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Factors influencing surgical decision-making in breast cancer using patient-reported outcomes: A multicenter collaborative study

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Background

Recent advances in cancer treatment and improvements in prognosis have led to increasing recognition of the critical role of shared decision-making (SDM) between patients and healthcare providers in determining treatment strategies. SDM requires not only information on surgery-related outcomes and health-related quality of life, but also consideration of patient-specific factors such as the social background. However, determinants of surgical choice among Japanese patients remain unclear, and this study aimed to identify the influencing factors.

Patients and methods

This multicenter, cross-sectional study evaluated patient-reported outcomes in 577 Japanese patients who underwent mastectomy (MT), breast-conserving surgery (BCS), or immediate breast reconstruction (IBR). Participants completed questionnaires to assess the factors influencing surgical decision-making, including sociodemographic, psychosocial, and healthcare provider-related factors. Clinical data were obtained from the medical records, and multivariate analyses were conducted to identify the factors associated with the selection of surgical procedures. The factors influencing surgical decision-making were categorized into clinicopathological factors, sociodemographic factors, psychosocial factors, and healthcare provider-related factors (Fig. 1).

Results

Patient characteristics were compared among the three surgical groups. Significant differences were observed in the age at diagnosis (P < 0.001), smoking status (P < 0.001), primary tumor size (P < 0.001), clinical node status (P = 0.003) and receipt of chemotherapy (P < 0.001) (Table 1). The most frequently reported factor influencing surgical decision-making was the surgeon's opinion (92.2%), followed by fear of cancer recurrence (43.8%), partner's opinion (35.5%), opinion of family members (22.4%), and opinion of breast cancer survivors (21.0%). The least frequently reported factor was financial concerns (3.6%) (Fig. 2). (Fig. 2). It was observed that nurse's opinion was significantly more frequently reported in the IBR group (10.8%) than in the other groups (P = 0.004). Partner's opinion demonstrated a significantly higher frequency in the BCS (39.5%) and IBR (41.5%) groups compared with the MT group (28.0%) (P = 0.012). Concern about recurrence was the predominant factor in the MT group (52.3%), with a significant difference among the procedures (P = 0.002). Impact on hobbies was the most frequent in the IBR group (7.7%), showing a significant difference (P = 0.004). Impact on work was also the most frequent in the IBR group (11.3%), with a significant difference among the groups (P = 0.025) (Fig. 3). In multivariate analysis, younger age, nurse's opinion, and lower concern about recurrence were significantly associated with the IBR group than the MT group (P<0.001, P = 0.022, and P = 0.042, respectively). In addition, younger age, non-smoking status, and nurse's opinion were significantly associated with the IBR group than the BCS group (P<0.001, P = 0.012, and P = 0.026, respectively) (Table 3). (Table 2).

Fig 1. Overview of the various factors influencing surgical decision-making in breast cancer

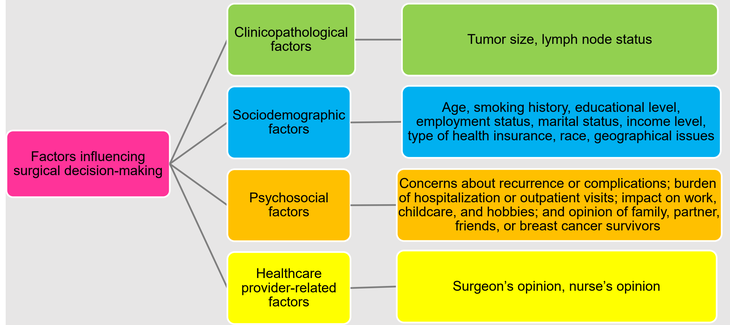


Fig 2. Frequency of factors influencing surgical procedure selection in breast cancer

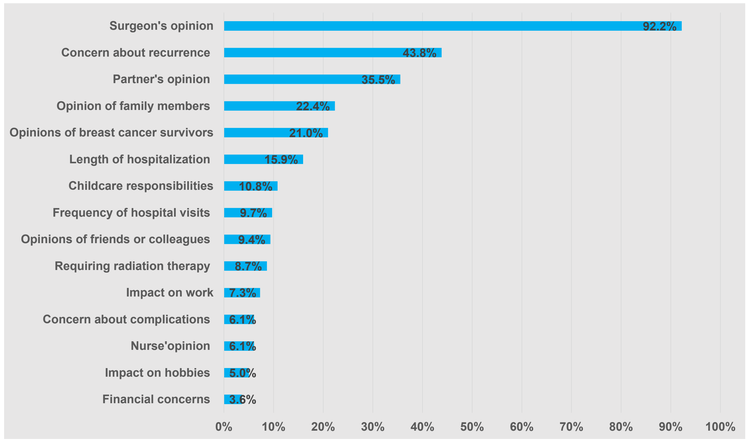


Figure 3. Comparison of factors influencing surgical decision-making in breast cancer by procedure

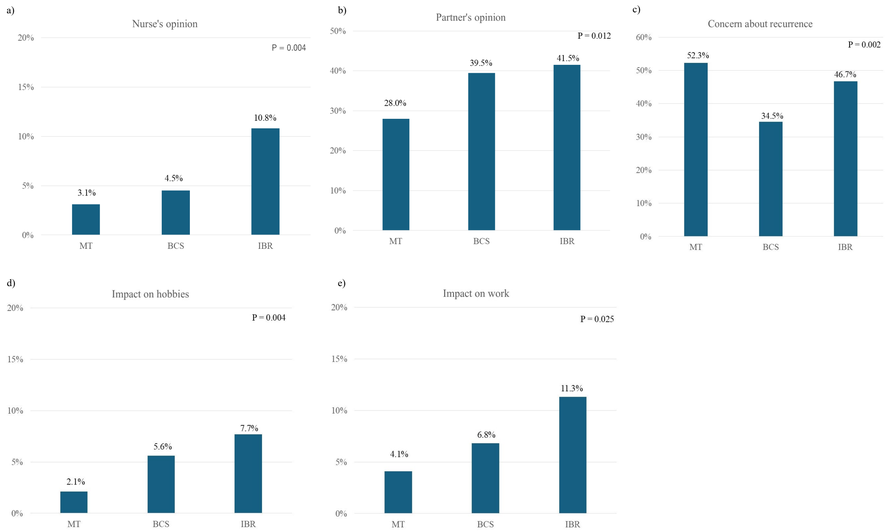


Table 1. Patient characteristics

Variables	Total (n = 577)	MT (n = 194)	BCS (n = 185)	IBR (n = 198)	P-value
Time from surgery to questionnaire response (months), mean (SD)	56.0 (± 27.9)	55.7 (± 27.4)	54.3 (± 29.9)	58.1 (± 26.6)	0.406
Age at diagnosis (years), mean (SD)	53.6 (± 11.5)	58.1 (± 11.9)	54.8 (± 11.4)	48.2 (± 8.6)	<0.001
Smoking					
No	510 (88.4%)	182 (93.8%)	170 (91.9%)	158 (79.8%)	<0.001
Yes	48 (8.3%)	10 (5.2%)	7 (3.8%)	31 (15.7%)	
Unknown	19 (3.3%)	2 (1.0%)	8 (4.3%)	9 (4.5%)	
Primary tumor size (T)					
is/1	385 (66.7%)	101 (52.1%)	141 (76.2%)	143 (72.3%)	<0.001
≧2	175 (32.1%)	92 (47.5%)	43 (23.3%)	50 (25.2%)	
Unknown	7 (1.2%)	1 (0.5%)	1 (0.5%)	5 (2.5%)	
Clinical node status (N)					
0	488 (84.6%)	152 (78.4%)	169 (91.4%)	167 (84.3%)	0.003
≧1	83 (12.3%)	42 (21.6%)	15 (8.1%)	26 (13.1%)	
Unknown	6 (1.0%)	0 (0%)	1 (0.5%)	5 (2.5%)	
Chemotherapy					
No	405 (70.2%)	115 (59.3%)	149 (80.5%)	141 (71.2%)	<0.001
Yes	169 (29.3%)	79 (40.7%)	36 (19.5%)	54 (27.3%)	
Unknown	3 (0.5%)	0 (0%)	0 (0%)	3 (1.5%)	

Table 2. Factors associated with the decision to undergo immediate breast reconstruction (multivariate analysis)

	MT vs. IBR		BCS vs. IBR	
Factors	**OR (95%CI)**	**P-value**	**OR (95%CI)**	**P-value**
Primary tumor size (T)(T≧2 vs T≦1)	0.694 (0.366-1.316)	0.263	1.088 (0.549-2.153)	0.810
Clinical node status (N) N≧1 vs N0	0.747 (0.316-1.766)	0.507	1.146 (0.440-2.986)	0.781
Chemotherapy (yes vs. no)	0.612 (0.314-1.192)	0.149	0.959 (0.477-1.926)	0.906
Age	1.083 (1.051-1.116)	<0.001	1.055 (1.024-1.086)	<0.001
Smoking (yes vs. no)	2.463 (0.962-6.306)	0.060	3.485 (1.309-9.276)	0.012
Employment status (full-time vs. part-time/unemployed)	1.677 (0.920-3.057)	0.091	1.164 (0.669-2.023)	0.591
Total household income (≧$ 5,500 vs. ＜ $5,500)	1.501 (0.821-2.774)	0.185	0.791 (0.455-1.375)	0.405
Nurse's opinion (yes vs. no)	4.263 (1.237-14.687)	0.022	3.732 (1.172-11.880)	0.026
Length of hospitalization (yes vs. no)	1.438 (0.695-2.976)	0.328	1.030 (0.525-2.021)	0.932
Concern about recurrence (yes vs. no)	0.568 (0.329-0.981)	0.042	1.671 (0.979-2.851)	0.060
Impact on hobbies (yes vs. no)	2.914 (0.711-11.939)	0.137	1.014 (0.360-2.856)	0.979
Impact on work (yes vs. no)	1.135 (0.405-3.177)	0.810	1.074 (0.410-2.813)	0.884
Opinions of friends or colleagues (yes vs. no)	0.833 (0.429-1.617)	0.589	1.098 (0.536-2.251)	0.798

Conclusion

The findings of this study can help in enhancing SDM in breast cancer treatment. As the factors influencing decision-making vary by surgical procedure, it is essential to tailor the surgical choices to each patient's values and lifestyle. Strengthening decision-support systems by involving the entire healthcare team will be an important priority moving forward.

COI Disclosure

All authors declare that they have no financial conflicts of interest related to the presentation.

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