Original Article :

Breast Reconstruction Satisfaction Among Breast Cancer Patients in Saudi Arabia

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Abstract

Background & Aims:

Breast cancer patients represent the largest group of cancer survivors. Breast reconstruction post-mastectomy has significantly increased worldwide. The aim of this study is to know the level of satisfaction about breast reconstruction among breast cancer patients.

Methods:

This cross-sectional study was conducted on women with breast cancer who underwent reconstruction post-mastectomy in a tertiary hospital in Riyadh in the period from January 2013 to August 2018. Satisfaction of patients about reconstruction were collected using (Breast Reconstruction satisfaction questionnaire).

Results:

A total of 53 participants were considered. 58.4% had a university education or above, and only 32.1% had an income of <5000 SR. No more than 7.5% and 11.3% were unsatisfied and strongly unsatisfied with their self-image. 30.2% were strongly unsatisfied about the discussion with a plastic surgeon prior to reconstruction. 81.1% would recommend the type of reconstruction to a friend, and 77.4% agreed that they

الملخص

الخلفية و الاهداف :

امرضى أورام الثدي يشكلون أكبر فئة ممن يتماثلون للشفاء من بين جميع الأورام. جراحة تجميل الثدي بعد استئصاله أصبحت اكثر شيوعا على مستوى العالم. الهدف من هذه الدراسة هو معرفة مدى رضا مرضى أورام الثدي من جراحة تجميل الثدي بعد خضوعهم لعملية تجميل الثدي.

طريقة البحث :

هذه دراسة مقطعية تم إجراؤها على نساء مشخصين بأورام الثدي وأجروا جراحات تجميل الثدي بعد استئصاله في مدينة طبية بالرياض في الفترة بين يناير ٢٠١٣ و أغسطس ٢٠١٨. تم الحصول على مدى رضا المرضى في هذه الدراسة باستخدام استبيان معد خصيصا لهذا الغرض (استبيان مدى الرضا عن جراحة تجميل الثدي).

النتائج :

احتوت الدراسة على ٥٣ مريضة. ٥٨.٤٪ منهم لديهم تعليم جامعي او أعلى. فقط ٣٢.١٪ من المرضى دخلهم أقل من ٥٠٠٠ ريال سعودي. لا يوجد أكثر من ٧.٥٪ و ١١.٣٪ ممن كانوا غير راضين و غير راضين جدا عن صورتهم الذاتية. ٣٠.٢٪ كانوا غير راضين جدا عن نقاشهم مع جراح التجميل قبل العملية. ٨١.١٪ قالوا انهم سيوصون اصدقائهم بجراحة تجميل الثدي في حال احتاجوها ، و ٧٧.٤٪ اتفقوا انهم سيجرون نفس جراحة تجميل الثدي اذا عاد بهم الزمن. ٧٩.٢٪ - ٨٨.٧٪ قالوا انهم لا يعانون من أية مشاكل في

would choose this type of reconstruction if they had to do it all over again. 79.2% to 88.7% reported no arm concerns at all. 45.3% of patients reported that it took them longer than expected to recover, and 52.8% of patients reported that the surgery was complex. Patients with above university-level education were significantly more satisfied about their recovery (P=0.003). Patients whose income was >20000 SR were more satisfied about their recovery (P=0.029). Patients with higher income were more satisfied about their self-image (P=0.033).

Conclusion:

Majority of patients were generally satisfied with their breast reconstruction. However, recovery subscale showed less satisfaction. Also, a relatively high percentage were not satisfied about the discussion with a plastic surgeon prior to the reconstruction. High income and high educational level patients were generally more satisfied.

Key words:

Breast Reconstruction, Breast Cancer, Self-image

الذراع او الكتف. ٤٥.٣٪ من المرضى ذكروا بأن التعافي من جراحة تجميل الثدي اخذ وقتا اكثر مما كانوا يتوقعونه ، و ٥٢.٨٪ من المرضى ذكروا بأن الجراحة كانت معقدة. المرضى ذوو المستوى التعليمي أعلى من الجامعي اظهروا رضا اكثر ممن دونهم في المستوى التعليمي بما يخص التعافي من الجراحة (P=٠,٠٠٣). المرضى ذوو الدخل > ٢٠٠٠٠ ريال سعودي اظهروا رضا اكثر ممن دونهم في الدخل بما يخص التعافي من الجراحة (P=٠,٠٢٩). المرضى ذوو الدخل العالي اظهروا رضا اكثر ممن دونهم بما يخص الصورة الذاتية (P=٠,٠٣٣).

الاستنتاج:

عموما ، غالبية المرضى اظهروا رضا عن جراحة تجميل الثدي بجميع جوانبها ، عدا التعافي من الجراحة. أيضا نسبة كبيرة من المرضى كانوا غير راضين عن نقاش ما قبل جراحة تجميل الثدي مع جراح التجميل. المرضى ذوو التعليم العالي و الدخل العالي اظهروا رضا عن الجراحة اكثر من غيرهم.

الكلمات المفتاحية:

جراحة تجميل الثدي ، ورم الثدي ، الصورة الذاتية

Introduction:

Breast cancer is the most common cancer in women worldwide [1]. 2.1 million people are diagnosed with breast cancer annually 1. Yearly in US, 1 out of 8 women are diagnosed with breast cancer [2]. In 2019, the American Cancer Society stated that the number of patients who were diagnosed with invasive breast cancer was over 268600, and approximately 41760 women died from breast cancer [2]. In Saudi Arabia, incidence rate of breast cancer varies between regions as Riyadh's incidence was 20.5 per 100000, whereas Jazan's was 4.8 per 100000 [4]. Breast cancer constitutes 29% of all newly diagnosed cancers in Saudi women in 2020 [5].

It is well known that the largest group of cancer survivors are breast cancer patients. Breast cancer treatment plan is dependent on tumour characteristics and patient wishes. Surgical options include breast conserving therapy, mastectomy alone or mastectomy with breast reconstruction (BR). BR can be defined as surgical procedures aimed to adjust breast shape. It can be performed immediately after mastectomy or delayed as a separate procedure. BR procedures include implants, autologous tissue (transverse rectus abdominis and latissimus dorsi flaps), or both. Tissue expansion using a temporary expander followed by replacement with a permanent implant is the most common method of re-

construction [2]. In a recent Hungarian study done on breast cancer patients on the day before mastectomy, patients aged 56 – 65 were the most group desiring BR [3]. Above 65 year old breast cancer patients often do not prefer breast reconstruction after mastectomy [3].

Generally, number of patients undergoing BR in Saudi Arabia is not high. In a previous study at 2 centers in Jeddah, the percentage of patients who underwent breast reconstruction was 16.5% 6. Moreover, studies in England and Denmark reported similar rates [7, 8]. Australian study showed lower reconstruction rate 9.4% 9. However, reconstruction rate increased significantly from 24.8% in 2003 to 29.3% in 2007 as an American study in California reported [10]. Also, other studies in the United States stated that BR rate reached 59% [11, 12].

BR decision-making is not an easy process for the patient. First, the patient gets the diagnosis of breast cancer and the option to undergo mastectomy. Second, the patient is given the options for BR by plastic surgeon with clarifying potential benefits and risks for each BR method. Decision is influenced by the stressful circumstance of being just diagnosed with breast cancer. A previous study found that almost half of general surgeons reported that they had breast cancer patients who were treated with mastectomy alone and refused BR despite being advised to consider it [13].

A recent review of studies that investigated breast cancer recurrence after BR showed that BR does not affect oncological consequences of the cancer and its relapse [14]. Moreover, it has good effects on patient's self-esteem, femininity, and sexuality. Thus, it is surprising knowing that a study reported that a large portion of patients (80%) refused BR [15]. Therefore, counselling post-mastectomy breast cancer patients for considering BR becomes important [16]. Lately, BR has been more accepted between mastectomy patients as they experience additional psychosocial suffering due to their life-threatening conditions and distorted body image [16, 17]. The aim of this study is to know the level of satisfaction about breast reconstruction among breast cancer patients.

Methods and Materials:

This is a cross-sectional study that was conducted at King Fahad Medical City (KFMC), Riyadh, Saudi Arabia. It included all breast cancer patients who had unilateral and bilateral mastectomy along with immediate and delayed breast reconstruction from January 2013 to August 2018. The study excluded patients with psychiatric disorders after the surgery.

Since BR is not commonly done and there are only 10-12 patients per year, all pa-

tients who fulfil inclusion criteria in the study period and were recorded in the KFMC database were included.

KFMC is one of the largest and fastest growing medical cities in the Middle East with a total capacity of 1200 beds. It has main, children specialized, women specialized and rehabilitation hospitals. In addition to heart, neuroscience, and obesity centers.

We used a well-validated survey (Breast Reconstruction satisfaction questionnaire, BRECON-31) [18]. This questionnaire has 31 items that evaluate satisfaction of breast reconstruction patients in terms of 8 subscales (Self-image, Arm concerns, Intimacy, Satisfaction, Recovery, Self-conscious, Expectations, Appearance). In our study, some of the questions were omitted as they were socially inconvenient.

The questionnaire was translated to Arabic and then cross translated to English by a professional linguist to ensure the meaning of the questions were conveyed credibly. Data were collected through an electronic questionnaire.

This study was reviewed and approved by the Institutional Review Board at King Fahad Medical City. Participants were informed that participation is completely voluntary and informed consents were taken. The identities of participants were anonymous and confidential. All information obtained in this study were stored in a secure place and kept strictly confidential and anonymous.

Statistical analysis:

Data were analyzed by using Statistical Package for Social Studies (SPSS 23; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean ± standard deviation, and categorical variables were expressed as percentages. One-way ANOVA was used for continuous variables. A p-value <0.05 was considered statistically significant.

Results:

We performed this study to assess the level of satisfaction about BR among breast cancer patients after undergoing the procedure. The total number of the current study participants is 53 women—more than half have a university education or above and live in central Saudi Arabia. More than two-thirds of the respondents have a monthly income of >5000 Saudi Riyals. Demographic characteristics of the patients are shown in [Table 1].

The answers to the BRECON-31 questionnaire subscales are shown in [Table 2]. The results were generally positive, and most patients were "satisfied" or "strongly satisfied" with all subscales except for recovery. For the self-image subscale, most of the patients were either satisfied or strong-

Table 1. Demographic characteristics of the patients.

		Number	Percentage
Educational level	Secondary	22	41.5
Income	University	27	50.9
	Above university	4	7.5
	<5000SR	17	32.1
	5000-10000 SR	21	39.6
	10000 -20000 SR	13	24.5
	>20000 SR	2	3.8
Area	Central	30	56.6
	West	6	11.3
	East	5	9.4
	South	6	11.3
	North	6	11.3

ly satisfied. No more than 7.5% and 11.3% were unsatisfied and strongly unsatisfied, respectively. For the expectations subscale, a relatively high percentage (30.2%) were strongly unsatisfied with the statement "the plastic surgeon told me what I needed to know". All assessed items in the appearance and intimacy subscales were scored as "satisfied" by a percentage ranging from 60.4% to 73.6%, "strongly satisfied" by 9.4% to 15.1%. In terms of general satisfaction with the surgery, 60.4% were "satisfied", 15.1% were "strongly satisfied"; 77.4% agreed that they would choose this type of reconstruction if they had to do it all over again, and more than 80% would recommend this type of breast reconstruction to a friend. The arm concerns subscale showed positive results: 79.2%-88.7% of the respondents reported no troubles in

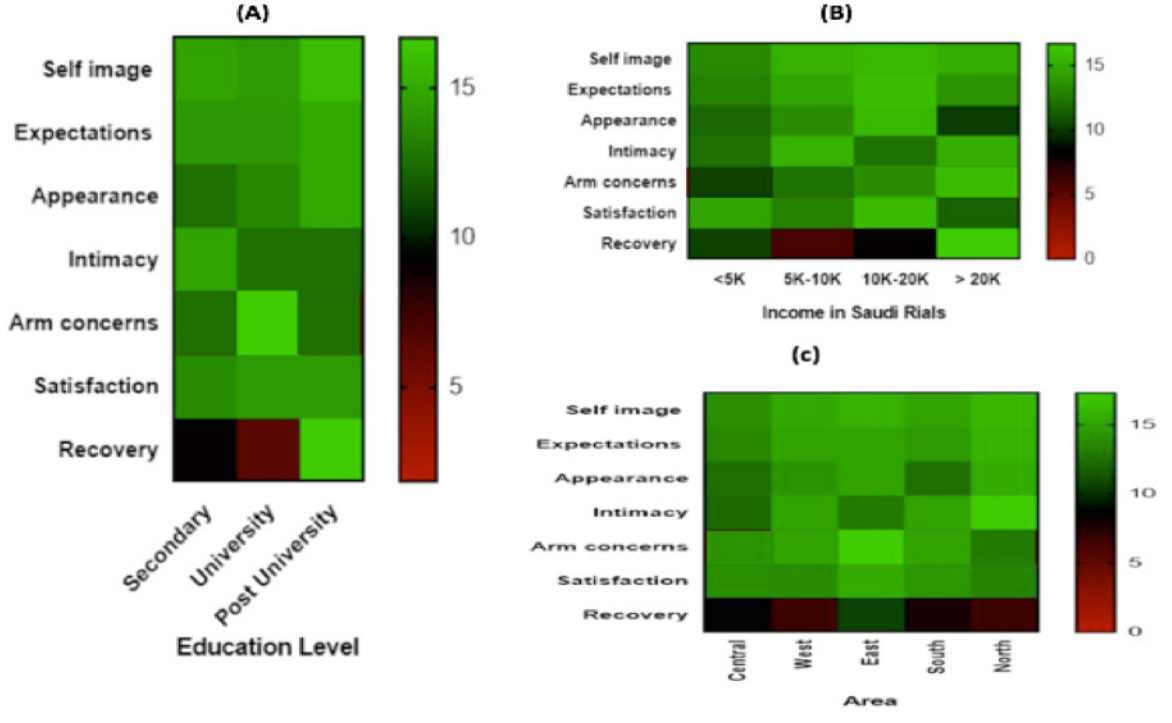
Table 2 Answers to the Breast Reconstruction Satisfaction Questionnaire

		Strongly unsatisfied		Unsatisfied		Satisfied		Strongly satisfied		Not applicable	
Subscale	Item	**n**	**%**	**n**	**%**	**n**	**%**	**N**	**%**	**n**	**%**
Self-image	I feel attractive	4	7.5	6	11.3	38	71.7	4	7.5	1	1.9
	I feel good about myself	4	7.5	4	7.5	39	73.6	6	11.3	0	0
	I feel feminine	4	7.5	4	7.5	40	75.5	5	9.4	0	0
	I feel normal	0	0	5	9.4	33	62.3	15	28.3	0	0
Expectations	What I wanted from the surgery was realistic	4	7.5	9	17.0	34	64.2	6	11.3	0	0
	The plastic surgeon told me what I needed to Know	16	30.2			33	62.3	4	7.5	0	0
Appearance	My reconstructed breast(s) looks better than my original breast(s)	3	5.7	6	11.3	37	69.8	7	13.2	0	0
	My reconstructed breast(s) is the right size for Me	5	9.4	6	11.3	36	67.9	6	11.3	0	0
Intimacy	My husband/partner is comfortable with my new breast(s)	5	9.4	6	11.3	34	64.2	5	9.4	3	5.7
	My husband/partner and I have a stable Relationship	5	9.4			39	73.6	6	11.3	3	5.7
	My husband/partner and I are happy together	5	9.4	4	7.5	33	62.3	8	15.1	3	5.7
	My husband/partner supported me during my breast reconstruction	5	9.4	6	11.3	32	60.4	7	13.2	3	5.7
Satisfaction	I feel satisfied about my reconstructed breast	4	7.5	7	13.2	32	60.4	8	15.1	2	3.8
		Yes		**No**							
		n	%	n	%						
	If I had to do it all over again, I would choose this type of reconstruction	41	77.4	12	22.6						
	I would recommend my type of breast reconstruction to a friend	43	81.1	10	18.9						

Satisfaction	The breast reconstruction turned out the way I thought it would	30	56.6	23	43.4
Arm concerns	I have trouble moving my shoulder	11	20.8	42	79.2
	My arm(s) hurts	11	20.8	42	79.2
	My arm(s) is swollen	6	11.3	47	88.7
	My shoulder(s) is sore	9	17.0	44	83.0
Recovery	It took me longer than expected to recover	24	45.3	29	54.7
	The surgery was a lot to go through	14	26.4	39	73.6
	The surgery was complex	28	52.8	25	47.2

moving the shoulder, no arm(s) pain, no arm(s) swelling, and no shoulder(s) soreness. More than half (52.8%) of the patients reported that the surgery was complex, and 45.3% agreed that it took them longer than expected to recover. [Figure 1] shows a heatmap for different subscales of satisfaction after breast reconstruction based on different demographics. In subscales of satisfaction based on educational level; a significant difference was seen between different educational level groups in recovery subscale. In subscales based on income; there were significant differences between different income groups in the self-image, appearance, and recovery subscales. No difference was seen between different area group The means of the subscales were calculated by educational level. There was no statistically significant

Fig. 1. Green is a satisfied patient and red is not satisfied. (A) Subscales of satisfaction based on education level; a significant difference was seen between groups in recovery subscale. (B) Subscales based on income; there were significant difference between groups in the self-image, appearance, and recovery subscales. (C) No difference was seen between different area groups.



difference in any of the assessed subscales by the educational level groups except for the recovery subscale (P 0.003) where the mean was the highest (2.50) for those with above university-level education as shown in [Table 3].

Table 3 Mean of subscales by educational level

Subscale	Educational level	Mean	SD	P-value	Subscale	Educational level	Mean	SD	P-value
Self-image (out of 16)	Secondary	11.77	1.69	0.477	Arm concerns (out of 4)	Secondary	1.05	1.46	0.129
	University	11.48	2.21			University	0.37	0.69	
	Above university	12.75	1.50			Above university	1.00	2.00	
	Total	11.70	1.96			Total	0.70	1.20	
Expectations (out of 8)	Secondary	5.68	1.32	0.894	Satisfaction (out of 7)	Secondary	4.77	1.66	0.871
	University	5.67	1.41			University	5.00	1.47	
	Above university	6.00	0.00			Above university	5.00	1.41	
	Total	5.70	1.31			Total	4.91	1.52	
Appearance (out of 8)	Secondary	5.00	1.60	0.445	Recovery (out of 3)	Secondary	1.36	0.85	0.003*
	University	5.41	1.69			University	0.96	0.81	
	Above university	6.00	0.00			Above university	2.50	0.58	
	Total	5.28	1.60			Total	1.25	0.90	
Intimacy (out of 16)	Secondary	11.77	2.96	0.237					
	University	10.04	4.04						
	Above university	10.00	4.00						
	Total	10.75	3.66						

• *Significant P-value
• P-value was calculated using one-way ANOVA

There were statistically significant (P<0.05) differences in the self-image, appearance, and recovery subscales by the income level groups as shown in [Table 4]; there was no statistically significant difference in any of the subscales between dif-

Table 4. Mean of subscale by income

Subscale	Income	Mean	SD	P-value	Subscale	Income	Mean	SD	P-value
Self-image (out of 16)	<5000 SR	10.59	2.43	0.033*	Arm concerns (out of 4)	<5000 SR	1.00	1.54	0.531
	5000-10000 SR	12.10	1.58			5000-10000 SR	0.67	1.15	
	10000 -20000 SR	12.46	1.39			10000 -20000 SR	0.46	0.78	
	>20000 SR	12.00	0.00			>20000 SR	0.00	0.00	
	Total	11.70	1.96			Total	0.70	1.20	

Subscale	Income	Mean	SD	P-value	Subscale	Income	Mean	SD	P-value
Expectations (out of 8)	<5000SR	5.12	1.87	0.092	Satisfaction (out of 7)	<5000 SR	5.06	1.30	0.273
	5000-10000 SR	5.81	0.87			5000-10000 SR	4.52	1.69	
	10000 -20000 SR	6.31	0.75			10000 -20000 SR	5.46	1.27	
	>20000 SR	5.50	0.71			>20000 SR	4.00	2.83	
	Total	5.70	1.31			Total	4.91	1.52	
Appearance (out of 8)	<5000 SR	4.65	1.93	0.030*	Recovery (out of 3)	<5000 R	1.53	0.62	0.029*
	5000-10000 SR	5.33	1.32			5000-10000 SR	0.90	0.83	
	10000 -20000 SR	6.23	0.83			10000 -20000 SR	1.23	1.09	
	>20000 SR	4.00	2.83			>20000 SR	2.50	0.71	
	Total	5.28	1.60			Total	1.25	0.90	
Intimacy (out of 16)	<5000 SR	9.65	4.01	0.102					
	5000-10000 SR	12.19	1.86						
	10000 -20000 SR	9.69	4.89						
	>20000 SR	12.00	0.00						
	Total	10.75	3.66						

* Significant P-value

P-value was calculated using one-way ANOVA

ferent area groups.

Discussion:

Saudi women with reconstructed breasts post-mastectomy for breast cancer in this study showed good breast reconstruction satisfaction. The literature showed that patient-reported outcomes of BR after mastectomy had no significant differences from mastectomy without reconstruction outcomes [19, 20]. Other studies reported that patient-reported outcomes of BR after mastectomy were better than mastectomy alone [21, 22, 23]. Additionally, one study found worse quality of life, body image, or sexual outcomes in patients who had mastectomy with reconstruction compared with those who had mastectomy only [24].

According to Awan et al 6, one of the most significant possible barriers to BR was the lack of adequate information on the procedure. In our study, 30.2% of the patients were strongly unsatisfied about the statement "the plastic surgeon told me what I needed to know". This might be due to patients' lack of knowledge about the procedure that was worsened by the poor discussion prior to the breast reconstruction. In a study done by Alderman et al., only 33% of breast cancer patients scheduled for mastectomy reported that they had a pre-

operative discussion about BR with their surgeons [25]. This might be attributed to the concern of general surgeons that breast reconstruction might mask breast cancer recurrence, as a previously published survey in Saudi Arabia reported 13, although no evidence supports this concern in the literature. A study done by Morrow et al. stated that 78.2% of patients reported that they had discussions about BR with a surgeon during the surgical decision-making process [26].

Patients managed by mastectomy, lumpectomy, axillary lymph node dissection (ALND) are at more risk for developing arm and shoulder pain, lymphedema, limited muscle strength and range of motion [27]. Also, patients undergoing BR are at risk of arm and shoulder impairments [28]. Our findings showed that most women (79.2% – 88.7%) had no arm concerns after breast reconstruction. Although it was noted that arm concerns were more in patients with lower educational attainment (secondary school) and lower income (<5000 SR), neither of them was significant. Alba et al 28 study stated that 34.4% of those who had flap reconstruction and 65.6% of those who had implant-based reconstruction were having swelling. Our study found that only 11.3% were complaining of swelling. Breast reconstruction can provide a satisfactory breast shape. However, this is a difficult operation as a couple of days of hospitalization is required, and recovery to normal physical activity may take a long time. Recovery may not be complete at 3 months for many patients [29]. A high percentage of our patients reported that the surgery was complex, and it took longer than expected to recover. Another study also reported that recovery subscale was having the lowest satisfaction among all subscales [30]. In our study, although recovery subscale had the lowest satisfaction among all subscales, recovery satisfaction was noted to be the highest in patients with higher educational attainment (above university) and higher income (>20000 SR), both were statistically significant.

Breast reconstruction is a common choice after mastectomy for women diagnosed with early stage breast cancer. Purposes for choosing BR were mostly appearance, femininity and emotional concerns [31]. In this regard, our findings showed that 62.3% - 75.5% of patients were satisfied and up to 28.3% were strongly satisfied about their self-image after BR. Moreover, higher income groups, especially 10000 – 20000 SR, showed statistically significant better self-image than those with lower income. Another study also reported high satisfaction in self-image subscale after BR [30].

It has been previously reported that poor and lower income people are less likely to

undergo BR [32, 33, 34]. They have lower satisfaction rates after their procedures [33, 34, 35]. In this regard, our findings were consistent with the literature. Low income group (<5000 SR) had a statistically significant lowest satisfaction in self-image subscale and was among the low satisfaction groups in appearance and recovery subscales. Also, the lowest satisfaction in intimacy, expectations, and arm concerns subscales. A previous study found that patients with higher educational attainments were more likely to desire BR [6]. Other study stated that education factor affects woman's decision and influence her to choose for post-mastectomy reconstruction [36]. Also, a study reported that higher educational attainments were more satisfied and less likely to regret their decision regarding reconstruction [35]. Moreover, in our study, higher educational attainment patients were more satisfied with their BR than lower educational attainment patients in majority of the subscales, except for intimacy and arm concerns, neither of them was significant. Limitations of this study include lack of generalization, as it was done in one center. Although validity of the questionnaire was already proven, here it may need to be tested again as some of the questions were omitted due to being socially inconvenient.

Conclusion:

Majority of patients were generally satisfied with their reconstructed breasts among all subscales. However, recovery subscale showed less satisfaction. Also, a relatively high percentage were not satisfied about the discussion with a surgeon prior to the reconstruction. Income had effects on BR satisfaction as high income groups had significantly better self-image and recovery satisfaction. Also, higher educational level patients were more satisfied across majority of subscales. Unsatisfaction about the pre-breast reconstruction discussion with plastic surgeons, and possible patients' lack of knowledge about the procedure need to be addressed with relevant educational programs and campaigns to educate women regarding the benefits of breast reconstruction. Moreover, recovery post-reconstruction needs to be addressed as well. Multi-center study is needed for confirming our findings.

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