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# Research on the Attitudes of Breast Specialist Medical Staff Towards the Implementation of Breast Cancer Decision-Making Aids

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ABSTRACT

**Background:** The participation of patients in treatment and nursing decision-making has been advocated by many medical staff. This is not only to attach importance to the wishes of patients, but also to the needs of social development. The purpose of this research was to investigate the attitudes of Chinese breast cancer medical staff towards the implementation of breast cancer decision-making aids.

**Methods:** A cross-sectional study was conducted among 420 doctors and nurses in the Department of Breast Surgery. We used a questionnaire designed by investigators. Data was collected from February 2021 to September 2021. IBM SPSS Version 22 was used to analyze the collected data.

**Results:** Overall, 420 valid questionnaires were returned from 220 doctors and 200 nurses. Response rate was 85.19%. The results showed that 77.14% of the medical staff supported the promotion of breast cancer decision-making aids, and 85.71%（360/420）agreed that patients should be the main participants in high-quality clinical decision-making. Also, 95.24%（400/420）believed that patients should know the reasons for making treatment decisions, and agreed that the positive effects of patient decision-making aids were positively correlated with high education ($r_{education}$=0.317, P=0.001). There were statistically significant differences in the attitudes of medical staff with different working years ($X^2$=9.432, P=0.024), educational background ($X^2$=42.918, P<0.001) and shared decision education ($X^2$=11.932, P=0.008) on whether to promote decision-making aids.

**Conclusion:** At this stage, breast medical staff have a positive attitude towards using breast cancer decision aids for joint decision-making.



## INTRODUCTION

According to the latest statistics, the number of new breast cancer cases in 2020 reached 2.26 million, accounting for about 11.7% of new cancer cases, surpassing lung cancer (2.21 million) for the first time to become the most prevalent cancer worldwide.[1,2] The mortality rate of Chinese women with breast cancer in 2020 was 16.6/100,000, ranking fourth in the spectrum of Chinese women's malignant tumor deaths.[3] Regarding the stage of the disease, the type of cancer and other factors, the treatment of breast cancer can include

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different combinations of surgery, radiotherapy and chemotherapy. As there are many choices and uncertain outcome factors, breast cancer is one of the preference-sensitive diseases.[4] It is difficult for patients to make decisions related to cancer treatment, especially when there are two or more medical options. Relevant evidence also shows that during cancer consultations, patients have difficulties in understanding and retaining clinical data.[5]

With the transformation of medical models and the development of evidence-based medicine, the change to patient-centered medicine is widely accepted, and patients' willingness to participate in decision-making is gradually increasing. Patient participation in decision-making is a positive patient behavior, including proactively asking questions, and expressing opinions and preferences.[6] Evidence shows that increasing patient participation in medical decision-making can improve medical outcomes.[7] Decision-making aids are intended to help people participate in decisions that involve weighing the benefits and harms of treatment options often with scientific uncertainty. In general, decision-making aids can continuously improve patients' knowledge, reduce decision-making conflicts, and help patients make choices consistent with their values.[8-11]

A study on the current status of treatment and nursing decision-making for breast cancer patients in China,[13] shows that most (64.8%) patients' participation in treatment decision-making is passive, suggesting that patients' participation in the breast cancer treatment decisions is low. In addition, about half of breast cancer patients think that they have hardly participated in the discussion and selection of treatment options. This shows that Chinese doctors often lead the entire process.[14] However, patient participation in treatment and nursing decision-making has been widely advocated. This reflects not only an emphasis on patients' wishes, but also a need for social development.[15] As the gatekeepers of patient information, medical staff play a vital role in sharing decision-making. Therefore, it is necessary to understand the attitude of medical staff towards the implementation of breast cancer decision-making aids. The purpose of this research is to investigate the attitudes of Chinese breast cancer medical staff towards the implementation of breast cancer decision-making aids and the participants involved in clinical decision-making, which can provide insights into the development of breast cancer decision-making aids in China in the future.

## METHODS

### *Design*

A hospital-based cross-sectional descriptive study was carried out to assess the attitude of medical staff from breast specialists towards the implementation of breast cancer decision-making aids.

### *Setting*

This study adopts a multi-stage stratified sampling method, based on the records of the China Health Statistics Yearbook 2020.[16] According to the degree of economic development, the study was done in eastern, central and western regions, each region with 2 to 3 provinces. We selected 2-3 cities in each province as well as representative breast surgery in tertiary or secondary hospitals in each city as the survey point. The survey covered 26 hospitals in 12 cities in 4 provinces and 2 municipalities in China.

### *Data collection and participants*

Data collection took place from February 2021 to September 2021. Based on the inclusion criteria, doctors and nurses with 5 years or more working experience in breast surgery wards who volunteered to participate in the study were recruited. Doctors and nurses not working in breast surgical wards were excluded. Written informed consent was obtained from each respondent by clarifying the purpose of the study prior to data collection. According to the pre-trial, the support rate for breast cancer decision aids among breast medical workers was 65%. Considering the 10-15% loss rate and sampling error, the sample size was at least 247 cases.

### *Questionnaires*

The preliminary questionnaire was formed through literature review and semi-structured interviews. Medical staff in the department of breast (doctors=4, nurses=4) were selected to conduct semi-structured interviews, and the initial questionnaire was modified according to the interview results. Through two rounds of Delphi technique, the questionnaire was modified and sorted out. The representativeness, diversity and authority of the experts are the key to the Delphi technique, and the number of persons is generally 15~50; therefore, 20 experts were recruited (Doctor=8, Nurse=6, Evidence Based Medicine=6) from 4 Chinese provinces (Fujian, Shanxi, Hubei and Guangdong). The inclusion criteria were as follows: 1) 10 or more years of work experience in fields related to breast cancer or evidence-based medicine; 2) Bachelor degree or above; 3) At deputy senior or higher professional level; 4) Having a rigorous realistic, voluntary participation attitude. Basic information of experts is shown in Table 1. The readability and relevance of the questionnaire were revised again after the expert meeting, and the final draft was formed after modification.

**Table 1.** Participants' characteristics (n=20)

| Item | Level | Doctor (n=8) | Nurse (n=6) | Evidence Based Medicine (n=6) | Total (%) |
|---|---|---|---|---|---|
| Age | / | 41.3±5.2 | 37.0±8.2 | 39.3±7.4 | / |
| Working years | ≤20 | 5 | 3 | 4 | 12 (60) |
| | >20 | 3 | 3 | 2 | 8 (40) |
| Education | Undergraduate | 2 | 3 | 2 | 7 (35) |
| | Master | 4 | 2 | 3 | 9 (45) |
| | PhD | 2 | 1 | 1 | 4 (20) |
| | Intermediate | 3 | 4 | 3 | 10 (50) |
| Job title | Deputy Senior | 3 | 1 | 2 | 6 (30) |
| | Positive Senior | 2 | 1 | 1 | 4 (20) |
| | Dean / Vice Dean | 2 | 0 | 0 | 2 (10) |
| Position | Director | 3 | 0 | 0 | 3 (15) |
| | Head Nurse | 0 | 6 | 0 | 6 (30) |

Before the survey, the questionnaire was tested for retest reliability. The Kappa value was 0.80, indicating high reliability of the questionnaire. The questionnaires were arranged in two parts. Part one contained questions on demographic characteristics (age, education, and occupation, etc.). The second part comprised questions on the attitudes of breast medical staff toward the implementation of breast cancer decision-making aids. The questions were of multiple-choice type.

*Data analysis*

Data analyses were conducted with SPSS software version 21.0. Descriptive statistics (mean, SD for intervals, frequency with percentages for categorical variables) were calculated. Age and education levels were grouped for categorical analysis. To determine associations between categorical dependent variables, Chi-square tests were carried out. Spearman rank correlation analysis was used for correlation analysis. Data were shown as frequency/percentage for categorical variables and mean (standard deviation-SD) for continuous variables.

*Ethical considerations*

This study did not involve direct medical concerns; therefore, no medical review was required. All participants who took part in the study completed informed consent forms.

## RESULTS

*Demographic characteristics*

Data was collected from February 2021 to September 2021. Overall, 420 valid questionnaires were returned from 220 doctors and 200 nurses. Response rate was 85.19% (Table 2).

*Shared decision-making participants*

The survey showed that the top three participants in clinical decision-making were doctors (92.14%), patients (76.90%) and nurses (66.19%). According to the data, 92.14% of medical staff agreed that patients themselves should participate in decision-making, indicating that medical staff had a high recognition of patients' participation in medical decision-making. Also, 50.71% of medical staff recognized the importance of the participation of patients' family members in decision-making, as important companyions in the treatment of patients. Also, 45% (189/420) of breast medical staff agreed that medical insurance workers should be included in decision-making (Table 3).

*Views of medical staff on patients' understanding the reasons for making treatment decisions*

The vast majority (95.24%) of the medical staff recognized the need for patients to understand the basis for diagnosis and treatment decision-making. Overall, 53.81% of the medical staff thought that under no circumstances should the patients be told the basis for diagnosis and treatment decision-making, 23.33% thought they should be told when it is necessary, and 18.10% of them believed that diagnosis and treatment should only be explained to patients under the patients' active inquiry. Only 4.76% of medical staff thought it was unnecessary for patients to know the basis for diagnosis and treatment (Table 4).

**Table 2.** Basic information (n=420)

| Item | Level | Doctor（n=220） | Nurse（n=200） | Total（%） |
|---|---|---|---|---|
| Gender | male | 126 | 10 | 136(32.38) |
| | female | 94 | 190 | 284(67.62) |
| Age | 20-30 | 69 | 72 | 141 (33.57) |
| | 30-40 | 79 | 62 | 141 (33.57) |
| | ≥40 | 72 | 66 | 138 (32.86) |
| Region | east | 90 | 80 | 170(40.48) |
| | west | 70 | 65 | 135(32.14) |
| | midland | 60 | 55 | 115(27.38) |
| Hospital level | | | | |
| | tertiary | 145 | 135 | 280(66.67) |
| | Second-class | 75 | 65 | 140(33.33) |
| Education | | | | |
| | PhD | 35 | 10 | 45(10.71) |
| | Master | 45 | 25 | 70(16.67) |
| | Undergraduate | 125 | 114 | 239(56.90) |
| | College | 15 | 51 | 66(15.71) |
| Working years | | | | |
| | ≤5 | 77 | 94 | 171(40.71) |
| | 5-10 | 73 | 73 | 146(34.76) |
| | 10-15 | 42 | 14 | 56(13.33) |
| | ≥15 | 28 | 19 | 47(11.20) |
| Job title | | | | |
| | Junior | 85 | 96 | 181(43.10) |
| | Intermediate | 82 | 65 | 147(35.00) |
| | Deputy Senior | 53 | 39 | 92(21.90) |
| Education related to shared decision making | | | | |
| | never | 33 | 26 | 59(14.05) |
| | at school | 84 | 67 | 151(35.95) |
| | at work | 63 | 61 | 124(29.52) |
| | at school and work | 40 | 46 | 86(20.48) |

**Table 3.** Clinical decision-making participants.

| Body | Frequency | Percentage（%） |
|---|---|---|
| Doctor | 387 | 92.14 |
| Patient | 323 | 76.90 |
| Nurse | 278 | 66.19 |
| Patients' families | 213 | 50.71 |
| Health care worker | 189 | 45.00 |

**Table 4.** Medical staff's views on the necessity for patients to be informed about the reasons for diagnosis and treatment decisions.

| Necessary | Frequency | Percentage（%） |
|---|---|---|
| Absolutely | 226 | 53.81 |
| When the doctor deems it necessary | 98 | 23.33 |
| When the patient deems it necessary | 76 | 18.10 |
| No need at all | 20 | 4.76 |
| Total | 420 | 100 |

Spearman rank correlation analysis indicated that educational background, professional title and working years were negatively correlated with the necessity that medical staff thought patients should know the reasons for making treatment decisions ($r_{education}=-0.355$, $P_{education}<0.001$; $r_{job\ title}=-0.194$, $P_{job\ title}=0.047$, $r_{working\ years}=-0.317$, $P_{working\ years}=0.001$)

*A medium that provides the basis for decision-making*

The survey showed that 51.67% of medical staff believed that web-oriented decision-making aids (Web pages, WeChat mini programs, WeChat official accounts, etc.) were the most suitable media for breast cancer decision-making. Also, 23.33% of medical staff approved video as a communication medium, 10.96% of medical staff considered decision-making aids as communication media, 9.52% and 4.52% of the medical staff considered optical discs and decision boards as suitable media respectively (Table 5).

*The type of hospital best suited for joint decision-making*

According to the survey, 63.57% of the medical staff thought that third-level hospitals are the most suitable for joint decision-making, while 34.05% of the medical staff agreed that second-level hospitals can carry out joint decision-making, and only 2.38% of the medical staff thought that first-level hospitals are suitable for joint decision-making, as shown in Table 6. In terms of the application of decision-making aids for breast cancer, the top three were surgical treatment for breast cancer (29.29%), radiotherapy and chemotherapy for breast cancer (26.90%) and breast reconstruction (23.33%), with 20.48% medical personnel approving the application of decision-making aids for breast cancer screening.

*The impact of the use of patient decision-making aids by medical staff*

Most medical staff believed that the use of patient decision-making aids can bring positive effects, such as "promoting the implementation of doctor-patient joint decision-making", "improving doctors' work efficiency", "enhancing patients' enthusiasm to participate in treatment", "relieving patients' bad mood" and "creating a good medical environment". A minority of medical staff were concerned about the negative effects of using patient decision-making aids, such as “increasing the workload of doctors” and “reducing the value of care” (Table 6).

**Table 5.** Breast cancer decision aids media

| Number | Type | Frequency（%） |
|---|---|---|
| 1 | Web-oriented decision assistance (such as webpage, WeChat official account, etc.) | 217（51.67） |
| 2 | Video | 98（23.33） |
| 3 | booklet | 46（10.96） |
| 4 | DVD | 40（9.52） |
| 5 | decision board | 19（4.52） |

**Table 6.** The impact of the use of patient decision aids by medical staff

| Number | Content | Frequency（%） |
|---|---|---|
| 1 | Promote the implementation of doctor-patient joint decision-making | 233（55.48） |
| 2 | Improve the effectiveness of doctors, such as tools to help patients understand the development of disease and the pros and cons of different treatment options in advance | 214（50.95） |
| 3 | Relieve patients' anxiety and other bad emotions caused by the disease | 191（45.48） |
| 4 | Improve the enthusiasm of patients to participate in treatment | 189（45.00） |
| 5 | Create a good medical environment, such as improving doctor-patient relationship | 176（41.90） |
| 6 | Increasing the workload of doctors, such as introducing and explaining decision-making aids to patients and answering their questions in decision-making, will take more time | 98（23.33） |
| 7 | Reduce the value of care | 72（17.14） |

**Table 7**. An intergroup comparison of medical staff's attitude toward promoting the use of patient decision aids

| Item | Promote the application of decision aids | | $X^2$ | P |
|---|---|---|---|---|
| | support（%） | oppose（%） | | |
| **Job** | | | | |
| Nurse | 167（83.50） | 33（16.50） | 1.529 | 0.216 |
| Doctor | 193（87.73） | 27（12.27） | | |
| **Working years** | | | | |
| ≤5 | 140（81.87） | 31（18.13） | 9.423 | 0.024 |
| 5-10 | 132（90.41） | 14（9.59） | | |
| 10-15 | 44（78.57） | 12（21.43） | | |
| ≥15 | 44（90.62） | 3（6.38） | | |
| **Education** | | | | |
| Junior | 40（60.61） | 26（39.39） | 42.918 | ＜0.001 |
| Undergraduate | 221（93.47） | 18（7.53） | | |
| Master | 60（85.71） | 10（14.29） | | |
| PhD | 39（86.67） | 6（13.33） | | |
| **Job title** | | | | |
| Junior | 148（81.77） | 33（18.23） | 4.326 | 0.115 |
| Intermediate | 129（87.76） | 18（12.24） | | |
| Deputy Senior | 83（90.22） | 9（9.78） | | |
| **Shared decision education** | | | | |
| Never | 42（71.19） | 17（28.81） | 11.932 | 0.008 |
| in school | 132（87.42） | 19（12.58） | | |
| in work | 110（88.71） | 14（11.29） | | |
| in school and work | 76（88.37） | 10（11.63） | | |

Spearman rank correlation analysis showed that medical staff with higher educational background and professional title were more inclined to agree with the positive effect of breast cancer decision-making aids ($r_{education}$ =0.317, P=0.001; $r_{job\ title}$ =0.417, P<0.001), and there was no correlation between years of work and acceptance of breast cancer decision-making aids ($r_{working\ years}$ =0.069, P=0.484).

*Attitudes*

Overall, 85.71% (360/420) of medical staff supported the promotion of patient decision-making aids, while 14.29% (60/420) opposed the promotion of patient decision-making aids. There were statistically significant differences in the attitudes of medical staff with different working years ($X^2$=9.432, P=0.024), educational background ($X^2$=42.918, P<0.001) and shared decision education ($X^2$=11.932, P=0.008) on whether to promote decision-making aids (Table 7).

## DISCUSSION

The findings of the study showed that 77.14% of medical staff supported the promotion of breast cancer decision-making aids. Also, the study found that 85.71% (360/420) agreed patients are the main participants in clinical decision-making, with 95.24% (400/420) believing that patients should know the reasons for making treatment decisions, and that the positive effects of patient decision-making aids are positively correlated with high education ($r_{education}$=0.317,P=0.001).

*Breast medical staff support the promotion of breast cancer decision-making aids*

The results showed that 85.71%（360/420）of medical staff supported the promotion of decision-making aids, and the medical staff with longer working years (P=0.024) or higher education (P＜0.001) supported the promotion of decision-making aids. These medical staff have either received systematic scientific research training at school, and can grasp the latest clinical research reports, guideline updates and other information. This has further increased the willingness of medical staff with a scientific background to implement breast cancer decision aids. Despite the statistics,[22] the annual medical dispute cases are growing at a rapid rate of 11%, but more than 60% of these cases are caused by the fact that the doctors do not fulfill the obligation of informing patients. In 2020, the number of medical disputes in China's third-grade hospitals increased by 3.5% compared with the previous year, and that in second-grade hospitals increased by 4.1%.[23] Patients have seriously damaged the working environment of doctors by bickering, containment and hitting, resulting in a negative social influence. Hospital reputation and normal diagnosis and treatment activities have been affected to varying degrees. Medical staff with longer working years have experienced various forms of medical disputes. The professionalism of medicine leads to emotional confrontation between doctors and patients. Some patients mistakenly think that doctors take advantage of their professional advantages to conceal side effects in the diagnosis and treatment process. Thus, if the doctor and patient do not communicate, conflicts are very likely to occur.

*The impact of breast cancer decision-making aids*

Studies have shown that most medical staff believe the use of decision-making aids for patients can bring positive effects. The higher the education and job title of medical staff, the more likely they are to agree with the positive effects of decision-making aids for breast cancer. Highly educated medical staff have more professional and in-depth theoretical understanding and knowledge, and are more willing to challenge inherent patterns and accept new trends. They are more inclined to believe that the use of decision-making aids can improve the efficiency of doctors, because such tools can help patients understand the occurrence and development of the disease and the pros and cons of different diagnosis and treatment plans in advance. These tools can help patients screen out some incorrect or misleading information, and change the way or content of communication at any time according to the patient's situation. It is necessary to provide support to patients under doubts over decision-making aids, increase the enthusiasm of patients to participate in diagnosis and treatment decision-making, and pay attention to their own needs in the process of participation, which is conducive to improving patients' own responsibilities in medical services, and correspondingly reducing doctors' medical liability risks. In addition, in the process of patients' participation in joint decision-making, informed consent is also required to be signed, which will be stored in the medical record room together with patients' medical records as an official document, which can minimize medical disputes.

Some people are concerned about the negative impact of the promotion of breast cancer decision-making aids. They are concerned that the use of decision-making aids alone may interfere with their face-to-face communication with breast cancer patients, and may take over their role as experts, thereby reducing the value of care. At the same time, involving patients in decision-making means that medical staff need to introduce and explain decision-making aids to patients, and answer patients' questions in decision-making, which will consume more time and increase the workload of medical staff. In China, the average number of outpatients per day is (19.76±20.94) hours, and the average number of inpatients per day is (12.38±11.25).[24] Meanwhile, wards, scientific research and teaching tasks need to be annexed, which make it hard to complete the tasks according to the conventional mode. Once the decision aid tools are implemented, there is no doubt that the workload and working hours of doctors will double, so some people believe that the introduction of decision-making aids will increase work stress.

*Participants in clinical decision-making*

According to the survey, the order of participants in clinical decision-making was doctors (92.14%), patients (76.90%), nurses (66.19%), patients' family members (50.71%) and medical insurance workers (45.00%). Medical staff as janitors of patients' information can be involved in the process of detailed introduction of the decision aid tool. The tool can build a bridge of trust between patients and doctors, and build a new type of joint participation in doctor-patient relationship. The implementation of decision assistance is inseparable from the participation of patients. According to the results, 76.90% of medical staff agreed that patients are one of the participants of high-quality clinical decision-making, and 95.24% of medical staff agreed that patients need to know the relevant basis of diagnosis and treatment decisions, and actively ask questions and express their opinions and preferences during diagnosis and treatment. However, relevant studies show that,[25] breast cancer patients' psychological status will affect the implementation of the decision aid, as patients' participation willingness or ability may be low, and the implementation of the decision aid may increase their psychological burden.

Therefore, in the process of implementing decision assistance, different forms of decision support should be correctly evaluated and given to different breast cancer patients to meet their individual needs. Also, 50.71% of medical staff recognize patients' family members as one of the subjects of clinical decision-making, which may be due to the traditional Chinese culture. Family is a basic social unit, so patients tend not to make decisions by themselves when making treatment decisions, and patients are more likely to consider their family members' suggestions. About 45% of the medical staff thought that health care workers should also be one of the stakeholders in clinical decision-making, because patients' choice of a certain treatment is often related to the strength of the medical insurance reimbursement, which requires the participation of health care workers.

*Media for breast cancer decision-making aids*

The most recognized types of breast cancer decision-making aids are the web-oriented decision-making aids, such as web pages, QQ, WeChat mini programs, WeChat public accounts, etc. Network-oriented decision-making aids are currently developed and used more decision decision-making aids.[6] At present, such decision-making aids are mainly professional websites, which require patients to have certain retrieval skills and certain Internet access. The continuous improvement of mobile communication environment and the further popularization of smart phones can make use of fragmented time to learn, which provides a foundation for the development of decision-making aids tools such as WeChat public accounts and mini programs. Moreover, smart phone applications have shown good sensitivity and specificity for postpartum depression screening, which indicates that health services using smart phones are effective.[27,28] The decision-making aids booklet is mainly in the form of pictures or charts, which can be placed in the waiting area for patients to consult or distributed to patients by medical staff. It is accessible and easy to carry, but it requires certain reading ability, and also requires certain manpower and cost, requiring the support of relevant medical departments. The decision board is a visual auxiliary board, which is mainly used by doctors to tell patients about the relevant treatment information orally or in writing, but contains little information and lacks individuality. In general, different types of decision-making aids have their own advantages and disadvantages, and appropriate decision-making aids should be selected according to individual differences

## CONCLUSION

This study was a cross-sectional survey of the attitudes of Chinese breast cancer medical staff towards the implementation of breast cancer decision-making aids. It reflects their positive attitude towards the use of decision-making aids for joint decision-making. The results show that there is a need to inform patients about the reasons for making treatment decisions, and that the positive effects of patient decision-making aids are positively related to high education.

## LIMITATIONS

There are some shortcomings in this research. Due to time and space constraints, only a few provinces in China were selected, and the survey scope should be expanded in the future. In addition, there are no open questions in this study, and there is a need to carry out more in-depth qualitative research on medical policy makers and medical administrative personnel in the future.

## ETHICAL CONSIDERATION

All participants who took part in the study completed informed consent forms. Also, this study did not involve direct medical concerns and no medical review was required.

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None.

## CONFLICT OF INTEREST

There are no conflicts of interest to be declared by the authors.

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