

Doctor-patient perceptual differences to barriers to breast reconstruction at a tertiary public hospital in Kenya

Abstract

Introduction: Breast reconstruction is essential in the care of breast cancer patients. Doctors affect the propensity of the reconstruction from occurring. We explored the perception of both postmastectomy patients and surgeons towards the barriers to the surgery.

Methods: We designed a cross-sectional study to establish patients' and surgeons' perceptions toward breast reconstruction via semi-structured questionnaires. We determined the odd ratios and Chi Squares using the statistical package for social science (SPSS version 25, Inc, IL, and Chicago, USA). We considered the results significant for p values below 0.05.

Results: We determined a response rate of 100% for the surgeons ($n=55$) and 126.6% for the post-mastectomy patients ($n=173$). We found perceptual differences between the patients and the doctors. Lack of awareness and knowledge and financial constraints appear to be the most common hindrances. A higher proportion of surgeons believe that financial constraints ($p=0.007$), the need for further therapy ($p=0.033$) and late presentation ($p<0.001$) are the barriers to breast reconstruction compared to the patients. There was no significant association between the sex ($p=0.110$) and age ($p=0.272$) of the surgeon to the propensity to refer patients.

Conclusion: Many surgeons have a low propensity to refer mastectomy patients for breast reconstruction, contributing to Kenya's low breast reconstruction rate.

Keywords: breast reconstruction, barriers, perceptual differences, surgeons, Kenya

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Introduction

Among women in Kenya, breast cancer has the highest incidence rate and prevalence rate. Despite the associated benefits of breast reconstruction in breast cancer care, most women usually do not have the surgery performed. We refer to either implant-based or autologous reconstruction of the breast, used separately or together for this study.¹ Gichuru et al.,² noted a low rate of 2.9%. Patient-associated factors were noted as some of the causes of hindrances to this procedure.² Studies in our set-up have yet to explore the physician-associated factors. Stakeholders' perspectives on post-mastectomy breast reconstruction (PMBR) affect the procedure's uptake by patients considering it.³ Lack of knowledge of PMBR contributes to its underperformance. Women require more opportunities to integrate and interpret information on their reconstructive options in shared decision making to allow for a more informed surgical treatment decision.^{4,5} Referral propensity by surgeons predicts the occurrence of the procedure.⁶⁻⁸

Methods

We conducted a cross-sectional study via semi-structured questionnaires at the School of Medicine, University of Nairobi. The study population targeted opt-in general and plastics surgeons involved in patients' care of postmastectomy and mastectomy patients, $n=312$ as indicated in the Kenyatta National Hospital (KNH) registry. We included purposive sampling among surgeons. The surgeon had diverse postmastectomy breast reconstruction experiences, including no reconstruction working at the Kenyatta

National Hospital. Raosoft™ Sample Size Calculator (Raosoft Inc, Seattle, WA, USA), a sample size calculator,⁹ was used to determine the minimum statistically adequate sample size, at 95% confidence level, with an error margin of 5% and a response distribution of 50%, is 173. We determined the doctor's sample as 55, using Cochran's Formulae of population less than 10,000. We sought consent for the study from Kenyatta National Hospital, University of Nairobi Ethics and Research Committee.

All the information was subsequently entered into the computer and analysed using the Statistical package for social science (SPSS version 25, Inc, IL, Chicago, USA) for Windows and macOS. Data analysis involved the use of pre-coded data and descriptive statistics like cross-tabulation, frequency ranges and mean. We presented the data using bar graphs, histograms, pie charts, and frequency tables. For the effect of the independent barriers, the analysis was by multinomial and binary logistic regression. We utilized odds ratios to determine the probability of breast reconstruction based on the identified risk factors. We applied the Pearson Chi-Square and Fischer's exact test in determining if there is an association between different variables. We made use of the t-test to establish the proportional differences. The results were considered significant for p values below 0.05.

Results

Response rate

We distributed 55 questionnaires to opt-in general and plastics surgeons involved in the care of patients postmastectomy. The

surgeons filled 55 out of 55 of the questionnaires distributed (100.0%). We offered a questionnaire to each mastectomy patient, and 219 out of the required 173 (126.6%) questionnaires were filled. We considered the response rate sufficient and excellent for the study. A response rate of 50% is adequate for analysis and reporting, a response rate of 60% is good, and a response rate of 70% and over is excellent.¹⁰

Sample characteristics

Of the respondents, 69.1% were male, 63.6% were general surgeons, and 36.4% were plastic and reconstructive surgeons. The mean age was 34.18 (21.28—47.09). The mean age for male surgeons

was 34.55 (21.35—47.75), while female surgeons were 33.35 (20.93—45.77). The mean age at the time of mastectomy for our patients was 46.79 (20.71—72.87) years of age, and the modal age was 40.

Hindrances to breast reconstruction

Patients that did not receive a breast reconstruction reported the following hindrances: lack of awareness, financial constraints, being comfortable with their body image, advancing age, they did not want to undergo surgery again, further therapy, unmarried. The frequencies of the above we demonstrated in Figure 1.

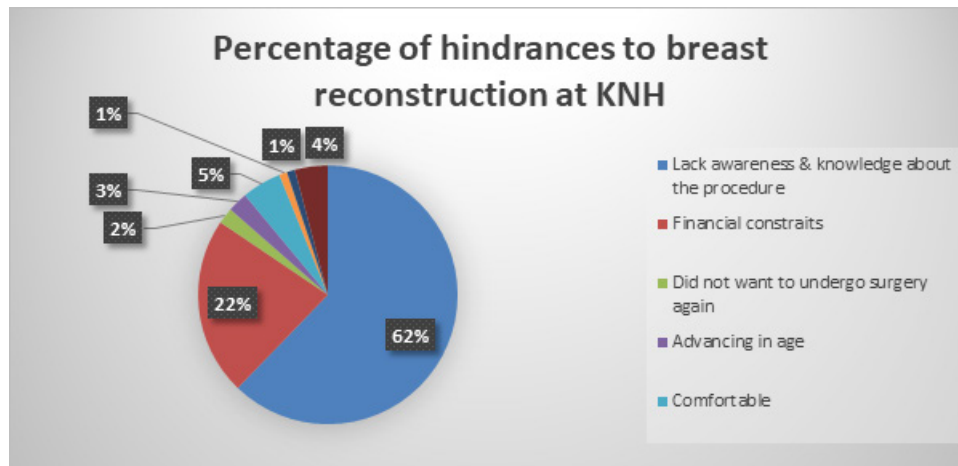


Figure 1 Frequencies of the various breast reconstruction hindrances as perceived by patients.

Tests of association

The surgeons' delineated the following as the hindrances for their mastectomy to breast reconstruction following their patients' mastectomy we describe it in Table 1. We also sought to outline the surgeons' perceived barriers to breast reconstruction as a surgeon at KNH. We summarized them in Table 2. 34.55% of all doctors had a high propensity to refer, 38.18% had a moderate propensity to refer, while 27.27% had a low propensity to refer. Of those with a high propensity to refer, 57.89% were plastic surgeons. For moderate and low propensity to refer, 9.52% and a third of them were plastic surgeons. 42.11%, 28.57%, and 20% of female surgeons report high, moderate, and low breast reconstructions referrals. We looked for the association between the propensity to refer a patient for breast reconstruction and the surgeons' various factors, as shown in Table 3. Surgeons were less likely to refer if they perceive a patient cannot pay for the procedure or lack sufficient knowledge. We also performed a significance test of association between the perceived barriers and the propensity to refer, age of the surgeon and sex of the surgeon. We found associations, as demonstrated in Table 4.

Table 4 established that a plastic and reconstructive surgeon is 5.750 times more likely to believe that their mastectomy patients do not have sufficient breast reconstruction knowledge compared to their general surgeon counterparts. Table 5 showed the perceptual differences between general and plastic surgeons. For those surgeons with a high propensity to refer patients for breast reconstruction, they are 4.533 more likely to perceive insufficient follow-up to be a barrier than those with a lower propensity to refer patients. Female surgeons were more inclined (4.62 times more) to perceive that KNH has limited resources (time, surgical equipment and infrastructure) compared to their male counterparts. In terms of communication

between the two disciplines, we found that plastic surgeons were 14.200 times more likely to believe that inadequate communication is a barrier. We cross-tabulated the association between the type of surgeon and the propensity to refer for breast reconstruction. We found a significant association ($p=0.004$). We further found that a general surgeon's odds of referring patients for breast reconstruction were 0.242 (0.074—0.791). Therefore, general surgeons are less likely to refer patients than plastic surgeons for breast reconstructions despite the perceived barriers. We ran a chi-square test to determine the association between gender and propensity to refer patients. There was no association ($p=0.110$); there was no association between the surgeon's age and the propensity to refer patients after running a Fischer's exact test ($p=0.272$).

Table 1 Surgeons' perceptions of why women do not choose breast reconstruction by surgeon referral practice to plastic surgery for breast reconstruction

Perceived barriers	Frequency presented as a %
Lack of awareness and knowledge	49.1
Financial Constraints	40
They do not want more surgery	5.5
Late presentation	14.5
Comfortable	3.6
Further therapy	5.5
Age	1.8
None	3.6

Table 2 Outline the surgeons' perceived barriers to performing breast reconstruction

Surgeons' perception	Frequency presented as a %
Insufficient follow-up	10.9
Remuneration - Concerned about cost	10.9
Not enough knowledge about reconstruction	47.3
Lack of referral	3.6
Limited hospital supplies	21.8
Lack of communication	5.5
None	3.6

Table 3 Perceived barriers of surgeons on breast reconstruction for their patients based on their propensity to refer

Perceived barriers for their patients	Propensity to refer			Adjusted OR (CI95%)	Odds ratio P-value
	Low	Moderate	High		
	N=	N=	N=		
Lack of awareness and knowledge	8	7	12	0.0013 (0-0.070)	0.001
Financial Constraints	10	5	7	0.022 (0-0.119)	0.003
They do not want more surgery	2	1	0	0.143 (0.001-19.454)	0.438
Late presentation	3	3	2	0.015 (0-1.008)	0.05
Comfortable	1	1	0	0.015 (0-1.008)	0.05
Further therapy	1	0	2	0.067 (0-5.495)	0.229
Age	0	0	1	0.333 (0.002 to 52.567)	0.671
None	2	0	0	0.2 (0.001 to 28.475)	0.525

Table 4 Significant associations and the adjusted OR

Perceived barrier	Chi-square p-value	Adjusted Odds ratio (CI 95%)	Odds ratio P-value
Lack of awareness and type of surgeon	0.004	0.174 (0.051 to 0.595)	0.049
Insufficient follow-up and referral propensity	0.02	4.533 (1.747 7.319)	0.035
Limited hospital resources and sex of the surgeon	0.02	4.62 (1.1998 to 17.7896)	0.026
Inapt communication between the two types of surgeons and the type of surgeon	0.018	14.200 (6.942 to 21.458)	0.031

Table 5 Perceptual differences between general and plastic surgeons

Perceived barrier	The difference in proportion (General Surgeon to Plastic Surgeon)	P-value
Lack of awareness & knowledge about the procedure	-0.407	0.004
Financial constraints	0.236	0.086
Did not want to undergo surgery again	0.086	0.178
Advancing in age	0.029	0.445
Comfortable	-0.021	0.683
Further therapy	0.007	0.911
Unmarried	0.057	0.276
Late presentation	0.15	0.129

Patients and surgeons

We sought to determine if the difference in perspective was significant between the surgeons and the patients. We computed the significance of the difference between the two proportions, as shown in Table 6. From our analysis, there is evidence that there are perceptual differences between the patients and the doctors. A higher proportion of surgeons believe that financial constraints, the need for further therapy and late presentation are the barriers to breast reconstruction compared to the patients. For the other perceived barriers, the difference in perception is not significant. In summary, our evaluation

of the congruency of perceived barriers between the surgeons and the patients showed that the two groups agreed on most factors. These later factors include lack of awareness and knowledge about the procedure, lack of a desire to undergo more surgery, advancement in age, the patient being comfortable without more aesthetic surgery, and marital status. We found evidence that there are perceptual differences between the patients and the doctors. A higher proportion of surgeons believe that financial constraints, the need for further therapy and late presentation are the barriers to breast reconstruction compared to the patients.

Table 6 The difference in perspectives between the patients and doctors as barriers to breast reconstruction

Perceived barrier	The difference in proportion (Patient to Surgeon)	P-value
Lack of awareness & knowledge about the procedure	0.13	0.082
Financial constraints	-0.178	0.007
Did not want to undergo surgery again	-0.035	0.158
Advancing in age	0.006	0.779
Comfortable	0.013	0.687
Further therapy	-0.045	0.033
Unmarried	0.01	0.466
Late presentation	-0.145	< 0.001

Discussion

A prerequisite for receiving post-mastectomy breast reconstruction (PMBR) is a referral to a plastic/reconstructive surgeon.⁴ Of the breast reconstruction stakeholders, plastic surgeons were more likely to refer patients for the procedure, with only about a third of the stakeholders having a high propensity to refer patients. In our set up, we found most doctors' perceived lack of awareness and knowledge and financial constraints to be significant hindrances to breast reconstruction accounting for 89.1% of the perceived barriers. Alderman AK et al.,⁶ established that these barriers lead to immediate breast reconstruction underutilization in Canada.⁶ Studies have shown that the negative predictive value of insufficient knowledge on PMBR has on the rate of PMBR.^{4,5,7} We opine that when surgeons refer for the surgery, they fear that patients will not return to the hospital for delayed breast reconstruction due to insufficient knowledge and awareness of the procedure, as is the case in 62% of our patients. Our study established that plastic and reconstructive surgeons were more likely to view post-mastectomy patients as having insufficient knowledge pre-operatively on breast reconstruction options than their general surgeon counterparts. Surgeons, especially female surgeons, were inclined to perceive limited resources to hinder them from performing the procedure. They claim that inpatient theatre time for all cases, theatre cancellations due to lack of blood for transfusion and absence of frozen sections; otherwise, immediate breast reconstruction would be more prevalent. In other centres, frozen sections acted as guides for intra-operative decision making for immediate autologous breast reconstruction.¹¹

Communication between the two disciplines facilitates a multidisciplinary approach to the care of breast cancer patients surgically. Evidence has shown that a multidisciplinary clinic with collaboration between specialties improves both access to reconstruction and patient satisfaction. Moreover, it recommends a

core breast healthcare team consisting of a radiologist, radiographer, surgeon, reconstructive surgeon, pathologist, medical oncologist, radiation oncologist, breast care nurse and data manager.^{12,13} We noted that plastic surgeons believed that there was poor communication between the two disciplines, therefore serving as a barrier. In Detroit and Los Angeles, only about a quarter of general surgeons referred about three-quarters of the patients to plastic surgeons to discuss the reconstructive options following mastectomy. Female doctors who work in cancer centres and more breast surgery experience tend to refer more. A referral is the most efficient and effective means of promoting patient preference and ensuring informed decision making for breast reconstruction.^{4-6,14} We established lower referral rates by general surgeons to plastic surgeons for breast reconstruction. Furthermore, the sex of the surgeon was not a predictor variable for the tendency to refer patients for breast reconstruction in our set up. With the payment of professional fees ranging between Kenya Shillings 220,000 to 350,000,¹⁵ it may be a significant financial hurdle for Kenyan patients to receive flap-based breast reconstruction. There is no quotable reference to how much it would cost to get implant-based breast reconstruction in Kenya. Implant-based reconstruction is expected to be more affordable compared to flap-based breast reconstruction.^{16,17} Moreover, it is challenging to compare Kenya and other countries due to the scarcity of cost data in Kenya; an area of future exploration is further analysis of breast reconstruction cost, including primary procedure or revision procedures, in Kenya.

Doctors strongly influence the patients' decision to undergo surgery. Surgeons might not recommend the surgery if they perceive that the patient cannot pay for the procedure or has inadequate knowledge of the operation.^{7,8} In our case, we established that doctors perceived financial constraints to be a more significant barrier than what our patients perceive. Also, the surgeons were less likely to refer a patient for PMBR based on this. We submit an exaggerated doctors' perspective on financial constraints. There is disconnect whereby

surgeons have a great concern about the surgery payment, while there is a lack of evidence from the patients' end. Doctors perceive further therapy to be a hindrance to performing breast reconstruction more than the patients. The difference in perception between the patient and the doctors affects the likelihood of undergoing breast reconstruction. The surgeon has an essential role in reviewing the risks and benefits of breast reconstruction with each patient. No protocol delineates a strategy for the decision-making process. Engagement of patients in health decisions with the clinical stakeholders on the apt management options reduces the potential risks of PMBR and increases the rate of PMBR. The complex decision-making involves aesthetic and surgical outcomes, quality of life and survival of the patient, and life expectancy.^{3,4,6,18}

The breast cancer stage at the time of presentation is a significant factor in the patient's prognosis. A systematic review showed that most patients in sub-Saharan Africa presented at stages III/IV. Stage IV is not appropriate for breast reconstruction as palliation care becomes management mode.^{19,20} Our study design failed to exclude stage IV breast cancer patients in the data collection stage. We could not stratify the data to know how many patients were significantly different from the population of interest, resulting in sampling bias. Our local institution established that most patients presented at tumour stage 2B to 3B. We have also noted that most of our breast reconstructed patients had a 90% probability of survival in ten years. Reconstructive surgery combined with dose-dense chemotherapy and growth factors following modified radical mastectomy, neoadjuvant chemotherapy, and endocrine therapy with ovarian ablation or tamoxifen is the maximal treatment of these stages.^{2,19,20} Therefore, our surgeons are justified to believe more than their patients that late presentation is a barrier to reconstruction as doctors are the ones that review the patients clinically and histologically for staging.

Limitations

We failed to collect data on surgeons' level of experience (from resident to consultant specialists) and the stage of breast cancer at the time of diagnosis. With such deficiencies in capturing the information, there is a need for future researchers to adapt the experience and staging of breast cancer as areas of further exploration.

Conclusion

A low breast reconstruction rate could result from a high proportion of surgeons having a low propensity to refer mastectomy patients for breast reconstruction. The significant perceived barriers to breast reconstruction were lack of awareness and knowledge and financial constraints. We found evidence that there are perceptual differences among doctors and between the patients and the doctors.

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Author's contribution

Gichuru Stephen Mwangi: Conception and design, Administrative support, Provision of study materials or patients, collection and assembly of data, Data analysis and interpretation.

John-Paul Ogalo: Conception and design, Administrative support, Provision of study materials or patients, collection and assembly of data.

Thomas Mutua Kedera: Conception and design.

Joseph Kimani Wanjeri: Conception and design, Administrative support, Provision of study materials or patients.

Peter Larry Waweru Ndaguatha: Administrative support.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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