

## Tendency to breast reconstruction after breast mastectomy among Iranian women with breast cancer

Fatemeh Homaei Shandiz<sup>1</sup>, Mona Najaf Najafi<sup>2</sup>, Zahra Abbasi Shaye<sup>3</sup>  
Mahta Salehi<sup>4</sup>, Maryam Salehi<sup>\*5</sup>

Received: 17 September 2014

Accepted: 14 December 2014

Published: 29 June 2015

### Abstract

**Background:** Women with the medical history of breast cancer constitute the biggest group of patients who survived cancer. Despite the high rate of mastectomy after breast cancer in Iran; only limited patients elect reconstruction surgery. The aim of our study was to evaluate the rate of tendency to breast reconstruction (BR) surgery among women with breast cancer who had mastectomy but not undergone reconstruction.

**Methods:** This cross sectional study was conducted in Mashhad, north east of Iran during 2013. A total of 108 patients with mastectomy due to breast cancer were selected through convenience sampling and completed the questionnaire. Demographic data collected and 21 items of questionnaire were compared between patients with and without tendency to BR. Data were analyzed using Chi square, t tests and logistic regression.

**Results:** In this study 62 (57.4%) patients had a tendency to BR and 46 (42.6%) had not. The mean ( $\pm$ SD) age of patients in first group was  $43.3 \pm 8.03$  and  $49.6 \pm 9.9$  in the second group ( $p < 0.001$ ). Frequency of agreement about impact of BR on appearance and beauty, mood, family living conditions and their opinion ( $p < 0.001$ ), lack of sufficient information ( $p = 0.01$ ), physician's opinion ( $p < 0.001$ ) and priority of cancer breast treatment ( $p = 0.02$ ) were significantly different between the two groups.

**Conclusion:** More than half of the patients had a tendency to BR although they did not go under the surgery yet. Identification of factors that can increase the tendency and factors that help to change the intention to action are important and should be investigate in future research.

**Keywords:** Tendency, Mastectomy, Breast cancer, Breast reconstruction.

**Cite this article as:** Homaei Shandiz F, Najaf Najafi M, Abbasi Shaye Z, Salehi M, Salehi M. Tendency to breast reconstruction after breast mastectomy among Iranian women with breast cancer. *Med J Islam Repub Iran* 2015 (29 June). Vol. 29:224.

### Introduction

Breast cancer is the most common type of cancer among women worldwide. Although it seems to be the disease of developed countries, but 50% of all breast cancer and 58% of related death occurs in less developed countries(1). Incidence of breast cancer in developing countries has increased faster in comparison to developed countries

during the recent decades (2). Incidence varies all over the world from 19.3 per 100,000 women in Eastern Africa to 89.7 per 100,000 women in Eastern Europe (1). In Iranian women breast cancer is also at the top of malignancies (3) and it is the fifth cause of death in women of Iran (4). Surgery is common treatment of breast cancer. Patients who undergo mastectomy

<sup>1</sup>. Associate Professor of Radiation Oncology, Department of Radiation Oncology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran & Cancer Research Center, Omid Hospital, Mashhad University of Medical Sciences, Mashhad, Iran. [homaeef@mums.ac.ir](mailto:homaeef@mums.ac.ir)

<sup>2</sup>. Resident of Community Medicine, Department of Community Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. [najafm901@mums.ac.ir](mailto:najafm901@mums.ac.ir)

<sup>3</sup>. Resident of Community Medicine, Department of Community Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. [abbasiSHZ911@mums.ac.ir](mailto:abbasiSHZ911@mums.ac.ir)

<sup>4</sup>. Mashhad University of Medical Sciences, Mashhad, Iran. [mahta68@yahoo.com](mailto:mahta68@yahoo.com)

<sup>5</sup>. (**Corresponding author**) Assistant Professor of Community Medicine, Department of Community Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran & Research Center for Patient Safety Mashhad University of Medical Sciences, Mashhad, Iran. [Salehim@mums.ac.ir](mailto:Salehim@mums.ac.ir)

have many concerns after surgery. Besides of the stress of life threatening disease, there is concern about relapse of tumor, changes in body image, physical defect, feel of loss something like infertility, sexual attractiveness, mood changes like depression and anxiety, low self-esteem that can affect sexual relations, and damage to quality of their social, family and also occupational lives (5-17). Women with the medical history of breast cancer constitute the biggest group of patients who survived cancer (18) and 85% of patients have more than 5 years survivals (19). In order to reduce psychological effects of mastectomy, the number of patients who choose breast reconstruction considerably has increased in last decades (20,21). The goal of reconstruction surgery is to repair breast tissue without any effect on progression or recurrence of cancer (22) and help patients to enhance their body image and improve their psychosocial life (23-25). Unfortunately in Iran and even in developed countries only limited number of patients elect breast reconstruction (BR). One study in Australia reported 9.1% (26) and another study in USA mentioned 29.2% of women undergo BR in 2007(27). Studies in other countries mentioned some reasons for refusing reconstruction. Study by Reaby reported lack of information about the procedure, fear of complications and not necessary surgery for physical and emotional well-being as some reasons for not having reconstruction (28). Other factors that influence decision of choosing surgery were: socioeconomic status, sexual activity, education, age (29), how much patients rely on their practitioners (30), religious believes, and partner refusal (31). In Iran factors influencing on BR surgery have not been studied yet. Therefore, the aim of our study was to evaluate the amount of tendency to BR surgery among women with breast cancer who had mastectomy and assess associated factors that effect on their decision.

## Methods

This cross-sectional study was conducted

in fall and winter of 2013 in Mashhad, Iran. Data were gathered from 108 patients with breast cancer from 5 private and state radiotherapy-oncology centers. Participants were entered the study by convenience sampling. Women with breast cancer who did mastectomy but had not undergone BR surgery yet, were eligible. Consent was obtained from all participants and they were assured their information would be confidential. This study was approved by Ethic Committee of Mashhad University of Medical Sciences, with ethic code of 910931.

## Instrument

We used a questionnaire including 21 items in 4 domains; which its validity and reliability was confirmed in previous study (32). In that study, superficial validity was confirmed. The amount of content validity using Lawshe's method was more than 0.99. Four hidden factors were found through exploratory factor analysis. Cronbach's alpha and split-half coefficient of the questionnaire were 0.80 and 0.79 respectively. The valid and reliable questionnaire was answered by patients with the aim of analyzing patient's attitude about breast reconstruction. Items' answers were dichotomous (agree or disagree) followed by a provided space for inserting participants' opinion about each question.

Outcome: the main variable was amount of tendency to BR which was calculated. Other variables in questionnaire were compared in two groups (with or without tendency to BR).

## Statistical analysis

Data were analyzed using SPSS software. Descriptive statistics were used to describe the quantitative (mean and standard deviation) and qualitative variables (frequencies). We used Chi square test for comparing the qualitative variables and t-test for comparing quantitative variables between two groups. Logistic regression model was used and odds ratio (OR) was calculated. A p-value less than 0.05 were considered as

statistically significant.

## Results

In this study, 108 mastectomy patients were examined. The mean $\pm$ SD age of patients was 46 $\pm$ 9.4 years and the most of the participants (n=49, 45%) belonged to age group of 35-45 year old. About 80% (n=87) of patients were married, 12 cases (11%) were single and others were divorced or widow. About 77 of them (71%) were housekeeper, 34 (31%) had a college education and 17 (16%) had only a high school diploma. In terms of their disease, 37 cases (34%) had a controlled disease, 59 (55%) were in treatment stage and the rest had disease recurrence. Thirty cases (28%) did not have a good financial situation, 54 patients (50%) had a middle class income range.

In this study 62 (57.4%) patients had a tendency to BR and 46 (42.6%) had not. The frequency of demographic variables were compared in two groups of cases (first group=who had a tendency to BR, second

group= who did not have a tendency to BR) which was shown in Table 1. None of these variables had statistically significant difference between two groups ( $p>0.05$ ) except for age (43.3 $\pm$ 8.03 vs. 49.6 $\pm$ 9.9,  $p<0.001$ ). Disease duration of patients was not statistically different between two groups too (3.6 $\pm$ 3.38 vs. 3.9 $\pm$ 3.46,  $p=0.96$ ).

The frequency of agreement or disagreement of two groups of patients with items of questionnaire is shown in Table 2. Among 21 items there were statistically significant differences in 12 items majority related to main factors (Q1 to Q5, Q7 to Q9, Q11, Q13, Q15 and Q17).

According to binary logistic regression model the only factor that can predict the tendency of women is age of patient ( $p=0.002$ , OR: 0.91) (Table 3).

## Discussion

Breast reconstruction following mastectomy is helpful, although only a small percentage of qualified patients have ever undergone reconstruction (33). In this study,

Table1. The frequency distribution of demographic variables in two groups of cases

Demographic Variables		Group		p
		First* N (%)	Second* N (%)	
Education	Under diploma	29(46.8)	28(60.9)	0.35
	Diploma	11(17.7)	6(13)	
	University	22(35.5)	12(26.1)	
Job	Employed or retired	20(32.3)	11(23.9)	0.34
	Housekeeper	42(67.7)	35(76.1)	
Income	Low	19(30.6)	11(23.9)	0.50
	Middle	28(45.2)	26(56.5)	
	High	15(24.2)	9(19.6)	
Marital status	Married	50(80.6)	37(80.4)	0.25
	Single	7(11.3)	2(4.3)	
	Divorced or widow	5(8.1)	7(15.2)	
Health department	Public	27(43.5)	21(45.7)	0.82
	Private	35(56.5)	25(54.3)	
Insurance	Yes	59(95.2)	46(100)	0.26
	No	3(4.8)	0	
Side of mastectomy	One Side	60(96.8)	43(93.5)	0.36
	Two Side	2(3.2)	39(6.5)	
History of chemotherapy	Yes	61(98.4)	45(97.8)	0.67
	No	1(1.6)	1(2.2)	
History of radiotherapy	Yes	38(61.3)	32(69.6)	0.37
	No	24(38.7)	14(30.4)	
(Phase)Stage of disease	Control	25(40.3)	12(26.1)	0.22
	Treatment	32(51.6)	27(58.7)	
	Relapse	5(8.1)	7(15.2)	

\*First group who had a tendency to breast reconstruction and second group who did not have a tendency to breast reconstruction

Table 2. The frequency distribution of patient's opinion about each item of the questionnaire

Domain	Items	First Group		Second Group		p
		Agree N (%)	Disagree N (%)	Agree N (%)	Disagree N (%)	
Main Factors	I think, breast reconstruction Impact on my appearance and beauty (Q1)	48(77.4)	14(22.6)	20(43.5)	26(56.5)	<0.001
	I can wear any clothe after breast reconstruction (Q2)	48(77.4)	14(22.6)	16(34.8)	30(65.2)	<0.001
	breast reconstruction can improve my mood (Q3)	47(75.8)	15(24.2)	20(43.5)	26(56.5)	0.001
	The effect of my age on breast reconstruction(Q4)	13(21.3)	48(78.7)	20(43.5)	26(56.5)	0.010
	Family living conditions can influence my tendency (Q5)	48(77.4)	14(22.6)	16(34.8)	30(65.2)	<0.001
	My Husband's opinion about breast reconstruction, can affect my tendency(Q6)	36(58.1)	26(41.9)	23(50)	23(50)	0.400
	Family's opinion about breast reconstruction, can affect my tendency(Q7)	48(77.4)	14(22.6)	20(43.5)	26(56.5)	<0.001
	Lack of sufficient information about breast reconstruction, can affect my tendency(Q8)	47(75.8)	15(24.2)	24(53.3)	21(46.7)	0.010
	Physician's opinion about breast reconstruction, can affect my tendency (Q9)	49(79)	13(21)	19(42.2)	26(57.8)	<0.001
	I think breast reconstruction costs a lot(Q10)	45(72.6)	17(27.4)	27(58.7)	19(41.3)	0.130
	If insurance company paid for a part of the breast reconstruction costs, I would do that (Q11)	49(79)	13(21)	20(43.5)	26(56.5)	<0.001
Second factor	Do not think about the lack of breast(Q12)	34(54.8)	28(45.2)	31(67.4)	15(32.6)	0.190
	Feeling deficiency in the presence of others, affects my tendency(Q13)	42(67.7)	20(32.3)	15(32.6)	31(67.4)	<0.001
	friend's opinion about breast reconstruction, affects my tendency(Q14)	30(48.4)	32(51.6)	18(39.1)	28(60.9)	0.340
Minor barriers	The use of an external prosthesis lead to not doing breast reconstruction(Q15)	40(64.5)	22(35.5)	19(41.3)	27(58.7)	0.020
	Mental problems caused by breast cancer affects my tendency to breast reconstruction(Q16)	38(61.3)	24(38.7)	33(71.7)	13(28.3)	0.260
	I think breast cancer treatment is in priority (Q17)	41(66.1)	21(33.9)	20(43.5)	26(56.5)	0.020
	Difficulties in access to hospital which has services for breast reconstruction affects my tendency(Q18)	23(37.7)	38(62.3)	21(45.7)	25(54.3)	0.410
Factors causing fear	Fear of cancer recurrence affects my tendency(Q19)	31(50.8)	30(49.2)	27(58.7)	19(41.3)	0.420
	Fear of complications of breast reconstruction surgery affects my tendency(Q20)	35(56.5)	27(43.5)	32(69.6)	14(30.4)	0.160
	Fear of re-operation affects my tendency(Q21)	31(50)	31(50)	25(54.3)	21(45.7)	0.650

57.4% of patients had a tendency to BR. The rate of reconstruction was 3.8% in Nova Scotia from 1991 to 2001, 20.8% within 1 year after mastectomy in united states in 2004, 29.2% in a study in US in 2007, 42% in a study of the national comprehensive cancer network in 2006, and 41.6% in Morrow's study in 2014 (34-35,27,36-37). It is noteworthy that in this study we examined the willingness of those individuals who did not undergo BR, therefore the rate in our survey is higher than other studies. Furthermore, reconstruction rate may be affected by several factors such as stage of disease, age, socioeconomic condition, insurance status, education and marital status which were different in distinct samples.

Overall, we can see the tendency toward BR is likely increasing along the time. We determined some differences between patients' attitudes in 4 sections (main factors, second factors, minor barriers and factors

causing fear) about BR after mastectomy. In our survey the most common factor causing an individual to not prefer BR was the BR costs, as expected, because of most insurance companies in Iran do not cover the costs of plastic surgeries. This should be considered as a main factor of avoidance of BR. Uninsured women must pay out of pocket for reconstruction, and for them, "no insurance" probably means "no reconstruction", probably due to limited economic resources (38). Other important factors were desire to wearing any clothing, impact of breast reconstruction on patients' appearance and beauty, family living conditions and effect on patients' mood. These concur with Handel's study that showed main factors were the desire to have more freedom in selecting clothing styles, the wish to eliminate an external prosthesis and desire to feel more balanced and more feminine (33). Other studies also have similarly

Table 3. Logistic regression of items to predict tendency to breast reconstruction

Item	p	OR (CI <sub>95%</sub> )
Age	0.002*	0.91(0.85-0.96)
Q1	0.81	0.72(0.05-10.41)
Q2	0.39	3.36(0.21-54.04)
Q3	0.95	0.94(0.15-5.85)
Q4	0.25	2.24(0.57-8.79)
Q5	0.24	4.74(0.35-63.57)
Q7	0.95	1.06(0.17-6.54)
Q8	0.97	0.98(0.26-3.67)
Q9	0.21	3.16(0.52-19.24)
Q11	0.37	0.31(0.02-4.12)
Q13	0.51	1.57(0.41-6.05)
Q15	0.22	1.99(0.67-5.90)
Q17	0.56	0.67(0.17-2.54)

\*statistically significant difference

indicated that post mastectomy BR enables patients to feel less anxiety, more flexibility in clothing styles options and to feel better and more confident (39-41). Nonetheless, in a systematic review by Lee, nine of the sixteen studies that evaluated body image, showed no significant differences between women who had reconstruction and those who had mastectomy only (55).

BR following mastectomy can be affected by physician's attitude. It was another main factor in our study that was different between the women with and without tendency to BR. General surgeons with high rates of referral for BR and those with low rates have been reported to have different opinions about women's priority for reconstruction. Surgeons with low rates were more likely than those with high rates to recognize obstacles to access to reconstruction in their practice (18). Wanzel in his research found that general surgeons, oncologists and family physician felt that scanty knowledge about breast reconstruction negatively affects their decisions to refer patients to plastic surgeons (42).

Decision making for breast reconstruction after mastectomy needs adequate information about this procedure, because it is followed by a lot of stress for any patient (43). In our survey, lack of sufficient information about breast reconstruction was one of the main determinants that was different in two group. Lee's, Reaby's and

Spector's studies showed that patients' decision making for breast reconstruction requires more information in this context (44,28,45). The post mastectomy patient may not be aware that BR is a safe option and the benefits of reconstruction extend beyond aesthetics (improved emotional health, general mental health, social functioning, and quality of life). Information about reconstructive options must be generally provided by either the treating physician or the media (38). Physicians should discuss with the patients about the diagnosis, prognosis and different treatments of disorders and provide information about the possible consequences of them so that the patient understands his/her part in decision making and expresses his/her preferences (46). Of course, due to financial and time constraints in health systems, it is not always possible that the information needed for BR be provided in detail for patients in a counseling session (18).

Family's opinion about BR was also different between women with and without a tendency to BR. It might be because of the fact that women who receive more support from their family and friends, psychologically better adjust and deal with their disease (16, 47-48). Family members are the main source of support for making decision about BR surgery. Reaby showed in her study that lack of family support was one of the factors accounted for the difficulty in



making the decision (28). However, Anderson found no significant difference between two groups concerning the importance of family/friends' expectations (51).

There was a significant difference between two groups about the use of external prosthesis. A greater use of external prosthesis seen in the group interested in BR suggests that application of external prosthesis is one of the minor barriers for tendency to BR. In Reaby's study, the most frequently reasons given by the reconstruction group for having reconstruction included: to get rid of the external breast prosthesis, to be able to wear many different types of clothing, to regain femininity, and to feel whole again (28).

The other minor barrier for breast reconstruction was being worried about delay in their cancer treatment. Nowadays this concern should no longer be considered as an important barrier to the use of reconstruction. Some studies such as Morrow's and Eberlein's survey reported that use of post mastectomy reconstruction does not delay the administration of adjuvant chemotherapy (49-50).

However, studies like Handel's survey mentioned that women who decide not to have reconstruction are worried about the disturbance and possibility of complications related to additional surgery. In line with Anderson's study, our study proposed that women who select the procedure also share the same concern. Plastic surgeons should emphasize the growing safety of BR, particularly in view of modern techniques that decrease the risk of complications (33,51).

Finally, we found that the age of patients influenced the tendency to BR and regression analysis showed that only predictor of patients' willingness was age of patients. Younger women are more likely to proceed with BR following mastectomy maybe because the older women consider less importance on maintaining attractiveness, femininity and sexuality (52) and are more worried about increased complication and comorbidity rates with age. Consistent with

Hall's, Hvilsum's, Platt's and Stanton's studies (26,52,18,53) Morrow found that age under 50 was the single best predictor of the use of reconstruction. In contrast, August reported fewer complications after BR among women aged older than 60 compared with those younger than 60 (54). Plastic surgery literature which does not support patients' age nor stage of disease as contraindications to BR, highlights the need for all patients to be given the option of reconstruction after mastectomy (36). Physicians may provide patients adequate information about the reality that age is not an obstacle for women who desire to have BR.

To our knowledge, this study is the first study to examine the factors influencing on tendency to post mastectomy BR in Iran. However, there were some limitations in our study, first, we did not considered some clinical factors such as obesity, smoking and comorbidities which can effect on tendency of patients; and second, the finding of our research are not generalizable to all women with breast cancer throughout the worlds, due to cultural differences in other countries that may effect on patients' decision about BR.

### Conclusion

More than half of the patients had a tendency to BR surgery although they did not have it yet. We found age as the most important and maybe the only factor that can effect on tendency to BR. Available clinical data in our research did not support other factors. Identifying the factors that can increase the tendency and factors that help to bridge intention to action are important and should be investigate in future research. Furthermore, study the effect of patient education on BR after mastectomy is suggested.

### Acknowledgements

We kindly appreciate the efforts of all people involved in this and a special thank you for Mashhad University of Medical Sciences because of funding.

This article is from a thesis entitled "Ten-

dency to breast reconstruction after breast mastectomy among Iranian women with breast cancer”.

### Conflict of interest

The authors declare no Conflict of interest.

### References

1. Breast cancer burden. World Health Organization. 2013; Available from: <http://www.who.int/cancer/detection/breastcancer/en/index1.html>.
2. Movahedi M, Haghighat S, Khayamzadeh M, Moradi A, Ghanbari-Motlagh A, Mirzaei H, et al. Survival rate of breast cancer based on geographical variation in Iran, a national study. *Iran Red Crescent Med J* 2012 Dec;14(12):798-804.
3. Mehrabani D, Almasi A, Farahmand M, Ahrari S, Rezaianzadeh A, Mehrabani G, et al. Incidence of breast cancer in Fars province, Southern Iran: a hospital-based study. *WJPS* 2012;1(1):16-21.
4. Taghavi A, Fazeli Z, Vahedi M, Baghestani AR, Pourhoseingholi A, Barzegar F, et al. Increased trend of breast cancer mortality in Iran. *Asian Pac J Cancer Prev* 2012;13(1):367-70.
5. Wilmoth MC. The aftermath of breast cancer: an altered sexual self. *Cancer Nursing*. 2001; 24(4): 278-86.
6. Thewes B, Butow P, Girgis A, Pendlebury S. Assessment of unmet needs among survivors of breast cancer. *Journal of Psychosocial Oncology* 2004; 22(1):51-73.
7. Knobf MT. Carrying on: the experience of premature menopause in women with early stage breast cancer. *Nursing Research* 2002;51(1):9-17.
8. Wilmoth MC, Coleman EA, Smith SC, Davis C, editors. Fatigue, weight gain, and altered sexuality in patients with breast cancer: exploration of a symptom cluster. *Oncology Nursing Forum* 2004; 1069-75.
9. Knobf MT. The influence of endocrine effects of adjuvant therapy on quality of life outcomes in younger breast cancer survivors. *The Oncologist* 2006;11(2):96-110.
10. Schnipper HH. Life after breast cancer. *Journal of Clinical Oncology* 2003;21(9 suppl):104-7.
11. Sammarco A. Psychosocial stages and quality of life of women with breast cancer. *Cancer Nursing* 2001;24(4):272-7.
12. Shapiro SL, Lopez AM, Schwartz GE, Bootzin R, Figueredo AJ, Braden CJ, et al. Quality of life and breast cancer: relationship to psychosocial variables. *Journal of Clinical Psychology* 2001; 57(4): 501-19.
13. Knobf MT. Reproductive and Hormonal Sequelae of Chemotherapy in Women: Premature menopause and impaired fertility can result, effects that are especially disturbing to young women. *Cancer nursing* 2006;29(2):60-5.
14. Pelusi J. Sexuality and body image. *Am J Nurs* 2006;106:32-8.
15. Manning-Walsh J. Social support as a mediator between symptom distress and quality of life in women with breast cancer. *Journal of Obstetric, Gynecologic & Neonatal Nursing* 2005; 34(4):482-93.
16. Boyle DA. Survivorship. *Clinical journal of oncology nursing* 2006;10(3):407-22.
17. Surbone A, Peccatori FA. Unmet needs of cancer survivors: supportive care's new challenge. *Supportive Care in Cancer* 2006;14(5):397-9.
18. Platt J, Baxter N, Zhong T. Breast reconstruction after mastectomy for breast cancer. *Canadian Medical Association Journal* 2011; 183(18):2109-16.
19. Canadian Cancer Society's Steering Committee on Cancer Statistics. *Canadian Cancer Statistics: Canadian Cancer Society* 2011. Available from: <http://www.cancer.ca/Canada-wide/About-cancer//media/CCS/Canadawide/Files-List/English-files-heading/PDF-Policy-CanadianCancerstatistics-English/Canadian Cancer Statistics 2011-English.ashx>. Accessed Oct.29,2011.
20. Doncatto LF, da Silva JB, da Silva VD, Martins PDE. Cutaneous viability in a rat pedicled TRAM flap model. *Plastic and reconstructive surgery* 2007;119(5):1425-30.
21. Parker PA, editor. Breast reconstruction and psychosocial adjustment: what have we learned and where do we go from here? *Seminars in plastic surgery*; 2004: Thieme Medical Publishers.
22. Cordeiro PG. Breast reconstruction after surgery for breast cancer. *New England Journal of Medicine* 2008;359(15):1590-601.
23. Potter S, Winters Z. Does breast reconstruction improve quality of life for women facing mastectomy? A systematic review. *European Journal of Surgical Oncology (EJSO)* 2008;34(10): 1181.
24. Zhong T, McCarthy C, Min S, Zhang J, Beber B, Pusic AL, et al. Patient satisfaction and health-related quality of life after autologous tissue breast reconstruction. *Cancer* 2012;118(6):1701-9.
25. Elder EE, Brandberg Y, Björklund T, Rylander R, Lagergren J, Jurell G, et al. Quality of life and patient satisfaction in breast cancer patients after immediate breast reconstruction: a prospective study. *The Breast* 2005;14(3):201-8.
26. Hall S, Holman C. Inequalities in breast cancer reconstructive surgery according to social and locational status in Western Australia. *European Journal of Surgical Oncology (EJSO)* 2003; 29(6):519-25.
27. Kruper L, Holt A, Xu XX, Duan L, Ellenhorn

- J. Disparities in reconstruction rates after mastectomy: patterns of care and factors associated with the use of breast reconstruction in Southern California. *Annals of Surgical Oncology* 2011; 18(8): 2158-65.
28. Reaby LL. Reasons why women who have mastectomy decide to have or not to have breast reconstruction. *Plast Reconstr Surg* 1998 Jun; 101(7):1810-8.
29. Charavel M, Bremond A, Courtial I. Psychosocial profile of women seeking breast reconstruction. *Eur J Obstet Gynecol Reprod Biol* 1997 Jul;74(1):31-5.
30. Beesley H, Ullmer H, Holcombe C, Salmon P. How patients evaluate breast reconstruction after mastectomy, and why their evaluation often differs from that of their clinicians. *Journal of Plastic, Reconstructive & Aesthetic Surgery* 2012; 65(8): 1064-71.
31. Saied SM, EL-Sherbiny AM. Acceptability of breast reconstruction after mastectomy in Upper Egypt. *Egypt J Plast Reconstr Surg* 2006;30(1):1.
32. Salehi maryam, Homae F, Najafnafari M, Salehi Mahta. Development and validation of a questionnaire to assess the attitudes of mastectomy patients about breast reconstruction. *IJOGI* 2014 Mar;90(16): 16-24.
33. Handel N, Silverstein MJ, Waisman E, Waisman JR. Reasons why mastectomy patients do not have breast reconstruction. *Plastic and Reconstructive Surgery Journal* 1990;86(6):1118-22.
34. Barnsley G.P, Sigurdson L, Kirkland S. Barriers to breast reconstruction after mastectomy in Nova Scotia. *Canadian Journal of Surgery* 2008 Dec;51(6): 447-52.
35. Bloom BS, de Pouvourville N, Chhatre S. Breast cancer treatment in clinical practice compared to best evidence and practice guidelines. *Br J Cancer* 2004;90:26-30.
36. Christian CK, Niland J, Edge SB, Ottesen RA, Hughes ME, Theriault R, et al. A Multi-Institutional Analysis of the Socioeconomic Determinants of Breast Reconstruction: A Study of the National Comprehensive Cancer Network. *Annals of Surgery* 2006;243( 2):241-49.
37. Morrow M, Yun Li, Alderman AK, Jagsi R, Hamilton AS, Graff JJ, et al. Access to Breast Reconstruction After Mastectomy and Patient Perspectives on Reconstruction Decision Making. *JAMA Surg* 2014 Aug;548.
38. Wilkins EG, Alderman AK. Breast Reconstruction Practices in North America: Current Trends and Future Priorities. *Seminars in Plastic Surgery* 2004;18(2):149-55.
39. Schain WS, Jacobs E, Wellisch DK. Psychosocial issues in breast reconstruction: intrapsychic interpersonal, and practical concerns. *Clin Plastic Surg* 1984;11:237.
40. Jamison Kr, Wellisch DK, Pasnau RO. Psychosocial aspects of mastectomy: I. the women's perspective. *Am J Psychiatry* 1978;135:432.
41. Schain WS, Wellisch DK, Pasnau RO, Landsverk J. the sooner the better: A study of psychological factors in women undergoing immediate versus delayed breast reconstruction. *Am J Psychiatry* 1985;142:40.
42. Wanzel KR, Brown MH, Anastakis DJ. Reconstructive breast surgery: referring physician knowledge and learning needs. *Plast Reconstr Surg* 2002;110:1441-50.
43. Sandham C, Harcourt D. Partner experiences of breast reconstruction post mastectomy. *Eur J Oncol Nurs* 2007 Feb;11(1):66-73.
44. Lee CN, Hultman CS, Sepucha K. Do patients and providers agree about the most important facts and goals for breast reconstruction decisions? *Ann Plast Surg* 2010 May;64(5):563-6.
45. Spector D, Mayer DK, Knafl K, Pusic A. Not what I expected: informational needs of women undergoing breast surgery. *Plast Surg Nurs* 2010; 30(2):70-4.
46. Coulter A. Patient information and shared decision-making in cancer care. *Br J Cancer* 2003;89 Suppl 1:S15-6.
47. Helgeson VS, Snyder P, Seltman H. Psychological and physical adjustment to breast cancer over 4 years: identifying distinct trajectories of change. *Health Psychol* 2004;23(1):3-15.
48. Friedman LC, Kalidas M, Elledge R, Chang J, Romero C, Husain I, et al. Optimism, social support and psychosocial functioning among women with breast cancer. *Psychooncology* 2006;15(7):595-603.
49. Morrow M, Scott SK, Menck HR, Mustoe TA, Winchester DP. Factors Influencing the Use of Breast Reconstruction Postmastectomy: A National Cancer Database Study. *J Am Coll Surg* 2001; 192(1):1-8.
50. Eberlein TJ, Crespo LD, Smith BL, Hergrueter CA, Douville L, Eriksson E. Prospective evaluation of immediate reconstruction after mastectomy. *Ann Surg.* 1993;218:29-36.
51. Anderson SG, Rodin J, Ariyan S. treatment considerations in post mastectomy reconstruction: their relative importance and relationship to patients satisfaction. *Annals of plastic surgery* 1994;33(3): 263-71.
52. Hvilsum G, Holmich LR, Frederiksen K, Steding Jessen M, Friis S, Dalton SO. Socioeconomic position and breast reconstruction in Danish women. *Acta Oncologica* 2011;50: 265-273.
53. Stanton AL, Estes MA, Estes NC, Cameron CL, Danoff Burg S, Irving LM. Treatment decision making and adjustment to breast cancer: A longitudinal study. *J Consult Clin Psychol* 1998;66:313-22.
54. August DA, Wilkins E, Rea T. Breast reconstruction in older women. *Surgery* 1994; 115:663-8.
55. Lee C, Sunu Ch, Pignone M. Patient-reported



Outcomes of Breast Reconstruction after  
Mastectomy: a Systematic Review. J Am Coll Surg.

2009 July;209(1):123-133.