



Influence of intestinal stoma on body image and sexual functioning

Wpływ stomii jelitowej na obraz ciała i funkcje seksualne

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Abstract

Objective. The aim of the study was to assess the body image and sexual functioning of patients with a stoma.

Materials and Method. Data were collected from 89 stoma patients. 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.

Results. 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 ($p = .033$, $r = 0.37$). Women who had received a follow-up treatment showed significantly lower levels of sexual desire in comparison with women who had not received this type of treatment ($p = .006$, $r = 0.47$).

Conclusion. The results show that patients with a stoma experience sexual dysfunction related to adjuvant treatment and body image disorders that affect sexual functions.

Key words

stoma, body image, sexual functions, chemotherapy, radiotherapy

Streszczenie

Wprowadzenie i cel pracy. Pomimo że stomia umożliwia pacjentom dłuższe i bardziej produktywne życie, to stomicy mogą cierpieć z powodu dolegliwości fizjologicznych, psychoseksualnych oraz społecznych. Duża grupa osób z wyłonioną przetoką jelitową zmaga się z problemami typu: wzdęcia, nieprzyjemny zapach i wyciek treści kałowej, zmiana obrazu ciała. Zaburzenia te mogą prowadzić do izolacji, nasilonego lęku oraz obniżenia samooceny, co negatywnie wpływa na życie seksualne. Badania dotyczące wpływu stomii jelitowej na obraz ciała i funkcje seksualne pozostają ograniczone. Celem pracy była ocena wpływu stomii jelitowej na obraz ciała oraz jakość życia seksualnego stomików.

Materiał i metody. Dane zebrano od 89 pacjentów ze stomią. Do ich pozyskania i oceny wykorzystano Formularz Identyfikacji Pacjenta, Skalę Oceny Ciała (BES), Indeks Funkcji Seksualnych Kobiet (FSFI) i Międzynarodowy Indeks Funkcji Erekcji (IIEF).

Wyniki. Analiza wykazała, że mężczyźni, którzy nie zostali poddani chemioterapii lub radioterapii po operacji raka jelita grubego, mieli znacznie wyższe wyniki funkcji erekcji niż ci, którzy przeszli terapię uzupełniającą. Kobiety, które otrzymały leczenie uzupełniające, wykazały znacznie niższe poziomy pożądanego seksualnego w porównaniu z kobietami, które nie otrzymały tego typu leczenia.

Wnioski. Wyniki tego badania pokazują, że u pacjentów ze stomią występują zaburzenia funkcji seksualnych związane z leczeniem uzupełniającym oraz zaburzenia obrazu ciała, które wpływają na funkcje seksualne.

Słowa kluczowe

stomia, radioterapia, chemioterapia, funkcje seksualne, obraz ciała

INTRODUCTION

The main reason for a gastrointestinal stoma is colorectal carcinoma, followed by inflammatory diseases, trauma, congenital diseases, developmental malformations and intestinal

obstruction. Such an intervention affects the body image and self-esteem, which have a negative impact on the quality of life. Even though a stoma enables patients to achieve longer and more productive lives, ostomates can suffer from physiological, psychosexual and social discomfort. A large group of people with a developed intestinal fistula struggle with such problems as: bloating, unpleasant odours and faecal incontinence, as well as changes in their body image. Such disorders can result in isolation, increased anxiety, and lowered self-esteem, which has a negative affect on their sex

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lives. Despite the fact that the vast majority of patients report a dissatisfying sex life after their stoma surgery, most efforts by health care personnel focus mainly on areas associated with the surgical intervention (recovery, self-care, experienced pathology), with little time dedicated to the sexuality of those with stomas [1].

Body image disorder has been defined as the persistent reporting of appearance-related dissatisfaction that leads to impaired social relationships or professional performance. When a stoma is created, the anatomy and function of the digestive system changes, with the newly-formed exit for intestinal contents requiring a special supply of bags the attachment of a special bag. The alteration of the natural structures impairs the body's ability to store intestinal contents which results in a lack of control over their excretion. Therefore, the surgical formation of the intestinal fistula gives an impression of a change in the body image. Studies have clearly demonstrated that patients with a stoma experience a negative body image, and some studies have even concluded that despite a significant improvement in the quality of life, the problems related to the body image persist [2–6]. This fact indicates that disorders related to the perception of self-body image can be present among patients and do not gradually disappear over time [7].

Kiliç et al. [3] studied how having a stoma affects self-body image, self-perception and sexual functions. They discovered that a stoma has an adverse effect on all these aspects. Persson and Hellström [8] interviewed patients, and showed that the majority of them believed that their sexual attraction decreased after the surgical formation of the intestinal fistula. Brown and Randle also observed that patients were convinced that their bodies were not the same after the stoma surgery, and that as a result they were unwilling to have sexual intercourse because they considered themselves less attractive [9].

It should also be emphasised that the stoma surgery itself (high probability of neurovascular damage) may result in the occurrence of a sexual dysfunction in both men and women, with the most common complications including erectile dysfunction and dyspareunia [10]. Sexual problems in people with an intestinal stoma 24 months after the surgery have been shown to be significantly more frequent than in those without stoma [11]. It has also been demonstrated that the follow-up treatment (radiotherapy, chemotherapy) contributes to reduced sexual activity [12].

Sexual activity is often considered a taboo subject, due to the belief that sex should be associated with a sense of shame or an activity restricted to procreation. As a result, both patients and healthcare professionals avoid the issue of carnality, which is a major mistake, as a holistic approach to patient care should also embrace their sexuality. Sexuality is an important aspect in the lives of ostomates, but they find it rather challenging to share their problems with medical personnel. The lack of effective communication skills, knowledge, adequate training and embarrassment make it also difficult for health professionals to discuss sexual dysfunctions [13].

Studies on the impact of an intestinal stoma on the body image and sexual functioning are still limited. The aim of this research was to assess the body image and sexual functioning of patients with a stoma, in order to gather more information related to this apparently overlooked problem.

MATERIALS AND METHOD

This was a descriptive, cross-sectional study, using data collected from 89 stoma patients at the Clinical Hospital in Poznań, and at the Department of General and Colorectal Surgery at the hospital in Łódź, both in Poland. Some of the survey questionnaires were obtained using the CAWI method (Computer-Assisted Web Interviewing). The research was conducted between April 2021 – April 2022 after obtaining necessary permissions. Those who agreed to participate in the study aged between 20–70 years, who had a sexual partner and who had undergone an ileostomy and/or colostomy. Participants who had a urostomy, those 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 (Approval No. PCN-CBN/0022/KB1/95/21).

Patient Identification Form. The form consisted of three sections: 1) socio-demographic 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 3 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 1–5, 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 5 domains: sexual desire, arousal (both subjective and physiological), lubrication, orgasm, satisfaction, and pain. Women with a total score above 26.55 are 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 1–5 and 15), sexual satisfaction (questions 6–8), 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 1–5 points, where 1 = severe dysfunction and 5 = no dysfunction. The total score range: 5–75. Based on this score, the degree of erectile dysfunction (ED) is classified as normal: >25, mild: 17–25, moderate: 11–16, or severe: 0–10.

Statistical Analysis. Data analysis was performed using SPSS 28.0 (Statistical Package of Social Science) software. Data were analysed using descriptive statistics methods (i.e. frequencies, percentages, mean scores, standard deviation, etc.) and the Shapiro-Wilk test was used to determine the normality of the distribution. Relationships between quantitative data were analysed using r-Pearson and rho-Spearman correlations, while the Mann-Whitney U test was used to compare them between 2 groups.

RESULTS

Survey participants. A total of 89 subjects participated in the study: 55 women (61.8%) and 34 men (38.2%). Average age of the participants: 44.18 ± 13.36 ; 40.4% of them received a secondary education and 41.6% a Master's degree.

Table 1. Socio-demographic characteristics of participants at baseline

| Baseline characteristics | n | % |
|---|----|------|
| <i>Gender</i> | | |
| Female | 55 | 61.8 |
| Male | 34 | 38.2 |
| <i>Marital status</i> | | |
| Single | 5 | 5.6 |
| Informal relationship | 26 | 29.2 |
| Married | 56 | 62.9 |
| Widowed | 2 | 2.2 |
| <i>Place of residence</i> | | |
| Rural area | 24 | 27.0 |
| Town up to 50k inhabitants | 12 | 13.5 |
| City with over 50k to 100k inhabitants | 20 | 22.5 |
| City with over 100k to 200k inhabitants | 11 | 12.4 |
| City with more than 300k inhabitants | 22 | 24.7 |
| <i>Education</i> | | |
| Secondary | 36 | 40.4 |
| Post-secondary | 5 | 5.6 |
| Higher – bachelor's degree | 11 | 12.4 |
| Higher – master's degree | 37 | 41.6 |
| <i>Employment</i> | | |
| Employed | 52 | 58.4 |
| Unemployed | 3 | 3.4 |
| On disability | 21 | 23.6 |
| Retired | 10 | 11.2 |
| In training | 3 | 3.4 |

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

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

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 2. Distribution of participants' stoma features and responses regarding living with a stoma

| Baseline characteristics | n | % |
|---|----|------|
| <i>Stoma type</i> | | |
| Ileostomy | 51 | 57.3 |
| Colostomy | 37 | 41.6 |
| n/d | 1 | 1.1 |
| <i>Type of stoma surgery</i> | | |
| Emergent surgery | 49 | 55.1 |
| Elective surgery | 40 | 44.9 |
| <i>Stoma duration</i> | | |
| Permanent | 53 | 59.6 |
| Temporary | 35 | 39.3 |
| n/d | 1 | 1.1 |
| <i>Reasons for performing stoma</i> | | |
| Cancer | 20 | 22.5 |
| Inflammatory Bowel Disease | 39 | 43.8 |
| Intestinal obstruction | 14 | 15.7 |
| Abdominal injury | 1 | 1.1 |
| Familial Adenomatous Polyposis | 1 | 1.1 |
| Other | 14 | 15.7 |
| <i>Follow-up therapy after surgery</i> | | |
| Yes | 20 | 22.5 |
| No | 69 | 77.5 |
| <i>Use of psychological services</i> | | |
| Yes | 24 | 27.0 |
| No | 12 | 13.5 |
| <i>Use of a stoma clinic services</i> | | |
| Yes | 24 | 27.0 |
| No | 12 | 13.5 |
| <i>Participating in ostomy support groups</i> | | |
| Yes | 24 | 27.0 |
| No | 12 | 13.5 |

Analysis showed a positive, significant relationship between sexual attractiveness and Arousal ($p = .013$), Lubrication ($p = .006$), Satisfaction ($p = .014$), Pain ($p = .003$) and overall sexual function ($p = .008$). There was also a positive and significant relationship between Weight concern and Arousal ($p = .018$), Lubrication ($p = .019$), Satisfaction ($p = .046$), Pain ($p = .005$) and overall sexual function ($p = .016$). A positive and significant relationship was also found between Physical condition and Arousal ($p = .038$), Lubrication ($p = .010$), Satisfaction ($p = .039$), Pain ($p = .002$) and overall sexual function ($p = .014$).

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 women

Analysis showed a positive, significant relationship between Physical attractiveness and Sexual desire ($p = .045$) and Overall satisfaction ($p = .034$). There was also a positive and significant relationship between Upper body strength and Erectile function ($p = .037$), Sexual desire ($p = .007$),

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

| Baseline characteristics | n | % |
|---|----|------|
| <i>Change in sexual activity after surgery</i> | | |
| Limited sexual activity to a significant degree | 44 | 49.4 |
| Limited sexual activity to a small extent | 18 | 20.2 |
| No changes | 22 | 24.7 |
| Increased sexual activity to a small extent | 3 | 3.4 |
| Increased sexual activity to a significant extent | 2 | 2.2 |
| <i>Less interest in sex from the partner</i> | | |
| Strongly disagree | 19 | 21.3 |
| Disagree | 27 | 30.3 |
| Undecided | 19 | 21.3 |
| Agree | 14 | 15.7 |
| Strongly agree | 9 | 10.1 |
| n/d | 1 | 1.1 |
| <i>Acceptance of change in body appearance by the partner</i> | | |
| Strongly disagree | 1 | 1.1 |
| Disagree | 6 | 6.7 |
| Undecided | 11 | 12.4 |
| Agree | 36 | 40.4 |
| Strongly agree | 34 | 38.2 |
| n/d | 1 | 1.1 |

Table 4. Correlations between the FSFI and BES questionnaire dimensions (N = 55)

| | Sexual attractiveness | Weight concern | Physical condition |
|-------------------|-----------------------|----------------|--------------------|
| FSFI Desire | .15 | .13 | .09 |
| FSFI Arousal | .33* | .32* | .28* |
| FSFI Lubrication | .37** | .32* | .34* |
| FSFI Orgasm | .20 | .19 | .19 |
| FSFI Satisfaction | .33* | .27* | .28* |
| FSFI Pain | .40** | .38** | .41** |
| FSFI (overall) | .36** | .32* | .33* |

* $p < 0.05$; ** $p < 0.01$ **Table 5.** Correlations between the IIEF and BES questionnaire dimensions (N = 34)

| | Physical attractiveness | Upper body strength | Physical condition |
|--------------------------|-------------------------|---------------------|--------------------|
| Erectile function | .27 | .36* | .31 |
| Orgasmic function | .26 | .30 | .26 |
| Sexual desire | .35* | .45** | .47** |
| Intercourse satisfaction | .27 | .36* | .32 |
| Overall satisfaction | .36* | .47** | .40* |

* $p < 0.05$; ** $p < 0.01$.

Intercourse satisfaction ($p = .039$) and Overall satisfaction ($p = .034$). A positive and significant relationship was also found between Physical condition and Sexual desire ($p = .006$) and Overall satisfaction ($p = .018$)

Follow-up therapy and sexual functioning in females.

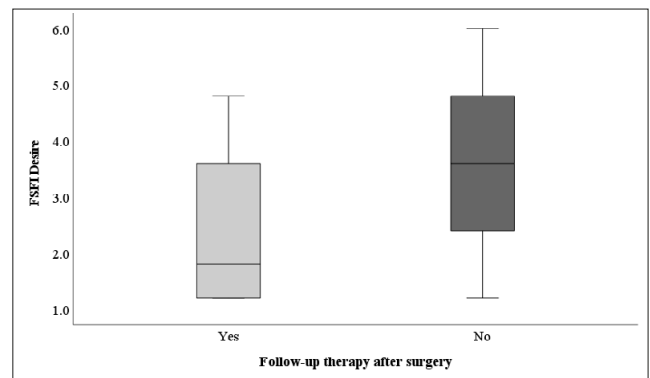
A comparison was made between the mean scores of the FSFI questionnaire in females with regard to whether or not they had received additional therapy after surgery.

Table 6. Comparison of FFSI dimensions between groups

| Variable | Therapy (n = 13) | | No therapy (n = 42) | | U | Z | p | r |
|-------------------|------------------|------------|---------------------|------------|--------|-------|-------|------|
| | Mdn | M_{rank} | Mdn | M_{rank} | | | | |
| FSFI Desire | 1.80 | 17.46 | 3.60 | 31.26 | 136.00 | -2.74 | 0.006 | 0.47 |
| FSFI Arousal | 3.30 | 20.54 | 4.05 | 30.31 | 176.00 | -1.93 | 0.053 | 0.33 |
| FSFI Lubrication | 3.00 | 22.85 | 4.20 | 29.60 | 206.00 | -1.34 | 0.181 | 0.23 |
| FSFI Orgasm | 3.20 | 23.69 | 4.00 | 29.33 | 217.00 | -1.12 | 0.264 | 0.19 |
| FSFI Satisfaction | 4.80 | 24.42 | 4.80 | 29.11 | 226.50 | -0.93 | 0.353 | 0.16 |
| FSFI Pain | 4.40 | 29.12 | 4.00 | 27.65 | 258.50 | -0.29 | 0.772 | 0.05 |
| FSFI (overall) | 18.30 | 23.96 | 21.55 | 29.25 | 220.50 | -1.04 | 0.298 | 0.18 |

n – group size; Mdn – median; M_{rank} – mean rank; U – M-W statistic; Z – Z statistic; p – significance level; r – effect size.

Analysis showed that women who did not undergo additional treatment after surgery had a significantly higher Desire score than women who underwent additional therapy ($p = .006$, $r = 0.47$). There were no significant differences for the other comparisons ($p > .05$).

**Figure 1.** Comparison of desire in females

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

| Variable | Therapy (n = 7) | | No therapy (n = 26) | | U | Z | p | r |
|--------------------------|-----------------|------------|---------------------|------------|-------|-------|-------|------|
| | Mdn | M_{rank} | Mdn | M_{rank} | | | | |
| Erectile function | 15.00 | 10.14 | 28.00 | 18.85 | 43.00 | -2.13 | 0.033 | 0,37 |
| Orgasmic function | 4.00 | 10.71 | 10.00 | 19.26 | 47.00 | -2.15 | 0.032 | 0,37 |
| Sexual desire | 5.00 | 10.64 | 8.00 | 19.28 | 46.50 | -2.07 | 0.039 | 0,36 |
| Intercourse satisfaction | 6.00 | 12.29 | 13.00 | 18.85 | 58.00 | -1.58 | 0.115 | 0,27 |
| Overall satisfaction | 5.00 | 14.64 | 8.00 | 18.24 | 74.50 | -0.88 | 0.381 | 0,15 |

n – group size; Mdn – median; M_{rank} – mean rank; U – M-W statistic; Z – Z statistic; p – significance level; r – effect size.

Analysis showed that men who did not undergo additional treatment after surgery had a significantly higher erectile function score than men who underwent additional therapy ($p = .033$, $r = 0.37$). They had also better orgasmic function ($p = .032$) and sexual desire ($p = .039$). There were no significant differences for the other comparisons ($p > .05$).

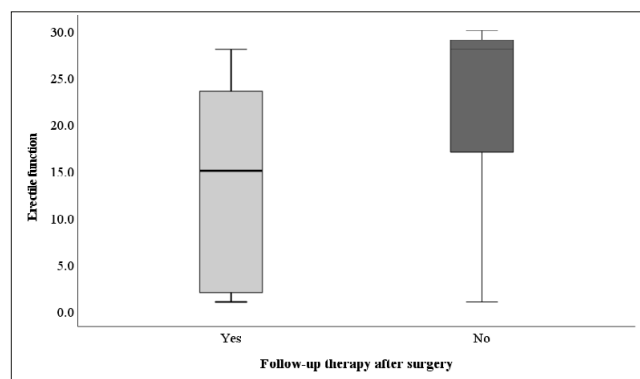


Figure 2. Comparison of erectile function in males

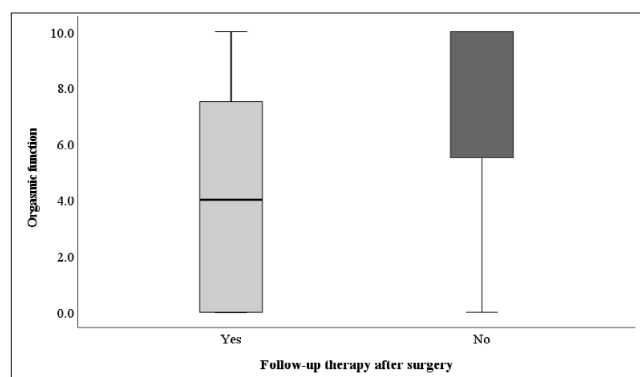


Figure 3. Comparison of orgasmic function in males

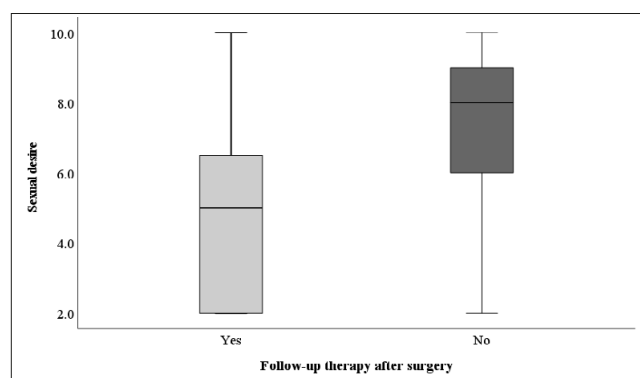


Figure 4. Comparison of sexual desire in males

DISCUSSION

Stoma formation surgery may be undertaken for many reasons, such as to eliminate a disease or to improve the patient's quality of life. Cancer, inflammatory bowel disease and diverticular disease are the most common conditions that lead to the formation of a stoma. In the current study, the most prevalent reasons for the stoma formation were inflammatory bowel disease – 43.8%, and cancer – 22.5%.

Stoma formation surgery can have a negative impact on the sex life of individuals. Many stoma patients are distressed about their sex life for such reasons as: opening bursting of the bag, faecal incontinence, or unpleasant odour during intercourse. As a result, they experience such problems as a decrease in the frequency of sexual activity, sexual desire and pleasure [14]. In the present study, reduced sexual activity after surgical formation of the intestinal fistula was declared by as many as 69.6% of respondents, and 25.7% of respondents acknowledged that they felt less interest in sex from their partner. The negative impact of a stoma on sex life is also reported in similar studies [15,16]. The results of the current study are therefore consistent with the related literature.

Body perception is formed on the basis of an individual's thoughts about the appearance of their own body and how it is perceived by others. It is known that the partners of people with a stoma play a significant role in the development of the body image of patients after surgical formation of the intestinal fistula. Partner support can have a positive impact on the perception of their own bodies. The study by Aktas and Bayker's clearly demonstrates that the patients' body perceptions were similar to those of their partners [5]. Altschuler et al. have interviewed women over the age of 60 and discovered that the majority reported difficulties in their sexual lives, struggled with lower self-esteem as a result of changes in their body image, and that the phenomenon was even stronger in the women whose partners did not accept their stoma [17]. In the study, 78.6% of respondents acknowledged that their partners had accepted the change in their appearance. Similar results were obtained in the study by Manderson [18] which showed that only a small group of partners reported feeling displeased with the presence of a stoma. This resulted in a significant reduction in sexual activity which, in turn, led to emotional and physical indifference between the spouses.

Patients with a stoma who were 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 [19,20]. Studies show that up to 75% of patients treated for colorectal carcinoma suffer from a sexual dysfunction, and nearly a third report temporary or permanent withdrawal from intercourse [21].

In the current study, women who had received a follow-up treatment showed significantly lower levels of sexual desire, compared with women who had not received this type of treatment. However, there were no significant differences in other domains (arousal, lubrication, orgasm, sexual satisfaction, and pain). Similar results were obtained by Marijnen et al. who found no increase in vaginal dryness or dyspareunia in women who had undergone follow-up treatment; however, a decrease in sexual interest was observed [22]. On the other hand, in the study by Bruheim et al., an increased risk of dyspareunia and vaginal dryness was observed in women after surgery (for colorectal cancer) in combination with (chemo-)radiotherapy, compared to women treated with surgery alone [23]. Other studies also confirm the negative impact of follow-up treatment on the sexual function of women after colorectal cancer surgery (dyspareunia, vaginal dryness, orgasmic problems, and lack of sexual satisfaction) [24–26]. 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 many years after the treatment [27]. Further studies are necessary to determine the impact of the follow-up therapy on the sexual functions of women with an intestinal stoma.

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 desire functions were also better. These results correlate with the findings of the study by Knowles et al., where up to 90% of men after radiotherapy (treated for colorectal cancer) had problems with erections [28]. The study by Ball et al. also indicated a significant erectile problem among men who received the follow-up treatment for colorectal cancer [29]. It should be emphasised that men who struggle with erectile problems experience increased frustration and symptoms of depression [30].

The study by Malibura et al. revealed that the quality of life of women with a stoma is worse than that of women who had no surgery; those with a developed fistula show high levels of depressive symptoms after surgery, and a distorted perception of their own body, resulting in distress and a substantial reduction in self-esteem related to their attractiveness. Altered perceptions of self-body image, elevated anxiety and lowered self-esteem adversely affect women's sexual functions [31].

Body image evaluation in stoma patients is an important predictor of whether women will resume sexual activity after treatment, and an inferior body image may correlate with lower sexual functions, including sexual interest, satisfaction and discomfort. In the current study, the results of the FSFI questionnaire were correlated with the results of the BES questionnaire, in order to identify the relationship between self-body image and the sexual functioning of women. The analysis demonstrated a positive correlation between all subscales of the BES questionnaire (sexual attractiveness, weight control, physical condition) and arousal, lubrication, sexual satisfaction, and pain. On this basis, it can be concluded that the body image of women with a stoma is of key importance for the quality of their sexual functioning. Unfortunately, no other analyses investigating this correlation have been conducted to date. While it is true that the correlation between the body image and sexual functions has been described in the study by Benedict et al., the study group included women after treatment for anal and rectal cancer (with or without stoma) [32]. It has been observed that an inferior body image was associated with poorer outcomes of sexual functions, including lower desire, arousal and lubrication, problems with orgasm and lower sexual satisfaction.

It is of interest that among the patients in the current study, body image had a significant, positive relationship with pain during sexual intercourse. Dyspareunia, or painful intercourse, can result from operations in the pelvic region that create scar tissue around the vagina. If the rectum is removed, the angle of the vaginal canal can shift to such a degree that penetration can be painful or difficult.

Analysis allowed the conclusion that there is a relationship between body image and sexual functions of men with an intestinal stoma. Particularly interesting is the correlation between physical condition and sexual desire, and satisfaction

with sexual intercourse, the correlation between body strength and erectile function, and the desire and satisfaction with sexual intercourse. Since stoma formation surgery in men can lead to a sexual dysfunction, knowledge of the different aspects in the body image that affect sexual functions can assist the medical personnel to educate the patient at an early stage, before stoma formation surgery. The study shows that the sexual functions of men are affected by those aspects of the body image that the patient himself can improve, e.g. physical condition. As no similar studies have been conducted to date in which the body image has been compared with the sexual functions of men with a stoma, further research is necessary to develop and implement effective interventions to improve the sexual health of male ostomates.

Limitations of the study. There are some limitations to the study. Data were collected using cross-sectional analysis, which did not capture changes in patient experiences over time. The use of longitudinal studies, however, would allow for a more dynamic and detailed understanding of how the sexual experiences and body image of patients with a stoma change over time.

One of the most common reasons for creating an intestinal stoma is colon cancer. In the current study, patients with a stoma were significantly more likely to have stoma fitted due to inflammatory bowel disease than due to cancer. Therefore, in the future, it would be necessary to conduct studies differentiating patients in terms of the reason for the stoma, and to check whether the disease leading to the formation of an intestinal fistula could affect the sexual functioning and body image of patients.

Finally, sexual functioning and body image are also influenced by the patient's spouse/significant other. The study did not include patients' partners, which is another limitation. Insofar as sexual functioning and body image encompass a wide spectrum of physiological, biological and psychological processes, and are impacted by dynamics within the relationship, the authors of this study believe that the psychosocial functioning of the patient's partner should also be assessed. It is therefore reasonable to expand the research by including the patient's spouse.

CONCLUSIONS

The results of the study show that patients with a stoma experience sexual dysfunction related to adjuvant treatment, and body image disorders that affect sexual function. Based on the obtained results, all health professionals who care for patients with stoma should be educated about sexuality, sexual health, sexual problems, and sexual counselling. Healthcare professionals should take the time to discuss possible sexual problems that may arise in patients with a stoma, especially after adjuvant treatment.

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