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PAPER

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Exploring the relationship between the body self and the sense of coherence in women after surgical treatment for breast cancer

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Abstract

Objective: Analysis of the relationship between the body self (BS) and the sense of coherence (SOC) in women after breast surgery due to cancer in comparison with a control group.

Methods: A cross-sectional study in a group of 78 women using the body–self questionnaire (BS-Q), and the life orientation questionnaire (SOC-29). Statistics based on the IBM SPSS v.25.

Results: Multivariate analysis of variance (MANOVA) has shown significant differences based on groups in experiencing intimacy, manifesting femininity, body acceptance, and manageability. In particular, manifesting femininity and body acceptance showed a big effect size ($0.30 < \text{partial } \eta^2 < 0.32$). Correlation analysis between the BS-Q and SOC-29 subscales and Fisher's r to z transformation determines that the differences between groups were significant in favour of healthy women in two sets of variables: experiencing intimacy/meaningfulness and attitude to food and weight/manageability.

Conclusions: Breast cancer survivors are at greater risk of developing decreased body acceptance and problems in intimacy, and have less correlation than the healthy control group between manageability and meaningfulness with an appropriate attitude to food and intimate relationship with their partner, respectively. A higher manifestation of femininity in the treated group can be considered a positive but socioculturally conditioned coping strategy.

KEYWORDS

body acceptance, body self, breast cancer, breast surgery, sense of coherence

1 | BACKGROUND

Body self (BS) can be defined as a universal manner of experiencing self in the body, inclusive of sexuality. Following William James' classic formulation, self could be defined in subjective and objective categories.[1] The subjective aspect of the BS-concerns' certain abilities, such as presenting an active attitude, thinking, perceiving, and adapting to the environment, and—in terms of the body itself—perceiving and feeling it, thinking about it, and experiencing emotions in connection with it. In objective terms, the BS is a collection of mental representations of the body and consists of the body schema, the body image, and the sense of body states.[2,3] Normal development assumes that both these aspects of the BS—subjective and objective—constitute a foundation for shaping the body identity of the individual.[2,4] It should be emphasised that further considerations in this study take into account only elements of the objective aspect of the body, which refers mostly to the body image.

Numerous studies suggest that body image and dissatisfaction with body have a potent impact on mental well-being, stress level, life satisfaction, self-esteem, physical health, and quality of life in cancer patients.[5,6] Body image is also under examination in breast cancer survivors. Authors have reported consistently that body image disturbance was associated with increased psychological distress in breast cancer survivors, highlighting the importance of body image to overall psychological well-being and self-esteem.[7-11] The authors also try to identify factors that support body image resilience in women suffering from breast cancer, but the lack of comparisons with the control group and delayed observation time seem to limit this study.[12]

Another construct that focuses on integration and regulation of mental functions of the individual in the context of cancer patients is the sense of coherence (SOC).[13-16] According to the concept of Aaron Antonovsky, SOC is understood as an individualised way of being, thinking, and acting connected with an inner confidence, which leads an individual to identify, take advantage of, use, and reuse the resources available. SOC consists of three components: comprehensibility, meaningfulness, and manageability.[16-18] Comprehensibility refers to the cognitive functions of an individual. It is a measure of one's ability to perceive incoming information as structured and coherent. Meaningfulness refers to the ability of an individual to attribute meaning to events, together with the tendency to understand them and experience them more as a challenge than a threat. Manageability manifests itself in an individual's belief about their capacity to cope with difficult situations, to have an active and effective influence on their own life situation, and to draw conclusions from past experiences. Many studies found that higher SOC scores were correlated with greater psychological well-being, higher self-esteem, better general health, more sufficient coping strategies against stress, higher level of quality of life, and better interpersonal relationships.[13,16,19-21] The SOC scale is also strongly and negatively associated with anxiety, anger, burnout, demoralisation, hostility, hopelessness, perceived depression, perceived stressors, and post-traumatic stress disorder.[22-24] The literature presents interesting reports confirming the correlation between SOC and emotional adjustment to the disease in women with breast cancer.[25] The SOC measure in patients with nonmetastatic breast cancer and fibromyalgia demonstrated an inverse correlation with pain, fatigue, and functional capability.[26] What is important is that, in many studies, SOC-29 was used for measuring the resilience in different groups of cancer and breast cancer patients.[26,27]

1.1 | The rationale for this study

Despite the call for more emphasis on mental health and psychological resilience, the literature focuses mainly on looking for risk factors for negative body image.[6-8]. Research exploring protective factors such as resilience or SOC, promoting a positive body image in women is limited.[12,28] Similarly, there are few papers describing directly the links between SOC and body image.[28,29] We will refer to each of them in detail in the further part of the discussion. Moreover, there is a dearth of studies regarding the direct correlation between potentially one of the most discussed health protective factors, which is SOC, and the way women experience their bodies after mastectomy. In connection with the above, the aim of this study is to examine the relationship between the BS and the SOC in breast cancer survivors in the first three months after breast surgery in comparison with the control group of healthy women. The analysis of some positive aspects of the body image (for example, manifesting femininity, experiencing intimacy, and attitudes towards food and weight) can be considered as the unique value of this study. Bearing in mind the whole body of evidence for the positive relationship between SOC and all abovementioned indicators of mental and physical well-being, we hypothesised that SOC could also be positively correlated with the BS, both in the study and in control groups. In addition, we expected that this positive correlation would be stronger in the treated group, which could be interpreted in accordance with Antonovsky's concept of generalised resistance resources,[16,28] where SOC is of high importance for health stability in the face of severe stress. To our best knowledge, this study is the first analysis of these correlations in a group of breast cancer survivors. The study is a part of a larger project carried out by the Department of Gynaecology and Oncology, Jagiellonian University Medical College in Cracow and the Department of Oncology, Jagiellonian University Medical College, under the common title: "Subjective image of the body—body self and the level of sexual satisfaction in women undergoing gynaecological and oncological treatment".

2 | METHODS

The data for this cross-sectional study were collected at the Department of Oncology of the Jagiellonian University Medical College between January and May 2017. The inclusion criteria for the study comprised women aged 18 to 68 years, admitted to the oncology ward not longer than 3 months after surgical treatment for breast cancer (mastectomy or breast-conserving treatment—BCT), and in good general condition (ECOG: 0-1 point). The exclusion criteria concerned patients with the presence of metastasis and patients not qualified for surgical treatment. The control group consisted of healthy women recruited from among the administrative and technical staff of the hospital. Finally, the inclusion criteria for the study was fulfilled by 78 women aged from 34 to 68 years old. The sociodemographic characteristics of the study group are shown in Table 1.

The body self questionnaire (BS-Q)[2,30] was used to examine how women experienced their bodies after breast surgery. The method consisted of 41 statements assigned to four scales identified on the basis of factor analysis. The A scale identifies the primary aspect of the BS, which is the acceptance of one's body defined by the level of women's satisfaction with their appearance and current body shape. High scores on this scale indicate a high level of own body acceptance, appearance, and body shape. The M scale describes the way of experiencing oneself in an intimate, sexual relationship with a partner. High scores on this scale are indicative of positive experiences in sensual and emotional relations with people of the opposite sex and the ability to experience satisfaction and pleasure from physical intimacy with the other person while maintaining one's own distinctness (sense of self). The K scale concerns acceptance and stressing (manifesting) one's femininity. It allows a determination of

TABLE 1 Socio-demographic variables of women in the study group (N = 78)

	Treated group (n = 39)	Control group (n = 39)
Age	M_{age} = 55.92, SD = 8.84	M_{age} = 52.87, SD = 6.24
Body mass index	M_{BMI} = 27.08, SD = 5.28	M_{BMI} = 25.65, SD = 4
Bra cup size	M_{BCS} = size C, Mo = size C	M_{BCS} = size D, Mo = size E
	n (%)	n (%)
Place of residence		
City (above 100 000 inhabitants)	23 (59)	19 (48.7)
Town (up to 100 000 inhabitants)	7 (17.9)	5 (12.8)
Village	9 (23.1)	15 (38.5)
Personal relationship status		
Currently in a relationship	33 (84,6)	36 (92,3)
Currently not in a relationship	6 (15,4)	3 (8,3)
Education		
University	11 (28.2)	14 (35.9)
High school	15 (38.5)	19 (48.7)
Vocational	9 (23.1)	5 (12.8)
Elementary	3 (7.7)	1 (2.6)
Kind of surgery		
Mastectomy	21 (53,8)	0
Breast conserving therapy	18 (46,2)	0

Treated group—breast cancer patients, control group—healthy women, M-median, Mo-modal.

the extent to which the fact of being a woman is a source of positive experiences and motivation to further exploration of womanhood. High results suggest a high level of acceptance of oneself as a woman and willingness to accentuate femininity with clothes or make-up. The E scale describes a woman's attitude to food intake and weight maintenance. Individuals with high results on this scale treat adequate food intake as one of many equivalent aspects of daily living. Eating and controlling one's food intake are not treated as problematic. The four aspects specified constitute the basic description of the BS, consisting of the results of the questionnaire: A scale—body acceptance, M scale—experiencing intimacy with the opposite sex, K scale—manifesting femininity, E scale—attitude to food and body weight. Cronbach's alpha for the whole scale equals 0.93, and for the individual scales, it is as follows: A scale α_A = 0.89, M scale α_M = 0.88, E scale α_E = 0.83, and K scale α_K = 0.74. Split-half reliability, assessed by Guttman's method (Guttman Split-Half) and the Spearman-Brown Unequal Length method, is uniform and equals 0.83; for the first part, it reaches 0.90 and for the second 0.88.[31]

Analysis of the SOC was carried out using the Polish adaptation of the life orientation questionnaire (SOC-29) designed by A. Antonovsky. Evaluation of the Polish version of the SOC-29 questionnaire showed the high reliability of the tool. The internal consistency coefficient, calculated using Guttman's method (Guttman Split-Half) and the Spearman–Brown unequal length method, was distributed as follows: for the SOC—0.92, comprehensibility—0.78, manageability—0.72, and meaningfulness—0.68. Cronbach's alpha was 0.78.[18]

The study results were statistically analysed using the IBM Statistical Package for the Social Sciences (SPSS) Statistics software (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. IBM Corp., Armonk, NY, USA).

3 | RESULTS

To explore whether there are significant differences in the four BS-dimensions and the three SOC dimensions between the group of women after breast surgery and the control group, multivariate analysis of variance (MANOVA) was conducted. Non-significant values of Box's test of equality of covariance matrices indicate that homogeneity was met. The results were significant: Pillai's Trace = 0.69, $F(7, 70) = 21.96$; $p = 0.001$, partial $\eta^2 = 0.69$. Furthermore, the results of the test between subjects indicate that there were significant differences based on groups in experiencing intimacy, manifesting femininity, body acceptance of BS-Q, and manageability of SOC (Table 2). In particular, manifesting femininity and body acceptance showed a big effect size ($0.30 <$ partial $\eta^2 < 0.32$). A lower—although still considerable—effect size was observed for experiencing femininity and manageability ($0.12 <$ partial $\eta^2 < 0.18$). In order to obtain some insight into the links between the BS and the SOC, the correlation in both groups was analysed (Table 3). However, a Fisher's r to z transformation allowed us to determine that the differences between groups were actually significant only in two sets of variables: experiencing intimacy–meaningfulness, and attitude to food and weight—manageability (Table 4).

4 | DISCUSSION

We found that cancer survivors compared with the control group, scored significantly lover for BS-Q in body acceptance (A scale) and experiencing intimacy (M scale), however, what is interesting is that the treated group scored significantly higher in manifesting femininity

TABLE 2 Intergroup statistical comparisons in terms of the SOC and body self dimensions: MANOVA

	Oncological group n = 39 M (SD)	Control group n = 39 M (SD)	Significance of differences		
			F(1.76)	p	n2
Attitude to food and weight (E)	35.67 (12.75)	38.97 (9.51)	1.48	0.23	0.02
Experiencing intimacy (M)	39.68 (14.35)	51.85 (11.79)	16.43	0.001	0.18
Manifesting femininity (K)	31.11 (12.76)	18.59 (5.51)	32.82	0.001	0.30
Body acceptance (A)	35.76 (13.42)	54.43 (13.84)	35.53	0.001	0.32
Body self (BS)	148.10 (48.52)	163.85 (34.34)	2.73	0.10	0.03
Comprehensibility	45.05 (11.55)	44.87 (10.77)	0.01	0.94	0
Manageability	53.50 (9.39)	47.28 (7.98)	9.81	0.01	0.12
Meaningfulness	42.58 (7.63)	41.74 (7.31)	0.24	0.62	0
Sense of coherence (SOC)	141.13 (24.17)	133.89 (22.35)	1.86	0.18	0

TABLE 3 Intergroup correlations between the sense of coherence and the body self: Correlation analysis

	Oncological group n = 39				Control group n = 39			
	SOC	Co	Ma	Me	SOC	Co	Ma	Me
Attitude to food and weight (E)	0.29	0.21	0.16	0.30	0.55**	0.46**	0.51**	0.46**
Experiencing intimacy (M)	0.42**	0.37*	0.35*	0.35*	0.61**	0.41**	0.59**	0.64**
Manifesting femininity (K)	0.25	0.17	0.32	0.13	0.18	0.13	0.13	0.22
Body acceptance (A)	0.48**	0.43**	0.41*	0.35*	0.61**	0.49**	0.53**	0.57**
Body self (BS)	0.44**	0.38*	0.37*	0.36*	0.64**	0.49**	0.57**	0.61**

Abbreviations: Co, comprehensibility; Ma, manageability; Me, meaningfulness.

*p < 0.05.

**p < 0.01.

TABLE 4 Significance of the difference between Pearson correlation coefficients in the oncological group and the control group: Fisher's *r* to *z* transformation

Significance of the difference between correlation coefficients (r_{SOC} and r_{BS})				
	SOC	Co	Ma	Me
Attitude to food and weight (E)	-1.35	-1.21	-1.69*	-0.79
Experiencing intimacy (M)	-1.1	-0.20	-1.32	-1.65*
Manifesting femininity (K)	0.31	0.17	0.85	-0.31
Body acceptance (A)	-0.78	-0.32	-0.65	-1.19
Body self (BS)	-1.20	0.57	-1.09	-1.40

Abbreviations: Co, comprehensibility; Ma, manageability; Me, meaningfulness.

*p < 0.05.

(K scale). No significant differences were found for attitude to food and weight (E scale). No significant differences were found in BS as a whole. The obtained low results on the A scale of the BS-Q show that women operated on due to breast cancer, more often than healthy women, perceive their body as a source of negative feelings, low self-esteem, and difficulty in everyday life. The fact that the extent of the surgery has proved to be insignificant in this matter suggests that the issue of body acceptance should be given particular importance not only in the case of women after mastectomy but also in women treated by BCT. In this scope, our results are similar to those of other authors who observed symptoms of distress in women with breast cancer due to the discrepancy between the expected and the actual appearance after surgery.[8,32,33] Another observation concerned the intimate relationship with a partner. Women after breast surgery, regardless of the extent of the surgery, had considerably lower results in experiencing intimacy with partners than did women from the control group. Low results on this scale may be evidence of fear and tension experienced in intimate situations with the partner and a tendency to avoid such situations. Our analysis did not reveal differences in the result between the groups of women currently in a relationship and those living alone. Also, other authors suggest that single women, after receiving treatment against breast cancer, can have potential problems with entering into romantic relationships with men, which correlate with the increased level of fear, dissatisfaction with the body, and low evaluation of their own interpersonal competence.[33,34] The next result, revealing higher scoring on the K scale, obtained by women after surgical treatment, may speak for some compensation strategies undertaken following the removal or mutilation of the breast, some of them manifested by a willingness to accentuate femininity with feminine attributes, such as clothes or make-up. We interpret this result as a positive coping strategy observed in the post-surgery group. These results suggest a tendency that is opposed to that described by Turkish authors who claimed that the removal of the breast reduces women's self-esteem and may result in attempts to hide this loss by modifying the way they dress, wearing loose-fitting clothes, and therefore, less significantly manifesting their femininity.[34] Perhaps these differences result from sociocultural conditions. In our study, the treated group scored significantly higher than the control group for manageability. No other significant differences in SOC-29 were found. This result is consistent with the reports of other authors observing higher manageability in women remaining in the active phase of the treatment.[35,36] These studies reveal that the

abovementioned correlation can be associated with better access to intellectual and economic resources, as well as with better adaptation to the disease.[35,36] This aspect was not reflected in our results, because socio-demographic variables did not differentiate the groups in this respect. In an interesting qualitative study, Engeli et al. (2016) asked patients with malignant melanoma about their coping strategies, attitudes towards the meaning of life and their cancer, and comprehension of what was happening to them. The most significant theme that emerged was manageability of the disease, with distraction the most commonly utilised coping skill. Therefore, the authors concluded that support for this group should focus on disease and situational manageability.[27] In our opinion, a similar recommendation may result from our observations. It is interesting that, although a tendency to exhibit higher manageability in the group of treated women coexists with an increased tendency to exhibit external attributes of femininity, which can be seen as a way to cope with an adverse change in body appearance, no mutual correlation between these variables was observed. This fact may suggest that the SOC has no moderating effect on this coping strategy.

The results of other researchers show that psychological resilience is a significant protecting factor for the body image, preventing the excessive development of negative self-esteem in post-mastectomy women.[12] Dumciene et al. (2015) found the strongest correlations between the general SOC as well as manageability alone and body shape dissatisfaction in healthy women.[28] The Buddeberg-Fischer group investigated associations between body image, SOC, and well-being among more than 500 students. They found strong correlations between the SOC, well-being, body image, and concerns about eating behaviour and BS.[29] In our study, we did not observe a relationship between the total SOC, which can be a measure of the strength of mental resistance and the body image. This may undermine the importance of resilience to the body image and therefore does not confirm these quoted reports. On the other hand, some authors indicate that SOC can be a strong predictor of attitudes to food, eating habits, and eating disorders.[29,37] Lindmark et al.[37] suggest that women in the highest, as compared with the lowest, SOC score quartile reported more "healthy" food choices, which may be of importance for cancer survivors in order to effect lifestyle changes. This seems to be interesting because our analysis revealed a high correlation between manageability and the attitude to food and weight in healthy women but not in the breast cancer patients, which is in line with this observation. It is difficult to determine whether this weak correlation reflects, for example, a low premorbid dependence that could be considered as a reflection of behavioural cancer risk factor or the result of stress and changing priorities related to the development of cancer. More comprehensive studies are needed in order to explain this issue. Further analysis in our study indicated that, in the treated group, there was significantly less correlation between meaningfulness and experiencing intimacy with partners. Emmons[38] described the relationship/intimacy domain as an important source of meaning for life. In the light of this concept, our results can be theoretically explained as a reflection of the negative impact of stress caused by cancer on this correlation. It seems that these observations may have some clinical implications that will be detailed below, but more research is needed to confirm it in larger groups.

5 | CONCLUSIONS

1. Women after surgical treatment due to breast cancer are at greater risk of developing decreased body acceptance and problems in intimacy with their partners.
2. The higher manifestation of femininity in women who survived breast cancer can be considered a positive but socioculturally conditioned strategy of coping with the disease. This strategy does not seem to be moderated by a SOC.
3. Women operated on for breast cancer disclose weaker correlations than those in the healthy control group between manageability and meaningfulness and appropriate attitude to food and intimate relationship with the partner, respectively. Hence, our initial hypotheses about SOC and BS correlations were confirmed only partially, and certainly not in the field of stronger correlation suggested for SOC and BS in the treated group.

5.1 | Study limitations

Although concepts of the BS and SOC are widely discussed in the subject literature, no unequivocal or generally accepted conceptualisation has ever been arrived at. On the one hand, this creates opportunities for open discussion, integrating various areas of expertise. However, it also limits the chance of reaching definitive conclusions. The study was cross-sectional in character and it was carried out in a nonrepresentative group of women with breast cancer. The data were collected once, and for this reason, we could not perform some interesting calculations, for example, to observe the impact of current BMI changes on the body image in the treated group. Also, our comparative study, which revealed, among other things, significant differences between groups in some correlation of the BS and SOC dimensions, would be even more interesting if this relationship could be demonstrated to be a change occurring under the influence of a causal agent in prospective observation. Nevertheless, performing such a study would require a much more complex and long-term methodology.

5.2 | Clinical implications

1. Women after breast surgery should be offered diagnostic, educational, and therapeutic assistance directed towards the improvement of body acceptance and addressing the increased risk of problems with intimate relationships which may develop as a result of a disturbed body image.
2. Further observation and targeted intervention in order to promote the appropriate manifestation of femininity in breast cancer survivors, especially considering the specific sociocultural circumstances of given women may constitute an additional areas of support for this group of patients.
3. The low correlation between manageability and meaningfulness with an adequate attitude to food and optimal intimate relationship with a partner, respectively, should be the goal of psychological counselling in the early stage of breast cancer treatment.
4. For better understanding and clearer highlighting of the risks and protective factors connected with body image resilience in cancer populations, further analysis of data from larger groups is needed.

CONFLICTS OF INTEREST

The Authors declare no conflict of interest in any stage of this research.

ETHICAL APPROVAL STATEMENT

The study conforms to the Declaration of Helsinki and was approved by the Bioethics Commission of the Jagiellonian University in Cracow based on decision no. KBET/96/B/2013.

PATIENT CONSENT STATEMENT

Participation in the study was based on informed and written consent. Patients had the opportunity to withdraw from the project at any stage without giving reasons for resignation.

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