

Surgery decision conflict and its related factors among newly diagnosed early breast cancer patients in China: A cross-sectional study

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Abstract

Aim: The aim of this study was to explore surgery decision conflict and its related factors among newly diagnosed early breast cancer patients in China.

Design: A cross-sectional survey study was conducted.

Methods: A total of 262 patients confronted with surgery decision-making were enrolled. The related factors were assessed with a demographic questionnaire, the Chinese version of the Decision Conflict Scale (DCS-C-16) and the Patient Participation Competence Scale (PPCS).

Results: Patients had a high level of decision conflict that was negatively correlated with the PPCS score. Age, marital status, living environment, education level, family income, cancer stage and the PPCS score were independent factors influencing decision conflict. Marital status, education level, cancer stage and participation competence were significant predictors of decision conflict. Patients who had higher participation competence were married, were well educated and had a lower cancer stage were likely to experience lower decision conflict.

KEYWORDS

breast cancer, decision conflict, newly diagnosed, participation competence, shared decision-making

1 | INTRODUCTION

According to global research data released by the World Health Organization (Bray et al., 2018), there were approximately 2.1 million newly diagnosed breast cancer (BCa) patients in 2018. In China, BCa accounts for 15% of all new female cancer cases and is still the most frequently diagnosed cancer in women (Chen et al., 2016). In addition to the high incidence rate of BCa, the survival rate is also increasing. In a survey conducted in 72 regions in China, the 5-year survival rate of BCa patients reached 58%–90%

(Li et al., 2016), which is due in part to the availability of multiple effective treatments.

Surgery is the most basic and common treatment for early BCa. A study of 3,846 Chinese BCa patients showed that 88.27% underwent surgery (Situ et al., 2015). In addition, the choice of surgery has evolved from single mastectomy to a number of options, including lumpectomy and reconstruction after mastectomy. It is generally verified that the survival rate for lumpectomy plus radiation is the same as that for mastectomy (Fisher et al., 2002). However, the fear of recurrence may be high among women who prefer to undergo

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lumpectomy, and females who choose mastectomy may have more negative emotions. Because all the choices are medically reasonable and BCa surgery decision-making is “preference-sensitive,” patients should participate in weighing the pros and cons of each option based on their own values (de Ligt et al., 2019; Wennberg, 2002). Nevertheless, the process of surgery decision-making for newly diagnosed BCa patients is not simple in clinical practice, and most patients have difficulty making decisions due to certain situations, leading to the occurrence of decision conflict (Ghaemi et al., 2019).

2 | BACKGROUND

With the progress of surgical treatment for BCa, there are many available options; the process of decision-making is therefore complicated, and patients face decision problems. Decision conflict is a prominent, subjective and comprehensive problem. It manifests as uncertainty about alternatives in decisions that involve risks or unknown outcomes, hesitation about potential gains and losses, and doubts about personal values and beliefs (Sim et al., 2015). For patients themselves, higher decision conflict negatively influences quality of life, leading to anxiety, stress and decision regret (Yamauchi et al., 2019). From the perspective of medical care services, it may result in delays and cause patients to miss the optimal operating time, increasing medical disputes (Knops et al., 2013). Therefore, it is of great significance to focus on decision conflict to improve the quality of medical processes and patients' health condition.

Decision conflict has become a significant predictor of decision quality, especially in BCa surgery decision-making (Sepucha et al., 2015). Newly diagnosed BCa patients are more likely to be exposed to decision conflict, as they usually face surgery treatment choices early on and feel shocked and fearful about their transition to the decision-maker role. These feelings are the result of meeting the indications for mastectomy and lumpectomy at the same time and a lack of understanding of the disease, awareness of shared decision-making and knowledge of options. Moreover, studies have shown that whether the patient has the competence to participate is a prerequisite for effective involvement and the elimination of decision problems; if patients are granted the autonomy to engage in medical decision-making but their subjective and objective decision competence, such as their knowledge, communication skills and emotion regulation, are not improved, then they cannot make good decisions (Welie & Welie, 2001). With the strengthening of public awareness of patients' rights and patients' transition from a passive to an active role in the medical process, patient participation competence has become a necessity in the decision process (Liu, 2012). How participation competence affects BCa surgery decision conflict remains poorly understood. Furthermore, although related studies have been carried out in other countries, little is known about the current situation and factors associated with surgery decision conflict among newly diagnosed Chinese BCa patients, particularly in the context of a Confucian culture. Hence, in the context of the Chinese cultural background, what are the current situation and

influencing factors of surgery decision conflict for patients who are newly diagnosed with early breast cancer? What is the relationship between participation competence and decision conflict? This study aims to determine the factors influencing decision conflict and the relationship between participation competence and decision conflict among newly diagnosed Chinese BCa patients to enhance decision quality, implement shared decision-making and optimize the medical experience.

3 | THE STUDY

3.1 | Design

This was a cross-sectional study performed among newly diagnosed BCa patients facing mastectomy or lumpectomy decision-making. Convenience sampling was conducted in the inpatient departments of a tertiary general hospital affiliated with Zhengzhou University in Henan Province, China.

3.2 | Sample

A total of 262 participants were enrolled from May 2020–August 2020. The inclusion criteria for selection included (a) at least 18 years old; (b) newly diagnosed and pathologically diagnosed stage I–II BCa; (c) tasked with making surgery decisions due to the certification of indications for mastectomy and lumpectomy; and (d) informed of the disease diagnosis and waiting for the initial preoperative conversation, with no counselling or information related to surgery decision options provided to patients prior to the conversation, and (e) willingness to participate in this survey. The exclusion criteria were as follows: (a) cognitive impairment or mental illness; (b) severe complications; and (c) family members who did not want patients to participate.

3.3 | Data collection

Team members were uniformly trained. Before the investigation, the researcher introduced the study purpose, content, method and matters needing attention to the team members. Then, the team members introduced the purpose of the survey to the patients, asked whether they were willing to participate and gave those who agreed a printed informed consent form and the questionnaires. The patients filled out the questionnaires anonymously and returned them on the spot.

3.4 | Instruments

The demographic questionnaire was self-designed by the researcher to collect patients' demographic and clinical characteristics. The demographic information collected was age, nationality, marital status,

number of children, living environment, education level, insurance, family per capita monthly income and work status. The clinical characteristics collected were cancer stage and whether the lesion was unilateral or bilateral.

The Decision Conflict Scale (DCS-16) was developed by O'Connor (O'Connor, 1995) in 1995 to assess the state of uncertainty of action in respondents confronted with high-stakes choices and was translated into Chinese by Li (2017). The Chinese version of the DCS-16 was examined among early liver cancer patients in Shanghai in mainland China and was subsequently used in patients with atrial fibrillation (Shen & Yang, 2020) and chronic heart failure (Jia et al., 2019) in mainland China. The DCS-16 used in this study consists of 3 dimensions (16 items). Items are rated on a 5-point Likert scale from 0–4 (from strongly agree to strongly disagree) (Li, 2017). The total score ranges from 0–64 and needs to be converted to a 0–100 scale, which follows the original English version. The higher the total score is, the higher the level of decision conflict. A score <25 indicates that the decision is effective, and a score >37.5 means that the decision is delayed or the respondent feels uncertain about the decision. Cronbach's alpha coefficient in this study was 0.941.

The Patient Participation Competence Scale (PPCS) was developed by Liu (2012) to measure patients' objective and subjective ability during the decision-making participation process. This scale consists of 4 dimensions (31 items), and the items are rated on a 5-point Likert scale from 1–5 (from strongly disagree to strongly agree) (Liu, 2012). The total score ranges from 31–155. The higher the total score is, the higher the level of patient participation competence. The Cronbach's α coefficient in this study was 0.920.

3.5 | Statistical methods

SPSS version 21.0 was used for data analysis. Measurement data were expressed as \bar{x} (*SD*) and counting data as frequency and percentage; *t* tests and ANOVA were used to test the differences in surgery decision conflict scores in BCa patients with different demographic and clinical characteristics. Pearson's correlation analyses were used to test the correlations between decision conflict and participation competence. To determine the influencing factors and the best model to explain decision conflict, multiple stepwise regression analysis was adopted. All variables of the demographic and clinical characteristics that were statistically significant according to *t* tests and ANOVA were added to the model as independent variables and were retained only if they were significant for the final model. Furthermore, the actual scores of participation competence were added to the model as independent variables if they were correlated with surgery decision conflict based on Pearson's correlation analyses. The final model predicts the mean change in decision conflict. The best model was assessed with *R* squared. The *p*-value for all statistical significance was .05, and the alpha level for adding or removing a variable in the model was 0.05 or 0.10, respectively.

3.6 | Ethical considerations

This study was approved before data collection by the ethics committee of the affiliated hospital (code number: 2020-KY-220).

4 | RESULTS

A total of 270 questionnaires were sent out, and 262 valid questionnaires were collected, for an effective recovery rate of 97.04%. The demographic information of the BCa patients was obtained. The participants were all female, with an average age of 44.70 (*SD* 11.27) years. They were predominately Han (87.0%). More than half of the participants were married (81.3%), and nearly half of them had two children (43.9%). A total of 61.5% lived in a rural area, and 15.3% had a bachelor's degree or above. Only 13.8% of the participants had family per capita monthly income over 5,000 yuan. The numbers of employed (49.2%) and unemployed (50.8%) participants were almost the same. Most of participants (61.5%) were at cancer stage II. Unilateral lesions were present in almost two-thirds of the participants (66.8%).

4.1 | Decision conflict scores of BCa patients with different characteristics

The results showed that newly diagnosed BCa patients with different ages, marital statuses, living environments, education levels, family per capita monthly incomes and cancer stages had statistically significant different surgery decision conflict scores (*p* < .05; Table 1).

4.2 | Surgery decision conflict scores of the newly diagnosed BCa patients

The total decision conflict score of the newly diagnosed BCa patients was 45.68 (*SD* 23.40), and the scores for each dimension, from high to low, were decision uncertainty (49.05 *SD* 25.31), information and values clarity (47.65 *SD* 30.39), and decision support and effectiveness (43.37 *SD* 21.85), all converted to a 0–100 point scale.

4.3 | Participation competence scores and the correlation with decision conflict in newly diagnosed BCa patients

The total participation competence score of the newly diagnosed BCa patients was 95.50 (*SD* 19.72), and the item average scores for each dimension were communication competence (3.63 *SD* 0.96), information acquisition competence (2.98 *SD* 1.10), emotion management competence (2.97 *SD* 0.28) and autonomous decision-making competence (2.76 *SD* 1.05). Pearson's correlation analysis

TABLE 1 Decision conflict scores of BCa patients with different characteristics ($N = 262$)

Items	N (%)	Score ($\bar{x} \pm s$)	t/F	p
Age				
18–30	28 (10.7%)	27.12 \pm 21.24	14.703	<.001
31–40	62 (23.7%)	35.84 \pm 21.37		
41–50	84 (32.1%)	50.67 \pm 21.77		
51–60	66 (25.2%)	50.33 \pm 22.75		
≥ 61	22 (8.3%)	64.06 \pm 12.44		
Nationality				
Han	228 (87.0%)	45.14 \pm 23.48	–0.969	.333
Ethnic minority	34 (13.0%)	49.31 \pm 22.82		
Marital status				
Unmarried	49 (18.7%)	55.01 \pm 26.30	3.146	.002
Married	213 (81.3%)	43.53 \pm 22.19		
Number of children				
0	20 (7.6%)	40.31 \pm 25.22	0.714	.544
1	76 (29.0%)	45.31 \pm 22.82		
2	115 (43.9%)	45.37 \pm 23.36		
≥ 3	51 (19.5%)	49.05 \pm 23.81		
Living environment				
Urban	101 (38.5%)	35.33 \pm 20.40	–6.044	<.001
Rural	161 (61.5%)	52.17 \pm 22.87		
Education level				
Primary school	92 (35.1%)	57.37 \pm 23.99	24.410	<.001
Junior high school	48 (18.3%)	53.58 \pm 16.81		
Senior high/technical secondary school	37 (14.1%)	43.54 \pm 18.61		
Junior college	45 (17.2%)	33.26 \pm 16.89		
Bachelor's or above	40 (15.3%)	25.27 \pm 18.16		
Family per capita monthly income (yuan)				
Less than 2,000	49 (18.7%)	42.98 \pm 19.03	18.043	<.001
2,000–2,999	75 (28.6%)	54.69 \pm 24.54		
3,000–3,999	71 (27.1%)	53.59 \pm 23.25		
4,000–5,000	31 (11.8%)	35.43 \pm 17.53		
More than 5,000	36 (13.8%)	23.83 \pm 8.53		
Work status				
Unemployed	133 (50.8%)	48.09 \pm 24.13	1.694	.091
Employed	129 (49.2%)	43.20 \pm 22.44		
Cancer stage				
I	101 (38.5%)	33.63 \pm 19.11	–7.221	<.001
II	161(61.5%)	53.24 \pm 22.70		
Unilateral or bilateral lesion				
Unilateral	175 (66.8%)	47.06 \pm 22.51	1.356	.176
Bilateral	87 (33.2%)	42.91 \pm 24.98		

Note: The decision conflict score has been converted to a 0–100 point scale.

revealed that the total score of participation competence ($r = -.874$, $p < .01$) was correlated with surgery decision conflict among newly diagnosed BCa patients. Moreover, significant negative correlations were found between the total score of the DCS and communication

competence ($r = -.826$), information acquisition competence ($r = -.798$), emotion management competence ($r = -.309$) and autonomous decision-making competence ($r = -.855$). Significant negative correlations were also found between the total score of the PPCS

and decision uncertainty ($r = -.603$), information and value clarity ($r = -.868$) and decision support and effectiveness ($r = -.785$). Each dimension of the PPCS was also significantly negatively correlated with each dimension of the DCS (Table 2).

4.4 | Multiple linear regression analysis of surgery decision conflict among newly diagnosed BCa patients

With the total score of surgery decision conflict treated as the dependent variable, six statistically significant variables (age, marital status, living environment, education level, family per capita monthly income and cancer stage) were analysed by *t* tests and ANOVA, with the total score of participation competence as the independent variable in the multiple linear regression analysis. The assignment of independent variables in the regression analysis is shown in Table 3. The results showed that participation competence, marital status and education level showed negative associations with the total score of decision conflict, and cancer stage showed positive associations with the total score of decision conflict ($p < .05$; Table 4).

5 | DISCUSSION

The results of this study showed that the total surgery decision conflict score among newly diagnosed BCa patients was 45.68 (*SD* 23.40), which is above 37.5 points, indicating that the decision was delayed or patients felt uncertain about the decision. This finding was similar to that of a study performed among mental disease patients (Li, 2017; Metz et al., 2018), but the decision conflict score in this study was higher. The reasons could be that the recruited patients were all female patients who are more sensitive and delicate. In addition, as the incidence of newly diagnosed BCa is occurring more often in younger patients, patients need not only to compare objective medical probabilities, such as survival and recurrence rate, but also to consider quality of life after breast surgery, which includes issues such as returning to work, marriage bonds and bearing children (Flitcroft et al., 2017a,b). This could increase decision complexity

and lead to decision conflict. The dimension with the highest score was decision uncertainty, which means that the BCa patients in this study were not firm in choosing options; the dimension with the lowest score was decision support and effectiveness, perhaps because 81.3% of the BCa patients in this study were married and 92.4% of the participants had children. Confucianism holds the supreme position in Chinese culture; thus, patient decision-making is rarely a matter of personal communication, and the importance of family is emphasized (Bian, 2015; Lin et al., 2013). Therefore, health professionals can interact effectively with newly diagnosed BCa patients during the treatment decision-making process by understanding and acknowledging the vital role of family members in resolving decision conflict.

The findings in this study showed that participation competence is one of the significant factors influencing newly diagnosed BCa patients' surgery decision conflict: the higher the participation competence is, the lower the level of decision conflict, as has also been indicated in previous studies (Liu, 2012; Welie & Welie, 2001). In this study, participation competence refers to communication, information acquisition, emotion management and autonomous decision-making. For newly diagnosed BCa patients, the ability to seek neutral, objective, contrastive and accurate information about lumpectomy and mastectomy is urgently needed and is also a precondition for promoting participation behaviour and reducing decision conflict (Recio-Saucedo et al., 2016; Ussher et al., 2018). In addition to needing information, Chinese female BCa patients are introverted and passive in communicating with surgeons and expressing their values or emotions on sensitive topics such as disorders of the breast, which is not conducive to the cultivation of participation ability. Moreover, the item average scores for the autonomous decision-making competence dimension were the lowest because Confucianism emphasizes the paternal nature of doctors and gives medical staff supreme rights. In addition, before patients make surgery decisions in China, their family members' written approval must be collected in addition to patients' approval (Zhang et al., 2015), which leads patients from eastern countries to be more dependent in their decision-making; this generates decision bias and conflict (Al-Bahri et al., 2018; Shin et al., 2017). It is suggested that health professionals improve

TABLE 2 Participation competence scores and the correlation with decision conflict in newly diagnosed BCa patients ($N = 262$)

	Decision uncertainty	Information and value clarity	Decision support and effectiveness	Total score of DCS
Communication competence	-0.577*	-0.779*	-0.789*	-0.826*
Information acquisition competence	-0.583*	-0.812*	-0.693*	-0.798*
Emotion management competence	-0.263*	-0.577*	-0.255*	-0.309*
Autonomous decision-making competence	-0.605*	-0.317*	-0.753*	-0.855*
Total score of PPCS	-0.630*	-0.868*	-0.785*	-0.874*

* $p < .01$.

TABLE 3 Independent variables in the regression analysis of the influencing factors of decision conflict

Independent variables	Items	Assignment of independent variables
X1	age	18–30 = 1, 31–40 = 2, 41–50 = 3, 51–60 = 4, ≥61 = 5
X2	Marital status	Unmarried = 1, Married = 2
X3	Living environment	Urban = 1, Rural = 2
X4	Education level	Primary school = 1, Junior high school = 2, Senior high/technical secondary school = 3, Junior college = 4, Bachelor's or above = 5
X5	Family per capita monthly income	Less than 2000 yuan = 1, 2000–2999 yuan = 2, 3000–3999 yuan = 3, 4000–5000 yuan = 4, More than 5,000 yuan = 5
X6	Cancer stage	I = 1, II = 2
X7	Participation competence	Actual scores

TABLE 4 Multiple linear regression analysis of the decision conflict of newly diagnosed BCa patients (N = 262)

Items	B-value	SE	β -value	t-value	p-value
Constant	143.521	5.542		25.898	<.001
Participation competence	-0.931	0.040	-0.785	-23.283	<.001
Marital status	-7.913	1.675	-0.132	-4.725	<.001
Cancer stage	5.412	1.433	0.113	3.776	<.001
Education level	-1.271	0.515	-0.081	-2.467	.014

Note: $R^2 = 0.797$, $F = 256.944$, $p < .001$.

patient awareness and confidence in the autonomous decision-making process, communicate with patients about surgical options in a straightforward manner and provide psychological support to improve their participation competence and reduce decision conflict.

In this study, the results showed that the decision conflict of married BCa patients was lower than that of unmarried participants, and the difference between the two groups was statistically significant ($p < .05$). Decisions on breast surgery are closely related to marital relationships, sexual life and family function. Unmarried BCa patients tend to be younger, so they have a higher demand for intimacy and fertility preservation, symptom elimination and a good body image, and they often hesitate among lumpectomy, mastectomy and breast reconstruction surgery (Flitcroft et al., 2017a,b; Komatsu et al., 2018). In addition, the foundations of Chinese culture are totally different from Western philosophies. In Western countries, there are many sources of support for patient decision-making, such as family, health professionals, friends, social workers and volunteers. In contrast, family has great significance for married Chinese BCa patients, and the husband is the core support resource when newly diagnosed. Psychological problems such as emotional overwhelm may occur in the diagnosis and surgery decision-making stages, and the majority of patients turn to their husband for psychosocial support and advice instead of to professionals (Wang et al., 2020). Influenced by traditional Confucian culture, Chinese

people consider treatment decisions, especially concerning cancer-related issues, private, and the husband's thoughts and opinions can greatly assist patients in making decisions. Therefore, health professionals should focus on the decision problems of unmarried BCa patients in the future, understand the decision conflicts of patients and meet their decision-making needs in a targeted way to improve decision quality and participation behaviour.

The results showed that the higher the cancer stage of BCa patients, the higher the level of decision conflict about surgical treatment, and the difference was statistically significant ($p < .05$). This result is inconsistent with findings from another study (Levine et al., 1992) showing that patients often give up participation once the disease progresses because treatment alternatives are limited. Only stage I and stage II BCa patients were enrolled in this study to meet the indications of both lumpectomy and mastectomy. Newly diagnosed stage I patients may prefer to keep their breasts and are unwilling to try overtreatment, so the level of decision conflict is comparatively low. Stage II BCa patients worry not only about body image but also the possibility of cancer recurrence and disease progression in deciding between the two surgery options. These results suggested that medical staff should distinguish cancer stages and treatment decision content to identify the level of decision conflict and provide specific decision support to patients.

In this study, the results showed that the decision conflict of BCa patients with a high education level was lower than that of

BCa patients with a low education level, and the difference was statistically significant ($p < .05$). This result is similar to findings from previous studies conducted in China (Jia et al., 2019). Well-educated BCa patients can easily search for, comprehend and use complicated surgery information and are more willing to participate in decision-making even at the time of diagnosis (Shen et al., 2019). Moreover, Henan Province holds a dominant position in China about agriculture, and most of the participants in this study were from rural areas. Limited health literacy made it slightly difficult to make surgery decisions with certainty, which led to high decision conflict. The results indicate that health professionals should attach importance to the decision conflict of those with a low education level and health literacy and further develop user-friendly decision support tools or systems aimed at newly diagnosed BCa patients facing surgery decision-making who come from different educational backgrounds in routine clinical settings.

6 | CONCLUSION

Newly diagnosed BCa patients showed a high level of surgery decision conflict. The results of multiple linear regression analysis suggested that patient participation competence, marital status, education level and cancer stage were significant predictors of surgery decision conflict. BCa patients who have higher participation competence, are married, are well educated and have a lower cancer stage are more likely to experience lower surgery decision conflict. The abovementioned results can help health professionals clarify the influencing factors and improve the decision quality of BCa patients.

6.1 | Relevance to clinical practice

Decision conflict has become a significant predictor of decision quality, especially in early breast cancer surgery decision-making. It is manifested as uncertainty about alternatives in decisions that involve risks or unknown outcomes, hesitation about potential gains and losses, and doubt about personal values and beliefs. Higher decision conflict negatively influences quality of life, leading to anxiety, stress, decision regret and increased medical disputes. However, little is known about the current situation and factors associated with surgery decision conflict among newly diagnosed Chinese BCa patients, particularly in the context of a Confucian culture. Therefore, it is significant to identify the surgery decision conflict of newly diagnosed early-stage breast cancer patients in China from the perspective of participation competence to improve their decision quality. The results of this study showed that patients who have lower participation competence, are unmarried, are not well educated and have a higher cancer stage are more likely to experience higher decision conflict. Hence, health professionals should pay more attention to early breast cancer patients who have these characteristics and should provide comparative and objective information on treatment

options in plain language as well as psychological support that meets the patient's needs to develop tailored decision-making support interventions based on the influencing factors and the specific cultural background.

6.2 | Limitations

First, this was a single-centre study in which participants were recruited from an affiliated hospital in Zhengzhou. The representativeness of the sample may be affected, so a wide range of surveys is needed. Then, the sample size should be expanded to include patients with different characteristics and from different regions in the future. Additionally, qualitative research and path analysis could be considered to understand more deeply the influencing factors and outcomes of newly diagnosed BCa patients' decision conflict to better guide clinical staff in the development and implementation of decision support interventions and help them improve decisions and medical care service quality.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest including any relationship, financial or otherwise aspects.

AUTHORS' CONTRIBUTIONS

All authors: Access to all of the data in the study and responsible for the integrity of the data and the accuracy of the data analysis. CC and TH: Conceptualization and design of the study. TH, WS, DR and DS: Data acquisition and entered in the database. YX: Statistical analysis. CP, LW, and KJ: Data interpretation. TH: Manuscript drafting. DR, WS and DS: Critical revision of the manuscript for important intellectual content. All authors: Approval of the final version for submitting.

DATA AVAILABILITY STATEMENT

The anonymous data in this study are available on reasonable request from the corresponding author.

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