



Research Article

## The Impact of Mastectomy on Self-Concept and Social Life: Decisional Conflicts for Breast Reconstruction

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### Abstract

**Background:** Having a mastectomy affects a woman psychosocially, especially to adapt to the changes of her

body. It is important to understand women's motivation for breast reconstruction surgery (BRS) to reconcile themselves

with their own beliefs and desires. This study explored the factors that affect women's decision to have BRS after the mastectomy, the level of awareness of the available BRS options and their suggestions to improve the acceptance of BRS.

**Materials and methods:** A questionnaire was distributed to patients diagnosed with BC in Saudi Arabia.

**Results:** A total of 352 women were recruited for this cross-sectional study. Age and high educational attainment were significantly associated with a positive decision for BRS. Physical appearance and self-confidence were essential factors in the decision-making for BRS. The main barriers were the surgical risks and strong religious beliefs. Interestingly, both breasts removed affect women's social life positively compared to those who had one breast removed. The majority (70%) of the sample did not know of the educational campaigns held by the Ministry of Health. The main suggestion to increase interest in BRS is the presence of clinicians throughout the treatment journey.

**Conclusion:** Women diagnosed with BC should be involved in a personalized care plan, especially the group at a higher risk of developing negative body image feelings associated with a mastectomy.

**Keywords:** Breast cancer; Mastectomy; Breast reconstruction; Self-esteem; Awareness; Decision conflict

## 1. Introduction

Breast Cancer (BC) is the most prevalent cancer causing mortality in women globally. In Saudi Arabia, the prevalence is increasing [1, 2]. Globally, the BC rate varies and it is five times more prevalent in some countries than

others [3]. According to the World Health Organization, in Saudi Arabia, 3629 (29.7%) new female BC cases of all ages were reported in 2018 [3]. The oldest established written history of the surgical management of BC originated from ancient Egypt in 1600 before Christ, with a parchment titled "Instructions concerning tumors of his breast" stating that there was no treatment for BC [4]. Twelve hundred years later, Hippocrates portrayed a lady with a nipple discharging blood and suggested no surgery as it would unquestionably hasten her demise. For the following 500 years, women with BC were offered no treatment. A BC related operation first occurred in the first century AD by a Greek doctor, Leonides, who called it "Escharotomy." This method was based on making repeated incisions into the breast until it was entirely burned off the chest wall. In 1948 [5], Patey and Dyson were the first who presented the concept of removing the entire breast and the necessary skin, a modified radical mastectomy [6].

Currently, a significant number of women with BC undergo long-term treatment, including surgery, chemotherapy, or radiotherapy, which may result in severe complications [7, 8]. In addition, the psycho-social complications induced by this disease and the treatment may be severe and affect the woman's self-esteem, identity and femininity [9, 10]. Following a mastectomy, adapting to the changed body may be physically and psychosocially challenging. The psycho-social distress is caused by personal self-esteem and body-image issues and the distress caused by the perceptions of society [11]. Society-related stress is a result of the societal expectations of femininity and womanhood. Following a mastectomy, a younger woman might be concerned about the possibility of being married and bearing children, and a mature woman already with a

family, may be concerned about how this change will affect her spouse and children.

Breast reconstruction surgery (BRS) following a mastectomy is done to restore the body contour and symmetry by replacing the lost volume. Many types of breast reconstruction are available, including silicone and saline implants, tissue expanders, pedicle, and free musculocutaneous flaps [12, 13]. Though these reconstruction choices are oncologically safe [12], many patients still reject the surgery [14]. The decision to continue with BRS following the mastectomy is challenging and influenced by many factors, including patient or physician factors, cancer-related factors, and financial status. It is strongly believed that this procedure has a significant positive impact on BC survivors' quality of life [15]. Asking patients who had BRS following a mastectomy, "How would you rate your quality of life?" of 27 patients, the response was good (41%) and very good (33%) [15, 16]. These scores were associated with both physical and psychological benefits. Providing that the option is available, deciding whether to have BRS is a medical and personal preference. Medically, immediate BRS is usually only offered to women with early-stage cancers who do not require additional treatment, including chemotherapy or radiation therapy. For more advanced cases, the women have to complete all their treatment before they can have the surgery [17-19]. It is essential to understand women's motivation to have or not to have BRS. This early perception assists the clinician and patient to make the best choice for each individual, aligned to their values and needs. The current study explored two aims: 1) to investigate the factors impacting a woman's decision to have BRS after the mastectomy; 2) to evaluate their

knowledge of the BRS choices available and their suggestions to enhance their acceptance of BRS.

## **2. Materials and Methods**

### **2.1 Study design and participants**

A cross-sectional and patient-reported survey study was conducted with BC survivors in Saudi Arabia (n=352), from October 2019 to March 2020. Women, 18 years and older who could provide informed consent, were included. The participants were recruited from the Oncology Department outpatient clinics at the Security Forces Hospital (SFH), Oncology Department in Prince Sultan Military Medical City, Riyadh, Kingdom of Saudi Arabia, and Zahra Breast Cancer Association in Saudi Arabia. Informed consent was obtained from all the participants before completing the questionnaire. The study participants completed the electronic survey (one-time) with a coordinator's assistance if required (personal or phone interview).

### **2.2 Questionnaire and data collection**

The study was approved by the Institutional Review Board of King Abdullah International Medical Research Center and the Research Ethics Committee of National Guard-Health Affairs in collaboration with Princess Noura bint Abdulrahman University in Riyadh, Saudi Arabia, with the number RC19/446/R. The questionnaire was developed based on literature and expert insight [20, 21]. The data collection consisted of completing a questionnaire with four parts. The first part collected demographic and socio-economic details, including age, marital and employment status, education level, monthly income, geographic location, and housing tenure. The second part focused primarily on the patients' intellectual visualization and

motivation to have or not have BRS by investigating different domains: self-reflectivity, inner negotiation, and social influence. The third part assessed the level of awareness of choosing BRS through the Ministry of Health (MOH) initiatives in the National Transition Program 2020 and Vision 2030 of Saudi Arabia. The last part consisted of the participant's suggestions to improve their acceptance of BRS. Questionnaires with missing values were omitted.

### 2.3 Statistical analysis

The data were analyzed with IBM SPSS statistical software (Version 21). For all tests, a P-value <0.05 was considered statistically significant. Descriptive statistics, frequency and percentage were used to describe the categorical variables for the four domains. A Pearson Chi-square test was used to assess the association between the demographic and socio-economic variables as well as the interest to have BRS. The predictors of choosing BRS were determined using a multivariate logistic regression.

### 2.4 Limitation of the study

The current study has some limitations that must be addressed. Data were only obtained using women's self-report measures, and the sample size of women who had undergone Mastectomy was small.

## 3. Results

### 3.1 Characteristics of the sample

The sample consisted of 352 women diagnosed with BC. The median age was 45 years, ranging from 25 to 80 years. The majority of the sample were Saudi (n=324, 92%), married (n=290, 82%), and residing in a city (n=319, 90.6%). The bivariate analysis of the demographic and socioeconomic factors and the desire to undergo BRS are displayed in Table 1. Age, educational level, place of

residence, and housing tenure were statistically significant predictors for choosing BRS (P<0.05). The results of the multivariate logistic model are displayed in Table 2. After adjusting for other variables, age and place of residence were predictors for accepting BRS post-mastectomy (Table 2).

The group who chose BRS were 0.971 less likely to undergo it based on their age, compared to the group not choosing BRS (95% confidence interval [CI], .946-.995; P<0.05). The group who lived in a village were 0.283 less likely to have the surgery, compared to the group residing in a city (95% CI, .106-.755; P<0.05). No other variable were statistically significant.

### 3.2 Factors associated with acceptance or rejection of BRS post-mastectomy

To identify the factors associated with the decision regarding BRS, their intellectual visualization and motivation based on the following variables: self-reflection, inner negotiation, and social influence (Tables 3 & 4) were assessed. The sample's main reasons for accepting BRS were to improve their self-image (n=181, 92.8%), overcome the mastectomy (n=174, 88.8%), and to restore self-confidence (n=164, 84.1%) (Table 3). In terms of the internal analysis and argument to choose BRS, the majority indicated being influenced by positive reviews on social media (n=110, 55.8%) and to avoid being pitied by others (n=81, 41%) (Table 3).

The majority of the sample (n=109, 60%) also chose BRS after receiving emotional support from their relatives (Table 3). Of all of the reasons provided by the sample for refraining from BRS, the most frequent was acceptance of their fate (n=140, 91.5%), followed by the fear of

complications related to the surgery (n=112, 73.7%) (Table 4). Lack of information (n=79, 52%) about the capabilities and knowledge of the surgery affected decision-making. A frequent reason (n=50, 33.3%) indicated was the complete acceptance of their appearance after the mastectomy (Table 4).

**3.3 The effect on social life of mastectomy**

Interestingly, as shown in Table 5, bilateral Mastectomy (both breasts removed) affects women’s social life positively compared to those who had unilateral Mastectomy (one breast removed). The majority of the survivors in this study who agreed to undergo BRS and had bilateral Mastectomy had more active social life such as meeting with their neighbors and friend (62.3%), relatives (62.3%), and other survivors from breast cancer (75%) compared to unilateral Mastectomy.

**3.4 Awareness of breast reconstruction surgery (BRS)**

The Ministry of Health (MOH) provides awareness and motivation campaigns to encourage women diagnosed with

BC to have BRS post-mastectomy, but the campaigns were not understood or seen by most participants (Table 6). Although the MOH launched a First Health Initiative as a part of the National Transformation Program (NTP) 2020 towards the Saudi Vision 2030, the majority (n=183, 70%) lacked information about the educational or health promotion campaigns (n=160, 71.8%). In addition, the majority of the sample (n=300, 88.5%), did not have any contact information about the campaigns, and less than half (n=139, 41%) heard about the campaigns via social media or from their friends (n=128, 38.2%).

**3.5 Expectations to improve acceptance of BRS**

Table 7 displays the suggestions of the sample to improve and promote the acceptability of BSR. The majority highlighted an emotional response regarding the physician’s management of them as patients, and the cost of the surgery, procedure clarification, as well as the presence of a psychologist and social counselor affected the decision to consider BRS.

| Variable                | All         | Do you want to get a BRS |                | P-Value* |
|-------------------------|-------------|--------------------------|----------------|----------|
|                         |             | Yes                      | No             |          |
| All                     | 352 (100%)  | 197 (56%)                | 155 (44%)      |          |
| Age (Median ± SD)       | 45 ± 10.255 | 44.41 ± 9.217            | 47.70 ± 10.981 | 0.003    |
| Categorized age         | ≤45         | 115 (63.2%)              | 67 (36.8%)     | 0.005    |
|                         | > 45        | 82 (48%)                 | 88 (52%)       |          |
| <b>Nationality</b>      |             |                          |                | 0.086    |
| Saudi                   | 324 (92%)   | 177 (54.6%)              | 147 (45.4%)    |          |
| Non-Saudi               | 28 (8%)     | 20 (71.4%)               | 8 (28.6%)      |          |
| <b>Education</b>        |             |                          |                | 0        |
| Illiterate-Primary      | 46 (13%)    | 12 (26%)                 | 34 (74%)       |          |
| Intermediate- Secondary | 113 (32%)   | 61 (54%)                 | 52 (46%)       |          |
| Diploma-Bachelor        | 182 (52%)   | 115 (63%)                | 67 (37%)       |          |
| Master- Doctorate       | 11 (3%)     | 9 (82%)                  | 2 (18%)        |          |

|  |             |             |             |       |
|--|-------------|-------------|-------------|-------|
| <b>Marital status</b>  |             |             |             | 0.44  |
| not married  | 62 (18%)    | 32 (51.6%)  | 30 (48.4%)  |       |
| Married  | 290 (82%)   | 165 (56.9%) | 125 (43.1%) |       |
| <b>Employment status</b>   |             |             |             | 0.745 |
| Government sector  | 72 (20.4%)  | 44 (61%)    | 28 (39%)    |       |
| Private sector   | 69 (19.6%)  | 37 (53.6%)  | 32 (46.4%)  |       |
| Unemployed   | 211 (60%)   | 116 (55%)   | 95 (45%)    |       |
| <b>Do you have children</b>  |             |             |             | 0.987 |
| Yes  | 311 (88.4%) | 174 (56.0%) | 137 (44.0%) |       |
| No   | 41 (11.6%)  | 23 (56.1%)  | 18 (43.9%)  |       |
| <b>Household monthly income</b>                                      |             |             |             | 0.11  |
| Under 5000 SAR   | 87 (24.7%)  | 41 (47.1%)  | 46 (52.9%)  |       |
| 5000 to 10,000 SAR   | 121 (34.4%) | 70 (57.8%)  | 51 (42.2%)  |       |
| More than 10,0000 SAR  | 144 (40.9%) | 86 (59.7%)  | 58 (40.3%)  |       |
| <b>Residency area</b>  |             |             |             | 0.19  |
| Central Region   | 223 (63.4%) | 125 (56%)   | 98 (44%)    |       |
| Western Region   | 25 (7.1%)   | 13 (52%)    | 12 (48%)    |       |
| Eastern Region   | 46 (13%)    | 32 (69.6%)  | 14 (30.4%)  |       |
| Northern Region  | 31 (8.8%)   | 15 (48.4%)  | 16 (51.6%)  |       |
| Southern Region  | 27 (7.7%)   | 12 (44.4%)  | 15 (55.6%)  |       |
| <b>Place of residence</b>  |             |             |             | 0.001 |
| Village  | 33 (9.4%)   | 10 (30.3%)  | 23 (69.7%)  |       |
| City   | 319 (90.6%) | 187 (58.6%) | 132 (41.4%) |       |
| <b>Housing tenure</b>  |             |             |             | 0.02  |
| Owner occupancy  | 169 (48%)   | 84 (49.7%)  | 85 (50.3%)  |       |
| Tenancy/Shared ownership   | 183 (52%)   | 113 (61.7%) | 70 (38.3%)  |       |
| *Chi-Square. Breast reconstruction surgery =BRS, SA R= Saudi Riyals. |             |             |             |       |

**Table 1:** The association between demographic/socioeconomic factors and the desire to undergo Breast Reconstruction Surgery (BRS).

| Yes*   | Odds Ratio | 95%CI         | P-Value |
|--|------------|---------------|---------|
| Age  | 0.971      | 0.946 - 0.995 | 0.020*  |
| <b>Education</b>   |            |               |         |
| High School or less  | 0.196      | 0.037 - 1.028 | 0.054   |
| Diploma/Bachelor   | 0.391      | 0.079 - 1.945 | 0.251   |
| Higher Education**   |            |               |         |
| <b>Employment status</b>   |            |               |         |
| Government sector  | 0.776      | 0.404 - 1.491 | 0.446   |
| Private sector   | 0.531      | 0.281 - 1.003 | 0.051   |
| Unemployed**   |            |               |         |
| <b>Place of residence</b>  |            |               |         |
| Village  | 0.283      | 0.106 - 0.755 | 0.012*  |
| City**   |            |               |         |
| <b>Residency area</b>  |            |               |         |
| Central Region   | 1.148      | 0.419 - 3.148 | 0.788   |
| Western Region   | 0.946      | 0.265 - 3.374 | 0.932   |
| Eastern Region   | 1.992      | 0.607 - 6.529 | 0.255   |
| Northern Region  | 1.1        | 0.339 - 3.566 | 0.874   |
| Southern Region**  |            |               |         |
| <b>Breast Removed</b>  |            |               |         |
| No   | 0.645      | 0.355 - 1.173 | 0.151   |
| Yes**  |            |               |         |
| * Reference category is: Yes; want to undergo BRS, ** Reference groups |            |               |         |

**Table 2:** Multivariate logistic regression model of the predictors of the desire to undergo Breast Reconstruction Surgery (BRS) for patients with breast cancer.

| Variable  | Agreement <sup>^</sup> |            |
|---|------------------------|------------|
|   | Yes                    | No         |
| <b>Self-reflection</b>  |                        |            |
| To regain my confidence   | 164 (84.1%)            | 31 (15.9%) |
| To overcome Mastectomy  | 174 (88.8%)            | 22 (11.2%) |
| I always want to look beautiful   | 181 (92.8%)            | 14 (7.2%)  |
| <b>Inner negotiation</b>  |                        |            |
| To avoid being pitied by others   | 81 (41%)               | 115 (59 %) |
| Some of my relatives have had a BRS   | 88 (45%)               | 107 (55%)  |
| I found encouraging feedback on BRS on the Social Media   | 110 (55.8%)            | 87 (44.2%) |
| <b>Social influence</b>   |                        |            |
| My children encourage me to get a BRS   | 95 (60.5%)             | 62 (39.5%) |
| My husband talks about BRS in an encouraging way  | 84 (54%)               | 71 (46%)   |
| My mother pushes me to get a BRS  | 71 (44.7%)             | 88 (55.3%) |
| My relatives encourage me to get a BRS  | 109 (60%)              | 72 (40%)   |
| "Yes*"; patients want to undergo BRS, BRS; breast reconstruction surgery, ^ not applicable answers were excluded. |                        |            |

**Table 3:** The intellectual visualization and motivation toward breast reconstruction surgery (BRS): the answer is "Yes\*".

| Variable  | Agreement <sup>^</sup> |            |
|---|------------------------|------------|
|   | Yes                    | No         |
| <b>Self-reflection</b>  |                        |            |
| My fears of complications related to BRS  | 112(73.7%)             | 40(26.3%)  |
| I don't care about my physical appearance   | 50(33.3%)              | 100(66.7%) |
| My belief in fate and acceptance of it  | 140(91.5%)             | 13(8.5%)   |
| <b>Inner negotiation</b>  |                        |            |
| Traditions prevent me from getting such cosmetic surgeries                                  | 26(17.2%)              | 125(82.8%) |
| My family's rejection of BRS because of their fears of complications related to the surgery | 51(33.6%)              | 101(66.4%) |
| My income is insufficient for BRS   | 51(33.8%)              | 100(66.2%) |
| <b>Social influence</b>   |                        |            |
| Not knowing the details of the surgery  | 79(52%)                | 72(48%)    |

|   |           |           |
|---|-----------|-----------|
| Different opinions on BRS from people around me   | 77(50.3%) | 76(49.7%) |
| No one in my family encourages me to get a BRS  | 63(42%)   | 87(58%)   |
| "No*"; patients do not want to undergo BRS, BRS; breast reconstruction surgery, ^ not applicable answers were excluded. |           |           |

**Table 4:** The intellectual visualization and motivation toward breast reconstruction surgery (BRS): the answer is "No\*".

| A) Bilateral Mastectomy   |            | B) Unilateral Mastectomy |          |
|---|------------|--------------------------|----------|
| <b>Meet with neighbors and friends who have got a BRS</b>   |            |                          |          |
| Yes   | No         | Yes                      | No       |
| 38 (62.3%)  | 23 (37.7%) | 45 (33%)                 | 90 (67%) |
| <b>Meet relatives who have had a breast reconstruction surgery weekly</b>   |            |                          |          |
| Yes   | No         | Yes                      | No       |
| 38 (62.3%)  | 23 (37.7%) | 35(26%)                  | 100(74%) |
| <b>Meet with other survivors to discuss the BRS</b>   |            |                          |          |
| Yes   | No         | Yes                      | No       |
| 46 (75%)  | 15 (25%)   | 60 (44%)                 | 75 (56%) |
| <b>Encourage newly diagnosed breast cancer patients to consider a BRS</b>   |            |                          |          |
| Yes   | No         | Yes                      | No       |
| 56 (92%)  | 5 (8%)     | 121 (89%)                | 15 (11%) |
| BRS = Breast reconstruction surgery.<br>Only participants who want to undergo BRS were included in this analysis.<br>Bilateral Mastectomy =both breasts removed.<br>Unilateral Mastectomy = one breast removed. |            |                          |          |

**Table 5:** Mastectomy effect on social life: only participants who agree to undergo BRS.

| Variable  | Agreement <sup>^</sup> |             |
|---|------------------------|-------------|
|   | Yes                    | No          |
| Has the Ministry of Health conducted educational campaigns to encourage having a BRS?             | 78 (30%)               | 183 (70%)   |
| Has the Ministry of Health conducted health promotion campaigns to encourage having a BRS?        | 63 (28.2%)             | 160 (71.8%) |
| How did you hear about these campaigns?   |                        |             |
| Family  | 121 (36%)              | 215 (64%)   |
| Friends   | 128 (38.2%)            | 207 (61.8%) |
| Primary health care Center  | 51 (15.0%)             | 284 (85.0%) |
| Brochures on dealing with chronic diseases  | 83 (24.6%)             | 254 (75.4%) |
| Social media  | 139 (41%)              | 200 (59%)   |
| National newspapers and magazines   | 51 (15%)               | 286 (85%)   |
| Maternal and child care programs  | 34 (10%)               | 301 (90%)   |
| Have the organizers of these campaigns given you a hotline number for BRS?                        | 39 (11.5%)             | 300 (88.5%) |
| BRS; breast reconstruction surgery, <sup>^</sup> missing and not applicable answers were excluded |                        |             |

**Table 6:** Awareness level of the ability to do a breast reconstruction surgery (BRS) through the Ministry of Health’s initiatives in the National Transformation Program 2020 and the Saudi Vision 2030 in Saudi Arabia.

| Suggestions   | ^Agreement  |            |
|---|-------------|------------|
|   | Yes         | No         |
| I need to talk to me, not at me, and not be treated as a patient  | 302 (90%)   | 36 (10%)   |
| I find it necessary that such surgeries are affordable for me   | 279 (82.5%) | 59 (17.5%) |
| I want the social counsellor to be aware of the medical aspects when meeting me before doing the BRS    | 296 (88.0%) | 40 (12.0%) |
| I want the psychologist to be considerate of my feelings and emotions as a patient of a chronic illness | 277 (82.4%) | 59 (17.6%) |
| I want the social counsellor to follow up with my case after my Lumpectomy/Mastectomy                   | 300 (89.3%) | 36 (10.7%) |
| I need the help of psychologists throughout all the stages of the BRS                                   | 295 (87.8%) | 41 (12.2%) |
| I only need the help of my doctor throughout all the stages of the BRS                                  | 241 (71.5%) | 96 (28.5%) |
| BRS; breast reconstruction surgery, <sup>^</sup> missing and not applicable answers were excluded       |             |            |

**Table 7:** What is your suggestion to improve your acceptability to the breast reconstruction surgery (BRS)?.

#### 4. Discussion

BC has not only physical but also psychological, economic and social implications. Even after successfully overcoming the disease, BC survivors will have to live and adapt to the physical and psychological complications associated with the cancer treatment, which usually include a lumpectomy or mastectomy, chemotherapy, or radiotherapy. The complications may result in serious self-esteem and identity issues, caused by the idealized image of femininity projected towards women and the women's perceptions in society [22]. Research exploring the patients' perspectives is critical to the attentive and supportive implementation of patient-centered care and the development of awareness and psychosocial support strategies and decision-making methods. This study aimed to determine the factors affecting the patients' decisions to choose BRS post-mastectomy and identify the support need to facilitate making a decision to improve the outcomes. It is important to increase the level of awareness of patients with BC about BRS and to improve their psychological health. It is also essential to understand the information deficit between patients and physicians. However, limited literature is available exploring the awareness and recognition of BRS in the Middle East [23].

The current findings indicated that patients aged 45 years or younger were more interested in BRS than their older counterparts. This finding is consistent with literature from the United States [24, 25] and Australia [26]. This may be partly due to increasing complication rates and comorbidities associated with an older age. In addition, a higher the level of education and residing in a city was associated with higher acceptance of BRS. A possible explanation may be that metropolitans have more exposure

and knowledge about BRS. Social phenomena indicate that city dwellers care more about the outward appearance, the general shape of the body, and everything related to healthcare. Living a city life differs from the life in the countryside and other residential areas due to the nature, patterns, and complexity of urban life. In terms of the perception and expectation of patients with BC to choose BRS, the current study identified positive and negative feedback. On the positive side, the majority of the participants stated that BRS supports them in terms of self-confidence, initiates the return to their femininity, and supports overcoming the mastectomy. Psychological support can establish a "new normal," especially from the family and friends surrounding the patients with solid and direct social relationships. The current study supports the encouragement from relatives, followed by children, husbands, and mothers, as the most critical factor in choosing BRS.

Education of the patients and their family is critical to ensure informed decision-making. Patients should understand the decision-making process, regardless of the choice to receive healthcare because they are informed of their care and future treatment choices. The involvement of family members is a vital source of psychological stability for the patient and a source of support for a faster recovery [27]. Although 56% of the sample indicated an interest in BRS, the rest chose not to have it. The majority (91.3%) has no moral objection to the BRS but "choose faith over surgery" and accepted themselves as they are. The second highest reason for this refusal was the lack of knowledge and family support due to fears of complications related to the surgery. These findings are in line with literature reporting that attractiveness, femininity issues, and medical risks are the main factors for choosing or not choosing BRS

[28-31]. Mastectomy might be involved in persistent body dissatisfaction; the result is a drop in self-esteem, which leads to introversion and social inhibition [32]. Previous findings indicate that a lack of opportunity to discuss personal issues due to social isolation may exacerbate normality bias [33, 34]. Consistent with that view, the current findings show that women who had bilateral Mastectomy expressed a positive attitude toward social life and community engagement, unlike unilateral Mastectomy. This can be explained by their understandability of their status as survivors with recurrence, or bilateral Mastectomy which may have strengthened them to cope with their status as their experience might better prepared them to confront the challenges, reduce some fear and anxiety, and know where to go for support (family and friends). Women with breast cancer who experienced social isolation may reduce their opportunities to discuss health concerns with others and leads to long-term patient and provider delay [35].

In Saudi Arabia, some patients with BC received limited information about their options for post-mastectomy BRS. Due to the lack of awareness and access to BRS, the Saudi BC Campaigns and health awareness days were presented by the Ministry of Health, but the focus was primarily on early diagnosis of BC. Based on a study from Jeddah [23], 63% of women with a mastectomy lacked information about their options to undergo BRS, and 54% had incorrect information. The current finding supports the Alwan et al. study, as one of the main barriers to receive BRS was the lack of information regarding the surgery. In addition, most of the sample were not aware of the Ministry of Health's educational and promotion campaigns. According to the findings, the Ministry of Health has not conducted enough educational campaigns and health promotion to encourage BRS. It is unclear whether this resulted from the surgeon's

information oversight or whether the women did not recall a discussion that they had with their healthcare provider. Awareness messages should be dispersed to communities and healthcare workers for all eligible patients to have BRS post-mastectomy, to be informed of their options. Government and non-governmental agencies play an essential role in disseminating awareness and knowledge to the public. To deliver motivational information to improve the patient's knowledge, the Saudi Breast Cancer Association, such as Zahra, in cooperation with governmental (Ministry of Health in Saudi Arabia) and non-governmental organizations should support the dissemination and propagation of resources that focuses on increasing knowledge and understanding regarding BC and BRS. Psychosocial oncology is an essential branch within medical oncology, with the mission to facilitate patients and their families' understanding of the cancer diagnosis and to improve their emotional health and quality of life [36].

The current study indicated that when the participants were asked how to improve their acceptance for BRS, they responded that follow-up post lumpectomy or mastectomy is essential. The majority (71.5%) emphasized the importance of their oncologist's presence throughout their recovery stage, including BRS. Health professionals remain the primary source of information for women who are starting treatment and affirm the information they receive. Clinicians, in general, have an ethical duty to discuss all clinically appropriate options for BRS to ensure women with BC are knowledgeable. A multidisciplinary team of surgeons, plastic or oncoplastic surgeons, and psychologists are required to form a pre-operative consultation team to inform patients of their options and the consequences of BRS appropriately. Post-mastectomy, BRS has always been

an option for patients with BC; 76% and 74% of British and USA general surgeons, respectively, refer their patients to plastic surgeons [37, 38]. This situation differs significantly in Saudi Arabia. Only one study from Jeddah assessed the attitude and perception of surgeons to BRS post-mastectomy, and only 35.5% of the surgeons referred their patients for BRS post-mastectomy. It is essential to stress that an oncology psychologist is necessary to deliver and elucidate the plans and options available to patients. Previous studies reported that patients who use such resources spend less time with their oncologist, resulting in increased patient empowerment [39].

## 5. Conclusion

Regardless of the category of the BC diagnosis, women scheduled to undergo a mastectomy should be fully aware of the breast-cosmetic options offered. A major aspect of this care plan is to provide knowledge about breast reconstruction following the mastectomy. Knowledge of the options available should be provided in person by healthcare professionals. Supporting printed and web-based educational resources in layman's terms, explaining each option's advantages and disadvantages, should be provided.

## Declaration

### Funding

No funding was received to assist with the preparation of this manuscript.

### Conflict of interest

There is no conflict of interest to declare.

### Financial interests

Financial interests or non-financial interests to disclose.

## Availability of data and material

All data are available within the manuscript

## Ethical statement

This study was approved by the Institutional Review Board of King Abdullah International Medical Research Center and the Research Ethics Committee of National Guard Health Affairs in collaboration with Princess Noura bint Abdulrahman University in Riyadh, Saudi Arabia, with the number RC19/446/R and has been performed in accordance with the ethical standards required.

## Author contributions

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## Consent to participate

Informed consent was obtained from all the participants before starting the survey.

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