Research Article

Factors Influencing Patients' Perception Regarding Post-Mastectomy Breast Reconstruction

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Abstract:

Background: Carcinoma Breast is prevalent cancer in females, with mastectomy being a common treatment. However, mastectomy can negatively impact body image, sexual function, and mental health. Breast reconstruction (BR) can help mitigate these effects and improve body image and self-esteem.

Objectives: To determine the perception and degree of awareness of patients regarding BR. To identify the factors that affected patients' decisions to undergo BR.

Design: Cross-sectional study.

Setting and Participants: Sixty female breast cancer patients admitted to the West Surgery Department of Mayo hospital (KEMU) Lahore, Pakistan, were included by consecutive sampling. A validated tool - Scale for Motive for and against Breast Reconstruction and a predesigned questionnaire were used for the collection of data through interviews. SPSS (v 26.0) was used for its analysis.

Results: Altogether, 60 patients were included, of whom 14 (23.3%) were willing to undergo BR. Those who desired BR were younger (38 vs. 50 years, p=0.001), and highly educated (p = 0.001). The main reasons to undergo BR were to physically look as before mastectomy (Mdn 6; IQR 5–6) and desire to have breast symmetry (Mdn 5.5; IQR 5–6) while the main deterrent was fear of negative outcomes of the BR procedure (Mdn 6; IQR 5–6.25).

Conclusion: Younger, more educated patients were more likely to desire breast reconstruction. Misinformation and misconceptions about the procedure deterred some patients. Educating patients about the options could increase the number of those choosing BR.

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Keywords: Breast reconstruction, Breast cancer, Mastectomy.

INTRODUCTION:

Cancer is an arising issue in the world, especially carcinoma Breast which is the most diagnosed cancer in women after skin cancer, with almost 2300000 cases detected annually 1. In Asia, Pakistan has the highest incidence of carcinoma breast, where one out of every nine women is affected. In Pakistan, the number of recorded cases was 25, 928 in 2020, accounting for 14.5 percent of total cancer cases. After analyzing the recent trends of the population, this incidence is expected to increase2.

The treatment approach for breast cancer is chosen on an individualized basis. Total mastectomy is one of the major treatments for patients that cannot go through a breast-conserving procedure and who opt for this procedure for prophylaxis. Approximately 45% of breast carcinoma patients who are in the early stage undergo the procedure of mastectomy. However, the removal of a breast through this procedure has the possibility of harming the self-image, and sexual and mental health of the women 3, 4.

To counter the detrimental effects of mastectomy, breast reconstruction may be offered to post-mastectomy patients. According to recent studies, women who go through breast reconstruction enjoy an improvement in body image, mental health, and sexual relationships as compared to women selecting mastectomy without BR 5, 6

Breast reconstruction (BR), a surgical procedure of restoring a breast's form and appearance, can be performed at the time of mastectomy or as a second surgery after a while. Different methods are available for breast reconstruction which include implants and autologous tissue, or in some cases a combination of both 7. Although the percentage of patients undergoing breast reconstruction has improved over the last few years, it still ranges from 5% to 42%. A recent survey by the American Society of Plastic Surgeons suggested that the percentage of women who are not aware of the possible available options for breast reconstruction is 80% 8.

In a ten-year audit of BR at Agha Khan University, Pakistan, by Samiullah Abdullah et al., 64 reconstructions were carried out, with 51 patients (85%) receiving immediate reconstruction and 9 patients (15%) receiving delayed reconstruction. Among these reconstructions, 31 (51.7%) were autogenous and 29 (48.33%) were implant-based. These numbers are relatively low when compared to international standards 9.

Various factors serve as potential barriers to undergoing breast reconstruction, the most significant being fear of cancer relapse10, followed by failure of general surgeons to explain various reconstruction choices after mastectomy11. The decision for breast reconstruction usually has several steps and women prefer having more time and information before the final decision. Thus, women do not always feel well prepared and the decision for breast reconstruction can be a complicated one made under stressful conditions12.

In Pakistan, there is a lack of sufficient literature in this field. This study is the first of its kind to evaluate patients' attitudes and various factors affecting their willingness to go through breast reconstruction.

METHODS AND MEASURES:

Study design and Data Collection:

A cross-sectional study spanning a period of four months (August 2022 to November 2022) was conducted among female patients of breast cancer admitted to the West surgery Department, Mayo Hospital, Lahore. The sample size required for the study was estimated using 10% absolute precision, and a 95% confidence level, and the percentage of undergoing Breast reconstruction was expected as 16.5%13. The required sample size was estimated to be 53, and a total of 60 individuals took part in this study. The sampling technique applied was non-probability sampling. Provided the hospital setting of the study, the interviewers were trained to correctly approach the participants under the guidance of the supervisors.

Variables for the Questionnaire:

A previously published survey was the basis for the development of our structured questionnaire3, 8. A pilot study was conducted, and the results were utilized to further filter this study. Logical validity was evaluated by the two specialists. The set of questions comprised 42 variables which were split into 4 parts.

1. Demographic characteristics of the patients.
2. Questions regarding breast cancer including the diagnosis time, modes of treatment which were received, and history of carcinoma breast in the family.
3. The perception of the patient regarding breast reconstruction. It involved queries about previous knowledge of breast reconstruction and the patient's source of information.
4. Scale for Motive for and against Breast Reconstruction. (SMBR) [14].

The questions were translated into Urdu to facilitate the conversation between participants and researchers.

Statistical Analysis:

Descriptive statistics were undertaken to sum up the sociodemographic characteristics. The qualitative variables were described using frequency and proportions, while the quantitative variables were summed up using median (Mdn) and interquartile range (IQR). The patients who expressed willingness or unwillingness to go through breast reconstruction were compared for all the variables by using cross-tabulations, with P values presented as Chi-square values. On the expected cell count lower than five, Fisher exact test was used. SPSS version 26.0 was utilized for the statistical analysis with a 95% confidence interval. Less than 0.05 p-value indicated that the results were statistically significant.

RESULTS:

The research included 60 participants with a median age of 49 years (range 27-58), of whom 50% had no formal education and 50% had a monthly income of 15,000 – 49,999 PKR. Of the participants, 14 (23.3%) expressed an interest in undergoing breast reconstruction (BR).

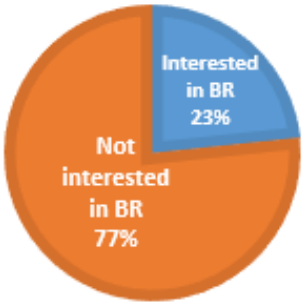

Figure 1: Preference regarding breast reconstruction.

Younger age (median 38 vs. 50 years) and higher education level were associated with a greater likelihood of desiring BR (p=0.001), as was a higher income level (p=0.002). Relationship status and motherhood were not found to be significant factors in determining patients' willingness to undergo breast reconstruction as seen in **Table 1**.

Table1. Sociodemographic characteristics.

	Interested in BR n=14	**Not interested in BR n=46**	**p-value**
Median age (years)	38 (27 - 58)	50 (32 - 58)	
Age Group			
18-40 years	9 (56.3%)	7 (48.3%)	0.001
41-80 years	5 (11.4%)	39 (88.6%)	
Currently in a relationship			
Yes	12 (30.0%)	28 (70.0%)	0.112
No	2 (10.0%)	18 (90.0%)	
Level of Education			
No formal education	2 (6.7%)	28 (93.3%)	0.001
Primary education	2 (16.7%)	10 (83.3%)	
Matriculation	2 (50.0%)	2 (50.0%)	
Intermediate	4 (66.7%)	2 (33.3%)	
Higher education (undergraduate and postgraduate)	4 (50.0%)	4 (50.0%)	
Household income per month			
< 15k PKR	3 (18.8%)	13 (81.3%)	0.002
15k -49,999 PKR	3 (10.0%)	27 (90.0%)	
50k -99,999 PKR	7 (70.0%)	3 (30.0%)	
>100k PKR	1 (25.0%)	3 (75.0%)	
Children			
Yes	13 (25.5%)	38 (74.5%)	0.671
No	1 (11.1%)	8 (88.9%)	

BR, Breast Reconstruction

Patients who received a breast cancer diagnosis between one to five years ago were found to have a lower inclination to consider BR, as indicated by statistical significance with a p-value of 0.002. **Table 2** shows data on the frequency and proportion of the various treatment methods used for both groups.

Table 2. Information related to breast cancer

	Interested in BR n=14	**Not interested in BR n=46**	**p-value**
Time since diagnosed with breast cancer	12 (42.9%)	16 (57.1%)	0.002
< 1 year	1 (3.8%)	25 (96.2%)	
1 to 5 years	1 (16.7%)	5 (83.3%)	
5- to 10 years			

What types of medical interventions have you received thus far, or would you be willing to undergo in the future?	12 (23.1%)	40 (76.9%)	1.000
Surgery	1 (11.1%)	8 (88.9%)	0.671
Neoadjuvant chemotherapy	7 (23.3%)	23 (76.7%)	1.000
Adjuvant chemotherapy	5 (33.3%)	10 (66.7%)	0.309
Adjuvant radiotherapy	1 (25.0%)	3 (75.0%)	1.000
Hormone therapy			
Family history of breast cancer			
Yes	4 (44.4%)	5 (55.6%)	0.193
No	10 (19.6%)	41 (80.4%)	

BR, Breast Reconstruction

As seen in **Table 3,** Knowledge of BR was not significantly associated with the decision to pursue the procedure. Only 4 (6.67%) patients reported receiving information on BR options from their general surgeons.

Table 3. Perception of breast reconstruction

	Interested in BR n=14	**Not interested in BR n=46**	**p-value**
Are you familiar with the term "breast reconstruction"?			
Yes	6 (46.2%)	7 (53.8%)	0.058
No	8 (17.0%)	39 (83.0%)	
If you have heard of breast reconstruction, can you share what you know about it?			
I am not familiar with this subject	1 (25.0%)	3 (75.0%)	0.860
Artificial implant	3 (60.0%)	2 (40.0%)	
Autologous implant	1 (50.0%)	1 (50.0%)	
Both	1 (50.0%)	1 (50.0%)	

What was the source of your information regarding breast reconstruction?	2 (66.7%)	1 (33.3%)	0.559
Doctors	4 (50.0%)	4(50.0%)	
Family members/ Friends	0 (0.00%)	2 (100.0%)	
Social media			

Did your surgeon provide you with information or discuss the possibility of breast reconstruction as an option?			
Yes	2 (50.0%)	2 (50.0%)	0.230
No	12 (21.4%)	44 (78.6%)	

BR, Breast Reconstruction

The results of the SMBR questionnaire are presented in **Table 4 and Table 5**. Overall, patients who expressed a desire for breast reconstruction reported that their main motivations for undergoing the procedure were "I wish to regain my pre-mastectomy appearance." (Mdn 6; IQR 5–6) followed by "I seek to improve my self-esteem." (Mdn 5.5; IQR 5–6), "I want to feel more secure about my body" (Mdn 5.5; IQR 4–6) and "I desire to have breast symmetry" (Mdn 5.5; IQR 5–6). On the other hand, patients who were unwilling to undergo BR in this group listed their primary reasons as "Concerns about the high cost of breast reconstruction." (Mdn 4.5; IQR 3–5), "Fear of negative outcomes of BR procedure" (Mdn 4; IQR 4–4), "Fear that daily activities would be difficult while recovering from breast reconstruction" (Mdn 4; IQR 2.5-4) "Fear of pain after breast reconstruction." (Mdn 4; IQR 3.5–4) "Concern about the recurrence of cancer after undergoing breast reconstruction." (Mdn 4; IQR 2.5–4).

Conversely, in the group that did not desire to undergo BR, none of the reasons for BR reached a median score greater than 2. The primary reasons stated against the BR procedure were "Fear of negative outcomes of BR procedure" (Mdn 6; IQR 5–6.25), "I am tired of undergoing surgical procedures." (Mdn 6; IQR 5–7), "Breast reconstruction is not important to me." (Mdn 6; IQR 5–7), "Breast reconstruction is not necessary at my age." (Mdn 6; IQR 4.75–7), and "Unfamiliar with the various surgical options for breast reconstruction. " (Mdn 5; IQR 2–6).

Table 4. Scale for Motive for and against Breast Reconstruction (SMBR)

	Interested in BR n=14	**Not interested in BR n=46**	**p-value**
1—I experience emotional distress since the mastectomy.	5.0 (4.75-6.00)	1.0 (1.00-2.00)	0.000
2—I desire to feel more attractive.	5.0 (3.75-5.00)	1.0 (1.00-2.00)	0.000
3—I feel incomplete as a woman	5.0 (4.00-6.00)	1.00 (1.00-1.00)	0.000
4—I seek to improve my self-esteem.	5.50 (5.00-6.00)	2.0 (1.00-2.00)	0.000
5—I am dissatisfied with how my clothes fit.	5.0 (4.00-6.00)	1.0 (1.00-2.00)	0.000
6—Using an external prosthesis causes me problems.	4.0 (3.75-5.00)	1.0 (1.00-2.00)	0.000
7— I believe breast reconstruction can improve my emotional well-being	5.0 (5.00-6.00)	2.0 (1.00-2.00)	0.000
8—I want to have more clothing options and feel liberated.	5.0 (3.75-5.00)	1.0 (1.00-1.00)	0.000
9— I wish to regain my pre-mastectomy appearance.	6.0 (5.00-6.00)	1.0 (1.00-2.00)	0.000
10—I want to feel more secure about my body.	5.5 (4.00-6.00)	1.0 (1.00-2.00)	0.000
11—I desire to have breast symmetry.	5.5 (5.00-6.00)	2.0 (1.00-3.00)	0.000
12—Breast reconstruction can help me feel more feminine.	5.0 (4.75-6.00)	1.0 (1.00-2.00)	0.000
13—I want to be able to look at my naked body in the mirror.	5.0 (4.75-6.00)	1.0 (1.00-1.00)	0.000
14—I want my children to see my breasts as more natural.	5.0 (4.00-6.00)	2.0 (1.00-2.00)	0.000
15— I want to put this chapter of my life behind me.	5.0 (4.00-6.00)	2.0 (2.00-2.00)	0.000
16—I want to please my partner.	4.5 (3.00-5.00)	1.0 (1.00-2.00)	0.000
17— Fear of negative outcomes of BR procedure.	4.0 (4.00-4.00)	6.0 (5.0-6.25)	0.000

18—Concerns about the high cost of breast reconstruction.	4.5 (3.00-5.00)	5.0 (3.00-7.00)	0.013
19—I am tired of undergoing surgical procedures.	3.0 (3.00-4.00)	6.0 (5.00-7.00)	0.000
20—Breast reconstruction is not important to me.	2.0 (2.00-2.25)	6.0 (5.00-7.00)	0.000
21—I am satisfied with my body after a mastectomy.	2.0 (2.00-2.25)	5.0 (4.00-6.00)	0.000
22—Breast reconstruction is not necessary at my age.	2.0 (1.75-3.00)	6.0 (4.75-7.00)	0.000
23—Fear that daily activities would be difficult while recovering from breast reconstruction.	4.0 (2.50-4.00)	5.0 (5.00-6.00)	0.000
24—I am comfortable wearing an external prosthesis	2.0 (1.75-2.25)	4.0 (2.00-4.00)	0.004
25— Fear of pain after breast reconstruction.	4.0 (3.50-4.00)	6.0 (5.00-6.00)	0.000
26— Concern about the recurrence of cancer after undergoing breast reconstruction.	4.0 (2.50-4.00)	5.0 (4.00-6.00)	0.000
27 —Concerns about my health condition, such as diabetes, obesity, and hypertension.	2.0 (2.00-4.00)	4.0 (3.00-5.25)	0.007
28—Insufficient information to make a final decision about breast reconstruction.	2.0 (2.00-3.25)	4.5 (2.00-6.25)	0.019
29— Unfamiliar with the various surgical options for breast reconstruction.	2.0 (2.0-3.25)	5.0 (2.00-6.00)	0.010

Table 5. The median (interquartile range) scores were obtained from the SMBR questionnaire.

	Interested in BR n=14	**Not interested in BR n=46**	**P value**
Total score- Motives for	78.00 (72.25-92.00)	22.00 (19.00-27.00)	P<0.001
Total score- Motives against	37.50 (35.00-41.25)	61.00 (58.00-75.00)	P<0.001
The subset of reasons against breast reconstruction is related to anxieties, worries, and expenses.	24.50 (21.00-27.00)	36.50 (32.00-41.00)	P<0.001
The subset of reasons against breast reconstruction is associated with insufficient knowledge or awareness.	4.00 (4.00-6.50)	9.00 (4.00-13.00)	P=0.012
The subset of reasons against accepting breast reconstruction	8.00 (7.50-10.25)	20.50 (18.00-23.00)	P<0.001

BR, Breast Reconstruction.

DISCUSSION:

Limited studies are available regarding the proportion and attitude of patients of breast reconstruction in Pakistan. In this study, a substantial percentage of patients (76.7%) were not interested in BR. This is in line with that of many other populations Nicaragua (77%) 15 and the USA (78%) 16 and more than the UK (50%) 17, Mexico, India, and Saudi Arabia.

Women who wished to go through BR were younger and more literate than those who did not want to undergo BR. Following the mastectomy, patients reported feeling less sexually attractive, experiencing greater bodily deformity, and diminished femininity. These findings are expected as previous studies have indicated that opting for BR is linked to a lower age bracket. Moreover, specific reasons to undergo BR reported by females were to look physically the same as before mastectomy, to feel more secure, to have breast symmetry, to close this chapter of life, and for their children. This is similar to other research 17, 18, so we can say that Breast reconstruction is tied to cosmetic reasons but we can see that another factor of motherhood can be seen here. In our cohort, Economical and socioeconomic status was highly associated with the desire for uptake of BR just like that of many other populations 19, 20, 21. Unlike in the United States and the United Kingdom, where reconstruction is an essential component of the treatment of carcinoma breast 22, 23, the health system in Pakistan does not provide coverage for this service. So, this makes a lot of sense considering that the monthly income of 50% was 15,000 – 49,999 PKR and the price of breast reconstruction in Pakistan is around 2.5 lac PKR.

Furthermore, the fact that only 13 (21.67%) of research participants have heard about BR suggests that there may be a major information gap that prevents the acceptance of this procedure. Given that some of the reasons against having the operation were "Unfamiliar with the various surgical options for breast reconstruction." And "Insufficient information to make a final decision about breast reconstruction," This could potentially have a significant effect on patients who have shown interest in breast reconstruction (BR). Since patients indicated that “Concern about the recurrence of cancer after undergoing breast reconstruction.” was one of the major obstacles to using BR, it was also believed that having BR may adversely affect their prognosis. Like earlier articles, we believe that by equipping patients with adequate knowledge regarding breast reconstruction (BR), such a false belief may be easily disproved. It is noteworthy that alerting patients undergoing mastectomy surgeries about the possibility of BR is not required under the recommendations of national consensus for the diagnosis and management of carcinoma breast 24, 25.

Only 4 (6.67%) of the participants in the study could recall a conversation with a doctor regarding breast reconstruction, which emphasizes the necessity of measures at the institutional level to improve the population's poor access to information. To increase the use of this method, all patients with carcinoma breast undergoing total mastectomy therapy should be

informed about the possibility of having BR. To enhance collaborative decision-making, it is important to discuss the practicality of the procedure, the various available options based on specific clinical aspects, and the anticipated risks and benefits, after sharing information. Such a conversation should be held regardless of the patient's financial situation, age, marital status, or kind of healthcare coverage. We have not yet fully analyzed the reasons behind doctors' propensity to under-inform patients about this procedure in Pakistan public healthcare facilities, but it may be due to some of the cultural and religious beliefs of Pakistani doctors and also because most of the mastectomy surgeries are done in public Hospitals of Pakistan where surgeries and health care is free of cost so the most appropriate health care is not being provided. The study by Alderman et al. provides support for the notion that the perception of a physician towards access barriers can result in a low referral rate for breast reconstruction (BR). Conversely, higher rates of BR conversations between patients and doctors have been documented in other populations. Given that sufficient information has been associated with increased BR uptake in prior research, addressing the information deficit in this demographic may be a critical step in enhancing national BR adoption and improving care for post-mastectomy breast cancer patients.

LIMITATIONS:

There are various limitations to this study. First off, the data might have been skewed in some way as it was self-reported by the participants. The survey used in our study was designed to evaluate interest in and information distribution about BR, and its effectiveness has not yet been established, despite our efforts to utilize well-established survey tools whenever possible. Thirdly, given the small sample size, the findings only accurately represent the experiences of one tertiary care hospital. As a result, probably, the findings cannot be extrapolated to other countries.

CONCLUSION:

Patients who were younger and more literate were willing to go through the procedure of BR. Inaccurate information and misconceptions about breast reconstruction were identified as significant factors that deterred patients from going through the procedure. Increasing knowledge regarding BR can have a positive impact on increasing the number of patients undertaking the procedure.

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