

Factors Influencing the Decision for Breast Conservative Surgery among Breast Cancer Patients

Dr. Md. Jahangir Hossain¹, Dr. Mohammed Rafiqul Islam^{2*}, Dr. Samira Chowdhury³, Dr. Md. Abu Sayem⁴, Dr. Ahmed Sami Al Hasan⁵, Dr. Ifthakar Al Mamun⁶, Dr. Abu Khaled Muhammad Iqbal⁷, Dr. Mohammad Ziaur Rahman⁸

¹Medical Officer, Department of Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

²Medical Officer, Department of Urology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

³Medical Officer, Department of Gyne & Obs, Institute of Child and Mother Health (ICMH), Matuail, Dhaka, Bangladesh.

⁴Medical Officer, Department of Surgery, National Institute of Cancer Research & Hospital (NICRH), Mohakhali, Dhaka - 1212.

⁵Medical Officer, Department of Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh.

⁶Medical Officer, Department of Surgical Oncology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

⁷Assitant Professor, Department of General Surgery with Surgical Oncology, Chittagong Medical College Hospital, Chittagong, Bangladesh.

⁸Medical Officer, Department of Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

*Corresponding Author

Dr. Mohammed Rafiqul Islam,

Medical Officer, Department of Urology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Email ID : dr_rafiq_urology@hotmail.com

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ABSTRACT

Background: Breast cancer is a leading cause of cancer-related morbidity and mortality among women. While breast conservative surgery (BCS) offers a survival equivalent to mastectomy with superior cosmetic outcomes, its uptake in Bangladesh remains variable and influenced by a complex set of factors.

Objectives: To identify and analyze the key factors influencing the decision to undergo breast conservative surgery among breast cancer patients.

Methods: A prospective interventional study was conducted at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from January 2021 to December 2022. A purposive sample of 33 breast cancer patients was recruited. Data were collected through face-to-face interviews using a structured questionnaire. Statistical analysis was performed using SPSS version 23.0. **Results:** The mean age was 45.2±8.7 years. Key findings revealed that higher education ($p=0.049$), smaller tumor size ($p<0.001$), and 'good' pre-consultation knowledge ($p<0.001$) significantly predicted BCS choice. The surgeon's recommendation was profoundly influential. Fear of recurrence was the primary reason for mastectomy (76.5%), while desire for better cosmesis drove BCS choice (83.3%). A lack of detailed information was the most cited barrier (63.6%) to BCS. **Conclusion:** The decision for breast conservative surgery (BCS) is multifactorial. Enhancing patient education, addressing fears of recurrence, and ensuring effective surgeon communication are crucial to increasing BCS uptake in Bangladesh and aligning practice with oncological standards.

Keywords: Breast cancer, Breast conservative surgery, Decision-making, Mastectomy, Recurrence, Tumor

INTRODUCTION

Breast cancer remains the most frequently diagnosed cancer and a leading cause of cancer-related mortality among women worldwide, posing a significant global public health challenge [1]. The management of early-stage breast cancer has evolved radically over the past few decades, shifting from radical mastectomy as the sole option towards less invasive, breast-

conserving approaches. Breast Conservative Surgery (BCS), followed by radiotherapy, has been established as the standard of care for eligible patients, offering oncological outcomes equivalent to mastectomy while preserving the breast mound and, consequently, improving cosmetic outcomes and patient-reported quality of life [2,3]. Multiple large-scale, randomized controlled trials and subsequent meta-analyses have consistently demonstrated that for early-stage disease, overall survival and disease-free survival rates between BCS with radiotherapy and mastectomy are comparable [4,5]. This robust evidence has solidified BCS as a cornerstone of breast cancer treatment guidelines globally. Beyond survival metrics, the psychological and aesthetic benefits of BCS are profound, leading to better body image, higher self-esteem, and lower rates of anxiety and depression compared to patients undergoing mastectomy [6]. Despite the well-documented equivalence in survival and superior psychosocial outcomes, the rates of BCS adoption vary significantly across different geographical regions and healthcare systems [7]. In high-income countries, BCS rates often exceed 60-70% for eligible patients, reflecting the integration of clinical evidence and patient preference into surgical decision-making [8]. However, in low- and middle-income countries (LMICs), including Bangladesh, the uptake of BCS remains disproportionately low, with mastectomy continuing to be the predominant surgical intervention [9,10]. This discrepancy highlights a critical gap between evidence-based recommendations and real-world clinical practice. The decision-making process for breast cancer surgery is complex and multifactorial, influenced by a dynamic interplay of variables beyond mere clinical eligibility. Studies indicate that this choice is shaped by a confluence of patient-related factors (e.g., age, education level, fear of recurrence, cosmetic concerns, and cultural beliefs), disease-related factors (e.g., tumor size and stage), and healthcare system-related factors (e.g., surgeon's recommendation, availability of radiotherapy, and access to complete information) [11,12]. In the context of Bangladesh, deeply ingrained cultural perceptions, socioeconomic constraints, and limited awareness about modern treatment options may heavily sway patients and their families towards mastectomy, often perceived as a more definitive and safer "complete removal" of cancer [9,13]. Understanding the specific determinants that influence the surgical choice in this unique socio-cultural and economic setting is crucial. There is a paucity of recent prospective data from Bangladesh analyzing this decision-making paradigm. Therefore, this study aims to identify and analyze the key factors influencing the decision for Breast Conservative Surgery among breast cancer patients presenting at a major tertiary care university hospital in Dhaka, Bangladesh. The findings will help illuminate the barriers and facilitators to BCS uptake, thereby informing targeted patient education and physician counseling strategies to align clinical practice with international standards of oncologic care.

METHODOLOGY

Study design and population: A prospective interventional study was conducted at the Department of Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The study population consisted of newly diagnosed breast cancer patients who were candidates for primary surgical intervention.

Inclusion criteria: Patients were eligible for participation if they were adult females (age ≥ 18 years), had a histopathologically confirmed diagnosis of primary breast cancer, and were clinically eligible for both BCS and mastectomy as determined by a multidisciplinary tumor board.

Exclusion criteria: Patients were excluded if they had metastatic disease at presentation, had recurrent breast cancer, presented with locally advanced cancer not amenable to upfront surgery, or had significant cognitive impairment affecting their ability to provide informed consent.

Study procedure: A purposive sampling technique was used to recruit 33 participants over the study period from January 2021 to December 2022. After obtaining informed consent, data were collected through face-to-face interviews using a pre-tested, structured questionnaire. The tool captured socio-demographic, clinical, and decision-making variables.

Data analysis: All collected data were compiled, coded, and analyzed using the Statistical Package for the Social Sciences (SPSS), version 23.0. Descriptive statistics were used to summarize participant characteristics. Inferential analyses, including Chi-square and Fisher's exact tests, were applied to determine associations between independent variables and the choice of surgery.

RESULT

A total of 33 breast cancer patients participated in this study. The mean age of the participants was 45.2 years (± 8.7 SD), with the majority (57.6%) falling between 41 and 60 years of age. Most patients were from urban areas (69.7%), had completed at least a secondary level of education (63.7%), and had a monthly family income below 50,000 BDT (72.7%). Analysis of the relationship between socio-demographic factors and the choice of surgery revealed that a higher educational status was significantly associated with a greater likelihood of opting for BCS. Clinical and tumor characteristics showed that a significant proportion of patients (63.6%) were diagnosed at Stage II of the disease. Tumor size was a critical determinant; 78.8% of patients who chose BCS had a tumor size of ≤ 2 cm, whereas 85.7% of those opting for mastectomy had a tumor size of 2-5 cm. This association between smaller tumor size and the selection of BCS was statistically significant. Furthermore, the majority of patients (81.8%) had invasive ductal carcinoma, which was the most common histopathological

type. The influence of knowledge and information sources was profound. Only 36.4% of patients reported having 'good' knowledge about BCS before consultation. The primary source of information for most (60.6%) was their treating physician. A highly significant association was found between the level of pre-consultation knowledge and the final surgical decision, with those having 'good' knowledge being far more likely to choose BCS. The strongest predictor of the final decision was the surgeon's recommendation. An overwhelming 90.9% of patients who received a recommendation for BCS opted for it, while 94.1% of those who received a recommendation for mastectomy followed that advice. Psychological and personal factors also played a substantial role. The most common reason cited for choosing mastectomy was the 'Fear of cancer recurrence' (76.5%), whereas the desire for 'Better cosmetic outcome' was the primary reason (83.3%) for selecting BCS. When asked about perceived barriers, a lack of detailed information about the procedure and its outcomes was the most frequently reported obstacle (63.6%) among all patients.

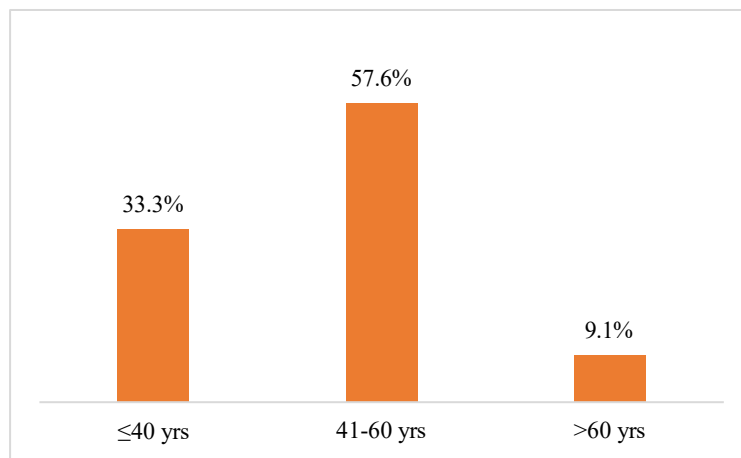


Figure 1: Distribution of age (N=33)

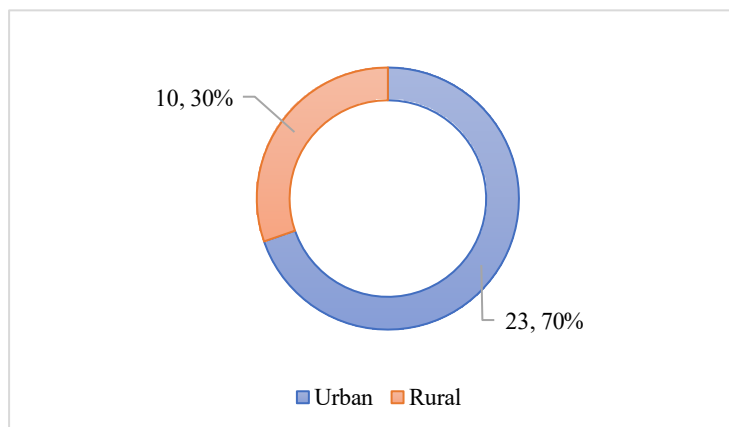


Figure 2: Residential status

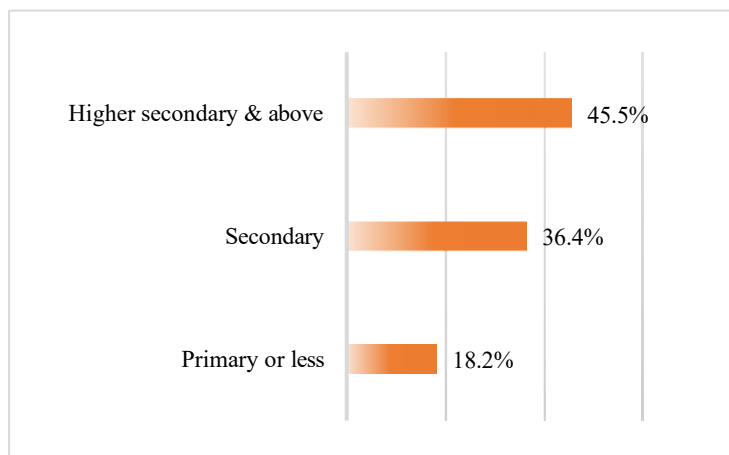


Figure 3: Educational status

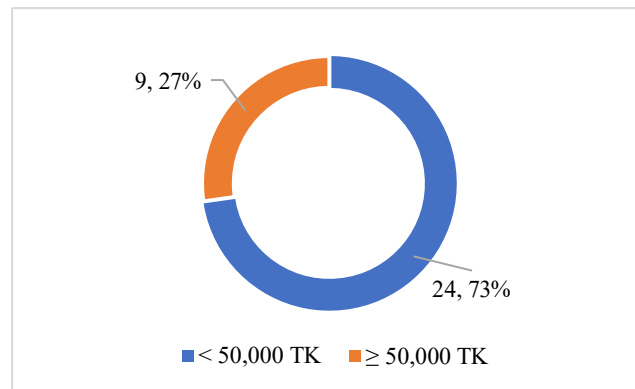


Figure 4: Monthly income status

Table 1: Association between socio-demographic factors and choice of surgery

Characteristic	Category	BCS	Mastectomy	p-value
		(n=12)	(n=21)	
Age group	≤40 years	5 (41.7%)	6 (28.6%)	0.456
	>40 years	7 (58.3%)	15 (71.4%)	
Education	Secondary or less	4 (33.3%)	14 (66.7%)	0.049
	Higher secondary & above	8 (66.7%)	7 (33.3%)	
Residence	Urban	10 (83.3%)	13 (61.9%)	0.252
	Rural	2 (16.7%)	8 (38.1%)	
Income	< 50,000 BDT	7 (58.3%)	17 (81.0%)	0.227
	≥ 50,000 BDT	5 (41.7%)	4 (19.0%)	

Fisher's Exact Test was used for statistical analysis

Table 2: Association between clinical factors and choice of surgery (N=33)

Clinical factor	Category	BCS	Mastectomy	p-value
		(n=12)	(n=21)	
Disease stage	Stage I	5 (41.7%)	3 (14.3%)	0.072
	Stage II	7 (58.3%)	14 (66.7%)	
	Stage III	0 (0.0%)	4 (19.0%)	
Tumor size	≤ 2 cm	10 (83.3%)	3 (14.3%)	<0.001
	2-5 cm	2 (16.7%)	18 (85.7%)	
Histology	Invasive ductal carcinoma	9 (75.0%)	18 (85.7%)	0.653
	Other types	3 (25.0%)	3 (14.3%)	

Fisher's Exact Test was used for statistical analysis

Table 3: Influence of knowledge and information on surgical decision

Factor	Category	BCS	Mastectomy	p-value
		(n=12)	(n=21)	
Pre-consultation knowledge	Poor	2 (16.7%)	19 (90.5%)	<0.001
	Good	10 (83.3%)	2 (9.5%)	
Primary information source	Physician	9 (75.0%)	11 (52.4%)	0.281
	Media/Friends/Relatives	3 (25.0%)	10 (47.6%)	
Surgeon's recommendation	For BCS	10 (83.3%)	1 (4.8%)	<0.001

	For mastectomy	2 (16.7%)	20 (95.2%)	
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Fisher's Exact Test was used for statistical analysis

Table 4: Patient-reported reasons for surgical choice

Reason for choice	BCS (n=12)	Mastectomy (n=21)
Fear of cancer recurrence	1 (8.3%)	16 (76.2%)
Desire for a better cosmetic outcome	10 (83.3%)	0 (0.0%)
Perception of being "more definitive"	0 (0.0%)	3 (14.3%)
Following the family's advice	1 (8.3%)	2 (9.5%)

Patients could cite more than one reason; percentages are based on the group total

Table 5: Perceived barriers to breast conservative surgery

Perceived barrier	n	%
Lack of detailed information	21	63.6
Fear of radiotherapy	18	54.5
Longer treatment duration	15	45.5
Cost of radiotherapy	12	36.4
Lack of a radiation facility nearby	9	27.3

Participants could report multiple barriers; percentages are based on the total participants

DISCUSSION

This prospective interventional study provides critical insights into the multifactorial nature of surgical decision-making among breast cancer patients at a tertiary care center in Bangladesh. Our findings illuminate a complex interplay of clinical, socio-demographic, knowledge-based, and psychological factors that collectively influence the choice between BCS and mastectomy. The significant association between higher educational attainment and the choice of BCS aligns with findings from other settings [14,15]. This suggests that patients with more education may possess greater health literacy, enabling them to better comprehend the equivalence in survival outcomes between BCS and mastectomy, and thus value the associated quality-of-life benefits. Conversely, the lack of a significant association with age or income in our study contrasts with some Western literature [16], but may reflect the specific socio-economic context of our purposive sample, where other barriers overshadow these factors. As expected, and consistent with global clinical guidelines [3], tumor size was a paramount clinical determinant. The strong association ($p < 0.001$) between smaller tumor size (≤ 2 cm) and the selection of BCS underscores that anatomical feasibility remains the foundational criterion. However, the fact that some patients with smaller tumors still opted for mastectomy highlights that clinical eligibility alone does not dictate the final decision, pointing to the powerful influence of patient perceptions and preferences. Perhaps the most striking findings of this study pertain to knowledge and information. The profound impact of a surgeon's recommendation on the patient's final choice cannot be overstated, with over 90% of patients aligning their decision with their doctor's advice. This places a tremendous responsibility on healthcare providers to offer balanced, evidence-based counseling. Furthermore, the strong correlation between 'good' pre-consultation knowledge and the choice of BCS ($p < 0.001$) underscores a critical deficit in public awareness and patient education. This is compounded by our finding that a 'lack of detailed information' was the most frequently cited barrier to BCS. In contexts like Bangladesh, where information from non-medical sources may be rife with misconceptions, the role of the treating physician as a trusted information source becomes even more crucial [17]. The psychological landscape of the patients played a definitive role. The predominant reason for choosing mastectomy was the 'fear of cancer recurrence,' a well-documented phenomenon often rooted in the misconception that more radical surgery equates to a better cure [18,19]. This "more is better" heuristic is a powerful driver in medical decision-making under uncertainty. On the other hand, the desire for a better cosmetic outcome was the primary motivator for those choosing BCS, consistent with studies linking body image preservation to improved psychosocial well-being post-treatment [6,20]. Our study must be interpreted in light of its limitations. The relatively small sample size of 33 and the use of a purposive sampling technique from a single tertiary institution limit the generalizability of our findings to the broader population of Bangladesh. The study duration, which coincided with the COVID-19 pandemic, may have also influenced patient flow and decision-making dynamics. The decision for BCS is not made in a vacuum but is shaped by a confluence of tumor biology, patient education, surgeon guidance, and deep-seated psychological fears. To improve the uptake of BCS in Bangladesh, a multi-pronged approach is essential. This should include the development of structured patient education programs and decision aids to dispel myths and provide clear information [21,22]. Enhancing communication skills training for physicians to effectively counsel patients is paramount [23].

Limitations:

This study's limitations include a small sample size and purposive sampling from a single center, limiting generalizability. Furthermore, the study period during the COVID-19 pandemic may have influenced patient decisions and access to care.

CONCLUSION

The decision for Breast Conservative Surgery is multifactorial, significantly influenced by tumor size, patient education, surgeon recommendation, and pre-operative knowledge. Fear of recurrence remains a primary barrier. Enhancing structured patient counseling and developing targeted educational interventions are crucial to align clinical practice with evidence-based guidelines and increase BCS uptake in Bangladesh, thereby improving quality-of-life outcomes for breast cancer patients.

Recommendation:

Implement structured patient counseling and decision aids to address knowledge gaps and fears. Enhance physician communication training for shared decision-making. Future multi-center studies with larger samples are recommended to generalize findings and develop context-specific interventions.

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