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ORIGINAL ARTICLE

The influence of partner involvement in the decision-making process on body image and decision regret among women receiving breast reconstruction

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Abstract

Purpose This study examines the influence of partner involvement in decision-making for breast reconstruction (BR) on women's body image and post-BR decision regret.

Methods A cross-sectional and correlational approach was used in a convenience sample of 105 women in Taiwan who had breast cancer (BC) whose partners were involved in decision-making for BR. A structured questionnaire including the Involvement in the Breast Reconstruction Decision-Making Process Scale, the Body Image Scale, and the Decision Regret Scale was administered. Pearson's *r* and path analysis were used to examine the relationships among the dyadic BR decision-making process, women's body image, and decision regret.

Results The greater the amount of medical information women had, the better their body image and the less decision regret they experienced. Moreover, partner involvement was not related to women's body image, though it was inversely related to women's decision regret. The final path model showed that the amount of medical information women obtained was directly related to body image and decision regret, while body image also directly influenced decision regret. Overall, the amount of medical information women obtained and their body image explained 45% of the variance in decision regret.

Conclusions Medical teams should provide female BC patients with complete medical information, and through partner involvement, women can be supported to make an appropriate decision regarding BR to achieve optimal levels of body image and lower levels of decision regret.

Keywords Breast reconstructive surgery · Partner involvement · Decision-making process · Body image · Decision regret

Background

According to the World Health Organization (WHO), breast cancer (BC) is the second most common cancer in women worldwide [1]. According to statistics from the National Institutes of Health (NIH) in 2016, the 5-year survival rate for new BC cases during 2006–2012 was 89.7% [2]. The survival rate for new BC cases in Taiwan was 83.4% [3]. Rapid improvements in health care technology have increased survival rates and have made BC a chronic disease, allowing women with BC to live longer. Although women in the early stages of BC may receive breast-conserving surgery (BCS), up to one third of women will undergo mastectomy [4, 5]. One survey conducted in China revealed that 90% of women with BC had received mastectomy [6].

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The impact of a mastectomy on body image has led to breast reconstruction (BR) as an option for women with BC. A recent systematic review summarized 12 studies and found that decision regret among women receiving BR was low or stable; however, a poorer body image may increase the degree of decision regret [7].

Women with BC are concerned about their partners' perceptions of their bodies. Fang et al. conducted a qualitative study in a sample of women who had undergone BR and found that in addition to the change in appearance after mastectomy, women also worried that the loss of a breast would influence their intimate and marital relationship with their partners. As a result, these women wanted to restore their previous appearance via BR [8]. Halkett et al. found that partner support in the treatment decision-making process reinforced women's beliefs that they were making the correct decision [9]. Zhang et al. conducted a study in China and revealed that husband's recommendation was associated with a woman's decision to undergo BR [10]. Regarding women's involvement in the decision-making process, Gilbar and Gilbar found that 92.98% of women with BC believed that making the decision on their own was important; 84.2% believed that their partners should be involved in the process [11]. Lillie et al. surveyed 517 partners involved in women's BR decision-making process and showed that the factors associated with high decision regret were the receipt of less information and less involvement in decision-making [12]. However, this study was conducted in a western country and did not consider women's perceptions.

A woman's body image develops in the context of her intimate relationships and social interactions [13]. Numerous studies have been conducted on the implementation of dyadic involvement to improve women's body image. The results from couple-based interventions have demonstrated that women's psychological adjustment can be improved via partner involvement [14, 15]. Scott and Kayser reviewed 12 studies on couple-based interventions and confirmed the effect of such interventions on improving women's body image and sexual relationships [16]. Thus, this study aligned with the framework of Northouse et al. [17] and extended the study by Lillie et al. [12], which suggested that better patient-partner relationships contribute positively to the decision-making process in cancer treatment. We propose that if the partner is involved during the surgical decision-making process, such as by having greater involvement and obtaining sufficient information, it is likely that women's post-surgery body image and degree of decision regret will be improved. The objective of the current study is to (a) gain an understanding of the relationship between dyadic involvement in the BR decision-making process and body image and decision regret and to (b) establish a model of how such dyadic involvement affects women's body image and decision regret.

Methods

This study had a cross-sectional design and employed convenience sampling of women with BC and their partners attending the outpatient clinics of two medical centers located in central and southern Taiwan.

Sample

Women were eligible to participate if they had been diagnosed with BC and had undergone BR, were at least 20 years old, and had a male partner. The partner was eligible if he was identified by a patient, was at least 20 years old, and reported being in a relationship with the patient when the decision to undergo BR was made. Women who were undergoing chemotherapy or radiotherapy at the time of the survey or who were being treated for any chronic illness were excluded. Partners who reported cognitive impairment or mental health disorders were excluded.

Procedure

After obtaining approval from the Institutional Review Board, a list of women who had undergone BR was provided to the researcher by the outpatient clinic health care providers. Eligible women and their partners were informed of the study at their next outpatient visit and were invited to speak with the researcher. We obtained informed consent from both the women and their partners, and the women and their partners then completed the questionnaire separately. Partners who did not accompany the patient to the outpatient clinic were first asked for permission via telephone, and the patient then gave the questionnaire to her partner in a sealed envelope. The questionnaire was returned by the patient at her next follow-up appointment 2~4 weeks later.

Measurements

Involvement in the BR decision-making process scale

Based on previous related studies [12, 18], the authors designed a dyadic Involvement in the BR Decision-Making Process Scale. The scale was divided into two subscales, each using a five-point Likert scale (1 [strongly disagree] to 5 [strongly agree]). The items prompted the BC patient and her partner to evaluate themselves regarding (a) medical information (MI), with six items (e.g., I understand the advantage/disadvantage of mastectomy/BR; the higher the score, the greater the amount of information the participant believed he/she had obtained), and (b) decision involvement (DI), with seven items (e.g., My partner/I would discuss with me/my partner the decision to undergo mastectomy/BR; the higher the score, the

greater the BC patient perceived her partner's involvement in the BR decision-making process had been or the greater the partner believed his actual involvement in the BR decision-making process had been). Expert validation was performed by four medical experts, namely, one nurse, one doctor, and two researchers who were familiar with BC care or dyadic issues, and one couple with BC experience. The index of content validity (CVI) was 0.91 [19]. The construct validity was also validated by performing an exploratory factor analysis in which principal axis factoring with promax rotation was used to extract latent constructs. One factor was extracted for MI and DI for both women and their partners. This single factor explained 62 and 60.1% of the MI variance for women and men, respectively. Another single factor explained 79.5 and 68.7% of the DI variance for women and men, respectively. Test-retest reliability, which was examined using ten couples 1 month later, was 0.73 for the women and 0.86 for the partners. Cronbach's alpha was 0.90–0.91 for MI and 0.94–0.96 for DI.

Body image scale

The body image scale was developed by Hopwood et al.. The scale has ten items rated on a four-point Likert scale (0 [not at all] to 3 [very much]), with total scores ranging from 0 to 30. Higher scores indicate greater BI distress [20]. This scale has been widely used in numerous countries and languages in samples of cancer patients [21–23] and has a Cronbach's alpha of 0.90; there is already a standardized Chinese version [24]. The Cronbach's alpha for this study was 0.94.

Decision regret

The decision regret scale was developed by O'Connor in 1996 and modified in 2003 [25]. The scale has five items rated on a five-point Likert scale (1 [strongly agree] to 5 [strongly disagree]); higher scores indicate greater degrees of regret [25]. The Cronbach's alpha in O'Connor's study of BC patients was 0.81–0.92 [25, 26]. Previous studies have used the scale to measure female BC patients' degree of BR decision regret; in these studies, the Cronbach's alpha was 0.86–0.90 [27, 28]. Our study used O'Connor's free Chinese version made available online in 2006. The Cronbach's alpha in this study was 0.92.

Statistical analysis

The statistical analysis was performed using SPSS 24.0. First, descriptive statistics were used to determine the demographics and disease/treatment characteristics of the participants. Pearson's r was used to examine (a) the relationship between dyadic involvement in the decision-making process and women's body image and decision regret, (b) the consistency of dyadic involvement in the decision-making process, and (c) the relationships among the BR decision-making process, the women's body image, and decision regret. Finally, a path analysis was performed using AMOS 24.0 to examine the relationships between dyadic involvement in the decision-making process and the women's body image and decision regret. The model fit was based on the criteria of Kline (2011), namely, the comparative fit index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) [29]. An acceptable fit was based on Hu and Bentler's suggestion that the values be greater than 0.95 for the CFI, less than 0.08 for the SRMR, and less than 0.06 for the RMSEA [30].

Results

Participant demographics

The list obtained from the health care providers included 188 women. Seventy-six women were excluded as ineligible. Six of the partners declined to participate, and one of the women did not complete the questionnaire. Ultimately, 105 heterosexual couples completed the questionnaire.

The mean age was 48 years for the women and 51 years for their partners; the age for the majority of both groups ranged between 40 and 49 years. The couples had been in the relationship for 22 years on average, and only two couples were not married. More than 90% of the women had immediate BR, and the majority of those chose implants. The mean time since BR was approximately 16 months. Only 6% of the patients experienced complications (Table 1).

Relationships of body image, decision regret, and dyadic involvement in the BR decision-making process

A correlation analysis was conducted to examine the relationships regarding dyadic involvement in the BR decision-making process. The results revealed that the MI for the women was significantly related to that of their partners ($r = 0.33$, $p < 0.05$), and women's DI and their partners' DI were also significantly related ($r = 0.43$, $p < 0.05$). The partners' MI was also significantly correlated with the women's DI and their own DI ($r = 0.40$, $p < 0.05$ and $r = 0.93$, $p < 0.05$, respectively) (Table 2).

The MI of the partners was unrelated to the women's body image, but the MI of the women was significantly inversely related to their body image ($r = -0.22$, $p < 0.05$), which indicated that when women obtained more information, they perceived fewer body image problems. The dyadic MI was

Table 1 Demographic and disease/treatment characteristics of the participants ($N = 105$)

Variables	Women N (%)	Partners N (%)
Age/mean ± SD (range)	48.32 ± 7.53 (32–64)	50.59 ± 8.30 (32–74)
< 40	19 (18.1)	8 (7.6)
40–49	42 (40.0)	44 (41.9)
50–59	35 (33.3)	38 (36.2)
≧ 60	9 (8.6)	15 (14.3)
Education		
Less than 9 years	18 (17.1)	16 (15.2)
9–12 years	37 (35.2)	44 (41.9)
More than 12 years	50 (47.6)	45 (42.9)
Occupation		
Full time	53 (50.5)	81 (77.1)
Part time	11 (10.5)	7 (6.7)
None	41 (39.0)	17 (16.2)
Marital status/mean ± SD (range)	22.01 ± 9.99 (1.5–42.0)	
Married	103 (98.1)	
Not married	2 (1.9)	
Importance of appearance of breast (range)	7.36 ± 2.12 (3–10)	
Pathology stage		
0~I	55 (52.4)	
II~III	50 (47.6)	
Reconstruction		
TRAM flap	32 (30.5)	
Prosthesis implantation	72 (68.6)	
Latissimus dorsi flap and silicone	1 (1.0)	
Timing of reconstruction		
Immediately	99 (94.3)	
Delayed	6 (5.7)	
Complication		
No	99 (94.3)	
Yes	6 (5.7)	

significantly inversely related to the women's decision regret (women $r = -0.48$, $p < 0.01$; partners $r = -0.29$, $p < 0.01$). The dyadic DI was unrelated to body image but was significantly inversely related to decision regret (women $r = -0.27$, $p < 0.01$; partners $r = -0.29$, $p < 0.05$) (Table 3).

Dyadic involvement in the BR decision-making process, body image, and decision regret

Before the path analysis, all possible factors that could influence body image and decision regret were examined,

Table 2 Relationships of dyadic involvement in the BR decision-making process

Women/partners	Partners	
	Amount of medical information (MI)	Degree of decision involvement (DI)
Women		
- Amount of medical information (MI)	0.33*	–
- Degree of decision involvement (DI)	0.40*	0.43*
Partners		
- Degree of decision involvement (DI)	0.93*	–

*$p < 0.05$ (two-tailed)

Table 3 Relationships of dyadic involvement in the BR decision-making process with the women's body image and decision regret

Participants	Variable	
	Body image	Decision regret
Women		
Involvement in the BR decision-making process	− 0.18	− 0.43**
- Amount of medical information (MI)	− 0.22*	− 0.48**
- Degree of decision involvement (DI)	− 0.11	− 0.27**
Partners		
Involvement in the BR decision-making process	− 0.10	− 0.29**
- Amount of medical information (MI)	− 0.09	− 0.29**
- Degree of decision involvement (DI)	− 0.10	− 0.29**

*$p < 0.05$ (two-tailed); **$p < 0.01$ (two-tailed)

including demographic and clinical characteristics. Because only the "importance of the appearance of the breast" correlated with body image with borderline significance, we included this factor in the path analysis.

The path model for the decision-making, body image, and decision regret (DBD) model is shown in Fig. 1. The chi-square value of the final model was not significant ($\chi^2 = 8.075$, with $df = 5$ and $p = 0.152$ for decision regret). The non-significance of the chi-square test and goodness-of-fit indices (RMSEA = 0.077, SRMR = 0.0512, CFI = 0.990) indicated that the model fit the data well.

Examination direct and indirect effects of body image

Based on the results of the DBD model, women's MI was directly related to body image ($\beta = -0.226$, $p = 0.029$) and decision regret ($\beta = -0.329$, $p < 0.001$). Body image also directly influenced decision regret ($\beta = 0.453$, $p < 0.001$), whereas when a greater MI for the women was reported, less body image distress and decision regret were perceived. Less body image distress also directly reduced decision regret (Table 4). In other words, greater MI directly reduced women's body image distress and decision

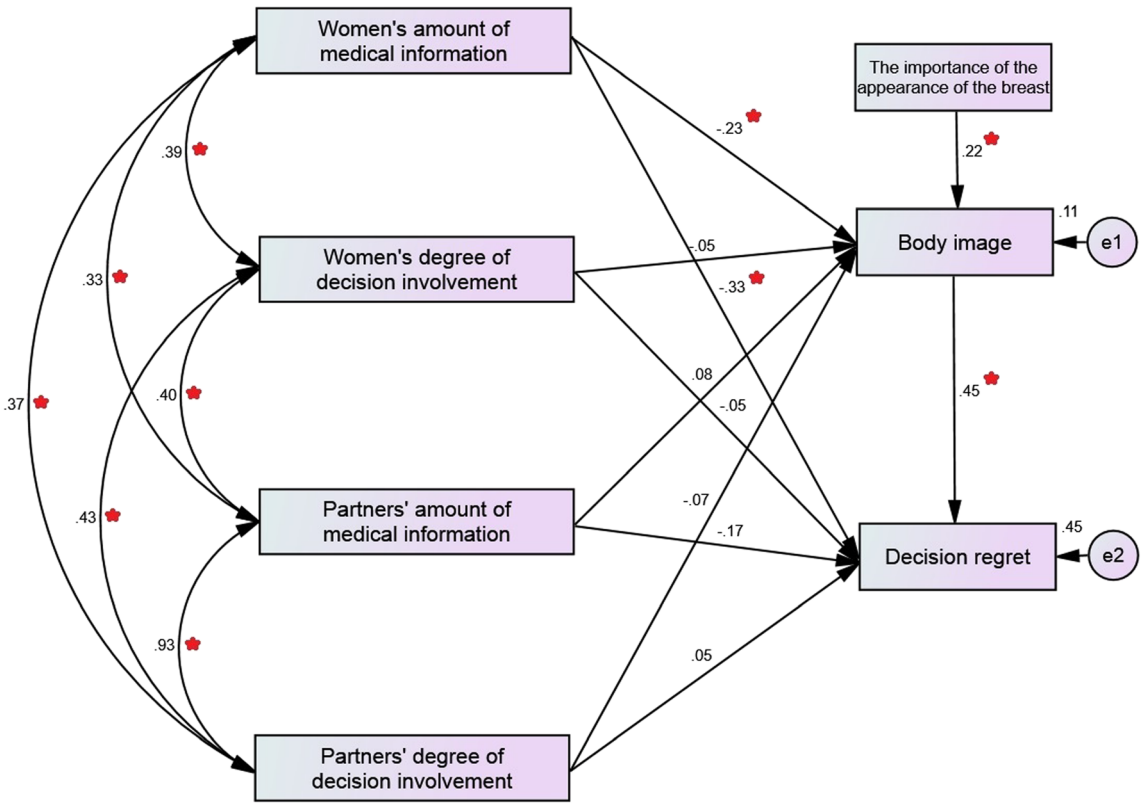

Fig. 1 Decision-making, body image, and decision regret (DBD) model

Table 4 Standardized effect values between women's amount of medical information (MI), body image, and decision regret

Path analysis		Direct effect	Indirect effect	Total effect
Amount of medical information (MI)	Body image	− 0.226*	0.000	− 0.226
	Decision regret	− 0.329*	− 0.102 (p = 0.053)	− 0.432*
Body image	Decision regret	0.453*	0.000	0.453*

*$p < 0.05$

regret, while MI might also indirectly reduced decision regret mediated by body image ($\beta = -0.102$, $p = 0.053$).

Discussion

Relationships of women's BR decision-making process to body image and decision regret

The more medical information women had, the lower their body image distress was. This finding was consistent with a recent study showing that insufficient and inadequate information may result in decision regret for women with BR [31]. This result also echoed some studies, suggesting that if women obtain comprehensive information regarding their treatment, such as the possible advantages or risks of surgery, the possible outcome from pictures of other patients, and the changes in sensation they may experience after surgery, they may have more realistic expectations of the physical changes that can be achieved by surgery to reduce the appearance gap between pre- and post-surgery [32, 33]. A qualitative study conducted in Taiwan by Fang et al. found that if the information given focuses only on improvements in appearance from BR and does not include the possibility of damage or complications after surgery, women may have difficulty coping with unexpected outcomes after surgery, which in turn will affect body image [8]. Thus, it is necessary to provide complete information during the BR decision-making process to reduce body image distress.

In addition to the effect of medical information on body image, the current study also revealed that medical information was associated with decision regret. This result is consistent with studies by Sheehan et al. [27] and Zhong et al. [34]. Sheehan et al. found that BR information reduced decision regret due to unrealistic expectations of the esthetic outcome of BR [27].

In addition, the current study showed that lower body image distress results in lower decision regret, which was also consistent with the findings of previous studies [27, 10]. Women experience less body image distress and decision regret when they obtain sufficient BR information.

Partner involvement in the BR decision-making process and women's body image and decision regret

The non-significant relationship between partner involvement and body image was unexpected. One study conducted recently in China revealed that husbands' opinions were highly related to patients' decisions to undergo BR; however, this factor did not influence women's satisfaction with the esthetic outcomes of BR [10]. Fang et al. studied BC survivors to gain insight into the female partner's perception of empathy from her male partner, as perceived by the women in the relationship between body image and depression. The study revealed that the perception of empathy by women did not correlate with their body image [35]. The authors explained that a woman's acceptance of her body requires the enhancement of her personal journey and an improved couple relationship [16]. Partner involvement in the decision-making process that is lacking these elements may limit the effect of partner involvement on a woman's body image. Another study found that the factors influencing women's self-acceptance and partner acceptance of their body image are different [36]. Thus, partner involvement in decision-making may improve only partner acceptance of the women's body image. As only women's self-acceptance of their body image was measured in the current study, this issue should be validated in future studies.

The results showed that partner involvement had a significant relationship with decision regret, though it was revealed non-significant in the path analysis. In a study on the role of the partner in the decision-making process by Muhamad et al., 47.5% of women stated that the treatment decision had been made by themselves, and 52% believed that their partner was the most helpful family member during the decision-making process [37]. A recent qualitative study also revealed that the role of the partner in the BR decision-making process is important and helpful for women, but this role is consultative rather than decisive [38]. Thus, women might place importance on partner involvement in the decision-making process, but they anticipate that their partners will respect their decision.

Conclusion

This study investigated and established a model of the relationship among dyadic involvement in the BR decision-making process, women's body image, and decision regret. The path analysis showed that when women obtained sufficient medical information during the BR decision-making process, they experienced lower body image distress and decision regret. Moreover, the better their body image was, the lower their decision regret was. The involvement of partners in the decision-making process, on the other hand, had a weak association with women's body image and decision regret post-surgery.

Study limitations and suggestions for future study

One of the strengths of this study was that we collected data on the perception of both the women and their partners to establish a model to predict women's body image and regret after BR. However, the current study only included six (of 105) women who had complications after BR, which is far below the percentage of those who experience complications in other countries. Thus, the low willingness to participate of those with post-BR complications or those who had poor relationships with their partners, such as those who were separated or divorced, may have led to selection bias. This bias could have reduced sample variation, which may have resulted in the non-significant relationship between partner involvement in the decision-making process and body image. Memory bias due to the retrospective design as well as the composition of the sample (i.e., women with stage 0-III BC and only heterosexual couples) may also have limited the representativeness of this study. Because certain assumptions could not be verified, adding a control group, such as patients who have undergone other types of surgery that do not have an effect on women's body image, is suggested. Such studies could allow for further understanding of whether the BR decision-making process calls for greater partner involvement than other surgical treatments. A longitudinal study to follow up the effect of dyadic involvement in the BR decision-making process on body image and regret would be informative to ensure better intervention in the future.

Clinical implications

One systematic review related to BR in recent years found that 20–25% of women lack information regarding BR or engage in insufficient physician-patient discussion on the advantages and risks of BR [39]. In the future, for women who need to receive a mastectomy and want to undergo BR, great importance should be placed on giving them complete information, including information on post-treatment care and the potential outcomes of the procedure, during the decision-making process. Even though a partner's understanding of the surgery and involvement in the decision-making process were not correlated with women's body image or decision regret, it is still advisable for the partner to be involved because his role as a consultant could help women become better acquainted with BR information. Such dyadic involvement will in turn improve women's body image and reduce decision regret.

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Compliance with ethical standards

Conflict of interest The authors declared that they have no conflict of interest.

Ethical approval Ethical approval was approved by committee of the National Cheng Kung University Hospital (Taiwan) (IRB number B-ER-104-097) and Changhua Christian Hospital (Taiwan) (IRB number 150711). All procedures performed involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The authors have full control of all primary data, and they agree to allow the journal to review their data if requested.

Informed consent Informed consent was obtained from all individual participants included in the study.

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