may reduce desire and potentially lead to avoidance of sexual activity. In addition, body dissatisfaction may distract a woman from receiving the signals necessary for sexual arousal (through cognitive distraction) or make it difficult for a woman to maintain arousal. Reducing negative self-talk related to the body during and before sexual intercourse may facilitate sexual desire and arousal.

Previous research showing that the weight concern and the sexual attractiveness subscales of the BES were related to sexual functioning scores among women with sexual difficulties [13]. In the study conducted in patients with intestinal stomas, an association was also observed between sexual function and body features that are less subject to public evaluation (i.e., items from the Physical Condition subscale), such as physical endurance, energy level, and physical coordination. The results demonstrated an association between sexual function and physical performance and raised the question of whether sexual functioning would improve with positive changes in overall fitness level or physical condition.

As the results show, ostomy patients can overcome negative body image by improving their self-esteem [14]. In fact, self-esteem has a strong link to mental health and may discourage people with intestinal stomas from comparing themselves to others based on their physical appearance. In the future, it would be worthwhile to compare the relationship between body image and sexual function among women with intestinal stomas with low and high self-esteem scores.

The findings from this study may be important in the treatment of women with a stoma who report problems with sexual functioning. The results of the study suggest that factors such as body weight, physical condition and sexual attractiveness are predictors of a satisfactory sexual life among women with stomas. It is possible that indicators of sexual function would improve if such factors were changed, for example through diet, exercise and work on self-esteem. On the other hand, research shows that sexual variables are influenced by both actual physical (e.g., weight) and nonphysical conditions (e.g., perceptions about body size), with the latter often being shown to account for a greater portion of body dissatisfaction

among women [15]. Working on the subjective perception of the body may prove to be a valuable element of therapy for women with stomas who present with problems with sexual functioning.

The study also found a relationship between body image and sexual functioning among men with intestinal stomas. The physical attractiveness scores were positively related to the IIEF components of erectile function, sexual desire, intercourse satisfaction and overall satisfaction. The upper body strength scores were positively related to the IIEF components of erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction. The physical condition scores were positively related to the IIEF components of erectile function, sexual desire, intercourse satisfaction and overall satisfaction. Also for men reporting sexual problems, healthcare professionals should ask questions about body image as a basis for treatment planning. Physical activity has been shown to have a positive effect on body image and sexual function in patients with intestinal stomas. Unfortunately, a large proportion of patients are afraid to return to physical activity after stoma surgery. Establishing clear guidelines by specialists regarding the type, frequency and intensity of physical activity may have a beneficial effect on improving the assessment of body image and sexual function in men with intestinal stomas [16].

Patients with a stoma who have been operated on for colorectal carcinoma may receive a follow-up treatment in the form of chemotherapy or radiotherapy. This often leads to oestrogen deficiency and nerve damage, which in turn predisposes to the onset of a sexual dysfunction. Sexual problems may include: vaginal dryness, erectile problems, pain, decreased desire and general sexual dissatisfaction [17]. These confounding factors may mask the precise impact of a stoma on sexual functioning. Therefore, it is imperative for future research to specifically address this issue in the context of colon cancer.

In the conducted study, the result on the scale of desire, lubrication and on the total FSFI scale was significantly higher in the group of women who did not receive chemotherapy and/or radiotherapy. These results are similar to those obtained by Baser et al., who showed that adjuvant therapy contributed to deterioration of sexual functioning, especially in the area of lubrication [18]. There are also other studies that confirm the negative impact of the follow-up treatment on the sexual function of women after colorectal cancer surgery (dyspareunia, vaginal dryness, orgasmic problems, and lack of sexual satisfaction) [19]. It is possible that the time that elapsed since the follow-up treatment may influence the results, as the effects of treatment are known to accumulate over time and have a long latency period. Indeed some researchers have observed that women report problems with sexual functions even several years after the treatment. The large Dutch TME trial showed that short-term radiotherapy led to more sexual inactivity compared to surgery alone. At 2 years' follow-up, a decline in sexual activity was observed. In irradiated women who were sexually active pre-treatment, 28% had become inactive. For patients without radiotherapy, only 10% had become sexually inactive [20].

The analysis revealed that men who had not been subjected to chemotherapy or radiotherapy after colorectal cancer surgery had significantly higher erectile function scores than men who had undergone the follow-up therapy. Their orgasm and intercourse satisfaction were also better. Mannaerts and et al., reported that out patients who had received both radiation and surgery as treatments for their rectal cancer, only 10% reported that they could achieve a "quality erection" and only 10% could ejaculate post operatively [21]. Medical care specialists must be aware that many patients may not realize the dramatic effects that loss of erectile function may have on their quality of life. Open and honest discussion with patients before treatment initiation will help to prepare patients for subsequent adverse effects and provide knowledge of available treatment options. Knowledge and managing expectations will help deter the patient anxiety, depression, and stigma that often coincide in men with sexual dysfunctions.

## LIMITATIONS

Considering the design of the present study (cross-sectional research), one of the limitations was that causal relationships between the variables could not be evaluated. The absence of pre-treatment assessment of sexual function is a notable limitation. Evaluating sexual function prior to treatment would have provided a baseline measure and enhanced our understanding of the impact of stoma and adjuvant therapy.

## CONCLUSIONS

The present study showed that women and men with a positive body image had higher sexual function valuation, compared to those with a negative body image. Patients with stoma who present with sexual problems should be assessed for the severity and specificity of body image concerns. Adjuvant therapy used in patients with colon cancer contributed to the development of sexual dysfunction. In women, decreased desire and problems with lubrication were observed, while in men, problems with erection, orgasm and satisfaction with intercourse were observed. Patients should be informed in detail preoperatively that sexual dysfunction is common so that they feel comfortable discussing therapeutic solutions. Future studies should focus on exploring preventive measures to reduce the risk of sexual dysfunction.

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