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Australian women's prediagnostic values and influencing sociodemographic variables relating to treatment choices for early breast cancer treatment

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Abstract

Women are often asked by their doctors to choose their preferred treatment for early breast cancer. Evidence shows that many women are distressed and confused about how to make this treatment decision and frequently seek help from nurses. Very little is known about women's value-centred decision-making in relation to selecting treatment for breast cancer and for nurses it is difficult to know how to assist these women with this process. In this study, 377 women participated prior to undergoing routine mammography screening and the data were collected using the Pre-Decision Portfolio Questionnaire (PDPQ) by Pierce [1]. The partipants identified that expected treatment outcomes were the most important factor in choosing early breast cancer treatment. The majority reported that it was very important that a treatment would reduce the chances the cancer would return (95.6%), increase the length of their life (82.1%) and lead them to being healthy (80.4%). In addition, the participants indicated that it was important, or very important, that the emotional consequences of the treatment did "not make you depressed" (88.6%) or "sad" (90.4%) and should "keep you from worrying" (97%) and "give you peace of mind" (98.6%). Other factors, such as treatment's side effects, were identified as less important. Age, employment, education and having a family history of breast cancer were found to be significant influencing variables on the values of the participants. It was concluded that assessing and understanding the treatment values of women can help nurses focus on areas of importance to the woman and lead to informed decision-making when they are choosing treatment for early breast cancer.

Introduction

Throughout the industrialised world, breast cancer remains a major cause of morbidity and mortality in women. In western countries the incidence of women developing this disease during their lifetimes is one in eleven in Australia [2], one in nine in the UK [3]; one in eight in the USA [4]. Each year over 11,000 Australian women are diagnosed with breast cancer [2] and up to one third of these women are aged <50 years [2,5].

Women who are diagnosed with an early stage of breast cancer have more treatment choices and a better prognosis than women who have developed an advanced form of the disease. In Australia, the TNM Clinical Classification defines early breast cancer as a tumour >2cm and <5cm in diameter, with no fixed lymph nodes and no evidence of metastases (this corresponds to tumours T11-2, N0-12, M0) [6]. The surgical recommendations for women diagnosed with early breast cancer are a mastectomy or breast conservation surgery (lumpectomy); both treatment options include auxiliary dissection [6].

After diagnosis of breast cancer, women are vulnerable to high levels of stress [7,8,9] psychological distress, and they suffer the consequent upheaval to their emotional wellbeing [10,11]. The emotional turmoil places them at risk of developing interpersonal difficulties, body image and sexuality problems, depression and anxiety [12]. Of Australian women diagnosed, A 34% will be highly distressed or will experience high levels of psychological disturbance; 35.4% will be experiencing distress at three months post-diagnosis and up to 20% at twelve months post-diagnosis [12] .

Breast cancer treatment decision-making

The recent fundamental paradigm shift in western countries from the traditional, paternalistic model of healthcare to consumer focused healthcare encourages doctors to shift the treatment decision-making responsibility to the patient. Following a diagnosis of early breast cancer, women are encouraged to participate with their doctor in choosing between equally effective treatment options – mastectomy and lumpectomy with adjuvant radiotherapy and possibly chemotherapy [13,14] – and women choose a treatment plan based on their values, preferences and lifestyle [9].

Many sociodemographic factors, such age [5,16,17] and education [18,19,20] have been identified as influencing this decision-making process. Other factors such as expectations of quality of life, psychological and physical state, perception of risks and preferences about the treatment options [21,22,23] are also known to influence choices for early breast cancer treatment.

There is evidence that women experience better psychological outcomes, such as less depression and anxiety, when they have been involved with their doctor in choosing between breast cancer treatments [7,24,25,26,27]. However, some women do not wish to participate in the responsibility of such decisions and the burden of choice can cause further anxiety [23,28]. The varieties of treatment and information can cause confusion for women, who are already distressed. This is especially the case when asked to make quality of life decisions from unfamiliar medical language [29] and uncertain outcomes [7,8,30]. In Australia, these circumstance can be further compounded by a number of health system barriers, such as a lack of continuity of care for women with breast cancer, the short time between diagnosis and treatment, inconsistency of information given, and the geographical distance of treatment options [6,12].

However, in the last five years in Australia, a number of initiatives to address these deficiencies have been put in place: communication skills training for oncologists [31]; the assessment of cancer patients communication needs [32]; distress levels [33]; the development of the Psychosocial Clinical Practice Guidelines for women with breast cancer [12]; the development of the role of the specialist breast care nurse and their specific competency based standards [34].

Many women may not have suitable access to health services, or possess the emotional and cognitive resources and skills following the diagnosis of breast cancer to make informed quality treatment decisions [35]. Many women are uncertain about choosing treatment and often seek supplementary information and guidance from nurses [9]. Nurses currently do not have structured methods to provide this support and may feel inadequate. The support of nurses in helping women in this decision-making process is vital because women often reflect on their decision both before and after consulting with their doctors.

Decision-making models

Although there are many normative and descriptive decision-making models, these do not adequately explain the process of choosing medical treatment in a naturalistic setting when the person is in a distressed state [8]. Normative models describe what people should do; descriptive models describe what people actually do [36]. Recently, decision science has evolved a new area called 'naturalistic decision-making' to describe how people actually make a decision in a natural setting. Naturalistic decision-making consists of four key features: it is a dynamic process with changing conditions; it has real time reactions to these condition changes; it has ill-defined goals and ill structured tasks; and it involves knowledgeable people [37].

Decision-making for medical treatment

Three major components make up the decision-making process for medical treatment:

1. The decision problem (which has at least two possible choices).
2. The decision-maker (patient).
3. The context (or environment) [21,22].

The conceptual model adapted in this study was the "empiric description of the decision-making" [22]. This model enables nurses to assist patients in their decision-making in difficult, distressing and uncertain situations. The first stage of determining the salience of the problem can be applied to assessing women's values involved in choosing medical treatment [22]. This model examines the problem for the decision-maker (patient) and discusses the sequential stages of diagnostics:

1. Salience of the problem (understanding of the problem, the risks and possible outcomes of each alternative).
2. Decomposition of alternatives (understanding the components of alternatives).
3. Information seeking (need or avoidance for further information).
4. Strategy (existence of a treatment plan).
5. Declaration of choice (decision).
6. Post-decision appraisal (satisfaction of decision choice/s).

Included in the model are questions that nurses can apply to determine (diagnose) the decision support (such as information and psychosocial interventions) necessary to assist the patient in the process of decision-making.

The role of the nurse in decision support

Nurses have an ethical responsibility, "to promote health, to prevent illness, to restore health and alleviate suffering" [38]. For nurses to fulfil these ethical imperatives, it is critical that women receive sufficient information in a way they can process, interpret, and use it as a base for informed consent for choosing care and treatment for early breast cancer. However, the nature of the value-centred decision-making process of women with cancer is complex and not fully understood, and research of aspects of women with breast cancer continues [39,40,41,42,43]. Published studies and future research should guide and assist nurses in their decision support assessment and interventions.

For nurses to help women choose medical treatments that are consistent with their values and lifestyle and improve their satisfaction, more information and understanding is required about what factors women believe are important and what sociodemographic variables influence choice of treatment. Values can be defined as 'ideals, beliefs, customs, modes of conduct, qualities, or goals that are highly prized or preferred by individuals, groups or society', which are culturally based[44]. In decision science, a 'value' is described as attractiveness of a possible outcome [45] and a 'utility' is defined as a patient's preference for a particular alternative [21,46]. Individual decisions are value-centred and choices are mediated (influenced) by their religious, personal and cultural values [22] and satisfaction is related to choices that are consistent with a person's values and expectations [47]. If nurses are able to accurately assess women's values and understand some of the influencing sociodemographic variables, they are able to target and deliver clear information that is important to women to help them make informed treatment decisions. Nurses need to provide information about treatment outcomes in a clear format that women can process and understand in order to help them make informed decisions that are value–centred and suit their lifestyles.

The study

Aim

The aim of this cross-sectional explorative survey was to investigate the prediagnostic values and sociodemographic variables of Australian women that influenced their choice of treatment for early breast cancer. Before evidence-based decision support interventions can be further developed and evaluated, it is essential to obtain an understanding of women's unaided decision-making for choosing medical treatment. Currently, there is limited information available for nurses that provides a structured method to guide the matching of women's values with the care provided. To redress this gap, this study provides a baseline to compare the treatment values of women and the sociodemographic factors that influence them.

Research Question

The research question developed for this study was: What are women's prediagnostic values and influencing sociodemographic variables involved in choosing early breast cancer treatment in a hypothetical scenario?

Definitions

The research variables for the study were defined as:

- Treatment values – the factors important to women when they are choosing hypothetical medical treatment for early breast cancer.
- Pre-diagnostic decision-making – the choosing of medical treatment if they are hypothetically diagnosed with early breast cancer.
- Socio-demographic variables – the background of participants such as age, education level, employment status, occupation and personal and family history of breast cancer.
- Hypothetical scenario – questions relating to what treatment choices they would make if diagnosed with early breast cancer.

Participants

The total non-probability (convenience) sample consisted of 377 women (response rate 66%) who were undertaking routine mammography screening at a Brisbane breast clinic. Brisbane is the capital city of the state of Queensland in Australia. Women who had declined the invitation to participate in the study stated that they had attended the breast clinic during their work time and wanted to return to their workplace as soon as possible.

The rationale for selecting this sample was that mammography is a screening procedure for breast cancer and so the women are already aware of the possibility of being diagnosed with breast cancer. Data gathered from these women are the closest match to women actually diagnosed with breast cancer without increasing the distress to women already in the midst of diagnosis or treatment. This sample also provided contact with a large number of women who were attending routine breast cancer screening.

"How important is it to you that the treatment...."		Result	Influencing variables#			
Treatment outcome						
"allow you to get well quickly?"	Very important	64.9%				
	Average important	28.2%				
	Less important	6.9%				
"be a tried and true treatment?"	Very important	74.0%	Believers in God	86.3%		
	Average important	19.6%		82.4%		
	Less important	6.4%		59.1%		
				p=0.0038		
"let you be healthy?"	Very important	80.4%				
	Average important	19.1%				
	Less important	0.5%				
"let you live a long life?"	Very important	82.1%	Age Mean (±SD)##	51.3 ±7	Professional Occupation	27.2%
	Average important	15.7%		54.4 ±9.1		21.1%
	Less important	2.2%		57.8 ±8.6		37.5%
				p=0.0033		p=0.0082
"help you get completely well?"	Very important	90.1%	Age Mean (±SD)##	51.5 ± 8.0	Employed	69.5%
	Average important	9.6%		56.2 ± 8.1		37.5%
	Less important	0.3%		42		100%
				p=0.022		p=0.067*
"cure you?"	Very important	90.9%	Age Mean (±SD)##	51.5± 8.0	Employed	69.1%
	Average important	8.2%		54.8± 8.6		40.7%
	Less important	0.8%		62.3±3.2		33.3%
				p=0.0090		p= 0.0122*
"get rid of the cancer?"	Very important	93.6%	Employed	68.3%		
	Average important	6.4%		45.0%		
	Less important	0%		0%		
				p=0.0234		
"reduce chances the cancer will come back?"	Very important	95.6%	Employed	68.2%		
	Average important	4.4%		28.6%		
	Less important	0%		0%		
				p=0.098		

Table 1: Participant's (N = 377) rating of the importance of different values relating to potential breast cancer treatment and influencing sociodemographic background variables.

Influencing variables of categorical nature given as percentages in the categories 'very important', 'average important', and 'less important'. For example, for the treatment outcome "be a tried and true treatment?", 86.3% who rated this 'very important' also reported belief in God; 82.4% who rated this 'average important' reported belief in God; and 59.1% who rated this 'less important' reported belief in God (p = 0.0038).

Age is presented by mean value and standard deviation (SD). For example, women who rated the treatment outcome "let you live a long life" as 'very important' had a mean age of 51.3 years; 'average important' a mean age of 54.4 years; and 'less important' a mean age of 57.8 years (p = 0.0033).

* These p-values are results of Fisher's exact test.

"How important is it to you that the treatment...."		Result	Influencing variables			
Side effects						
"not be painful?"	Very important Average important Less important	32.5% 33.9% 33.6%				
"not make you sick?"	Very important Average important Less important	40.2% 32.0% 27.8%	University Education	26.3% 35.1% 47.8% p=0.0112		
"not have many side effects?"	Very important Average important Less important	45.2% 36.8% 18.0%				
"not have serious side effects?"	Very important Average important Less important	59.9% 31.0% 9.1%				
"not be dangerous?"	Very important Average important Less important	82.2% 14.2% 3.6%	Professional Occupation	26.6% 21.2% 46.2% p=0.0243		
Emotional consequences						
"not make you depressed?"	Very important Average important Less important	56.1% 32.5% 11.4%	Family history of breast cancer	51.0% 47.4% 25.6% p=0.0148		
"not make you sad?"	Very important Average important Less important	60.1% 30.3% 9.6%	Family history of breast cancer	50.2% 48.6% 23.5% p=0.0412	University Education	31.0% 33.3% 57.6% p=0.0363
"keep you from worrying?"	Very important Average important Less important	76.6% 20.3% 3.0%	Urban living	78.1% 92.4% 62.5% p=0.0136		
"give you peace of mind?"	Very important Average important Less important	87.9% 10.7% 1.4%				

Table 1 (continued)

Instrument and data collection

The Pre-Decision Portfolio Questionnaire [1] was used to collect data for the study. This instrument was developed following the analysis of interviews from 48 women diagnosed with early breast cancer in a grounded theory study [9]. Information was collected from participants about their sociodemographic background and their decision-making treatment values relating to early breast cancer treatment [1]. A small group of Australian women representative of the study's population were used to validate the instrument prior to data collection of the sample. The internal consistency reliability of the value items was assessed by the Cronbach alpha method and the results were: Treatment Outcomes = 0.84; Side Effects = 0.80; Emotional Consequences = 0.73; Effects of Treatment on Energy Levels = 0.93; General Perceptions = 0.84; Characteristics of Treatment = 0.75.

The questionnaire was a series of closed-ended questions about women's demographic details and decision-making values for treatment. The questionnaire was divided into two areas: socio-demographic variables and treatment values. Socio-demographic variables included thirteen items: age, education, marital status, address postcode, occupation, employment status, income, private health insurance status, and experience with breast cancer or cancer in the family and/or a close person, medical diagnosis and significant support person. Treatment Values covered thirty-one items scored on a 5-point scale from 'not at all important' to 'critically important'. These items included questions relating to general characteristics of the treatment, the effect of treatment on energy, side effects, treatment outcome, and emotional and perception consequences of the treatment. For comparative analysis, the scale was reduced to a 3-point scale ('not so important', 'average important', and 'very important'). A full list of the items can be found in Tables 1 and 2.

When women arrived at the breast screening clinic, they were given written information about the study while waiting

"How important is it to you that the treatment...."		Result	Influencing variables	
Effects of treatment on energy levels				
"not limit your activities?"	Very important	50.7%		
	Average important	35.6%		
	Less important	13.7%		
"not make you tired?"	Very important	53.8%		
	Average important	34.7%		
	Less important	11.5%		
"keep you physically active?"	Very important	54.7%		
	Average important	36.3%		
	Less important	9.1%		
"keep your energy level up?"	Very important	56.4%		
	Average important	36.5%		
	Less important	7.1%		
"not interfere with your daily life?"	Very important	50.4%		
	Average important	31.6%		
	Less important	18.0%		
"let you control your life"	Very important	64.7%	Believers in God	84.6%
	Average important	29.8%		78.1%
	Less important	5.5%		100%
				p=0.0404
General perceptions				
"not change the way people think about you?"	Very important	16.4%		
	Average important	19.4%		
	Less important	64.2%		
"not interfere with your sex life?"	Very important	27.6%		
	Average important	31.0%		
	Less important	41.4%		
"allow you to wear clothes and look normal?"	Very important	31.1%	University Education	27.5%
	Average important	40.5%		34.8%
	Less important	28.4%		43.0%
				p=0.0286
"not make you feel bad about your body?"	Very important	37.6%		
	Average important	28.7%		
	Less important	33.7%		
"allow you to still feel like a woman?"	Very important	47.9%	University Education	26.8%
	Average important	36.6%		44.0%
	Less important	15.4%		34.5%
				p=0.0104

Table 2

"How important is it to you that the treatment...."		Result	Influencing variables			
General characteristics of treatment						
"be convenient?"	Very important	14.9%				
	Average important	30.6%				
	Less important	54.5%				
"be affordable?"	Very important	18.7%	Living with somebody	77.6%	With private health insurance	70.6%
	Average important	29.1%		81.6%		82.9%
	Less important	52.2%		91.2%		87.4%
				p=0.0083		p=0.0071
"be quick?"	Very important	22.6%	University Education	26.3%		
	Average important	30.4%		35.5%		
	Less important	46.9%		40.0%		
				p=0.0284		
"allow you to get back to work soon?"	Very important	38.1%				
	Average important	29.8%				
	Less important	32.1%				

Table 2 (continued)

for their mammography screening. If women consented to participate in the research, they were asked to complete the consent form and a questionnaire and to place both items in a sealed box located in the waiting room. The information sheet for the study included an explanation of the two surgical options for early breast cancer; mastectomy (total removal of the breast) and lumpectomy (removal of breast lump).

Pilot Study

A pilot study of 47 women who completed a questionnaire prior to routine mammography screening was conducted and evaluated, using the protocol described above. No changes were required to the data collection procedure and protocol, so the entire pilot data collected was included in the study.

Ethical considerations

The researchers applied and obtained ethical approval for the study from the Experimentation Ethics Committee of James Cook University and permission from the site for conducting of the study. During the study the clinic's specialist breast nurses were available to give support to the women in the study if they felt distressed by the questionnaire. No women approached the specialist breast nurses or indicated in the open-ended questions at the end of the questionnaire that they had experienced distress while participating in the study.

Data analysis

Descriptive and inferential analyses of the data were performed following the data cleaning process. Because of low response rates in the extreme categories, the treatment outcomes were reduced from a 5-point scoring scale ('not at all important' to 'critically important') to a 3-point scale ('very importan', 'average importan', 'less important'). Bivariate associations between sociodemographic variables and decision-making treatment values were assessed using Chi-square tests and Fisher's exact tests, if both characteristics were categorical (Fisher's exact test was used when expected frequencies were small), and analysis of variance, if one characteristic was categorical and the other numerical (age). Statistical analysis was performed using SPSS for Windows release 6.1.3 and, in the statistical analysis, a significance level of 0.05 was assumed.

Findings

Participants

The participants (N=377) in the study ranged in age from 33 to 76 years (mean age = 52 years, SD ± 8.2 years); 80.6% were living in the urban area of Brisbane; 57.9% had completed high school, 8.3% had completed Technical and Further Education (TAFE) and 33.8% had completed university; 86% reported residing with others; 83.9% reported a belief in God; 66.1% reported being in employment; 82.9% held private health insurance; 23.9% reported a household income of >$AUS 27,500 per person per year. Six of the participants reported a personal history of breast cancer and 47.1% a family history of breast cancer.

Almost three-quarters (73.3%)(N=377) of the participants reported that they would choose to undergo a lumpectomy with radiation, compared with 26.7% who would choose mastectomy treatment. Due to the amount of data collected, specific details about the decision-making styles and processes of the sample have been separated and discussed elsewhere [68].

Breast cancer treatment values

Table 1 presents the participant's rating of their values when deciding about early breast cancer treatment. The majority (82.2%) rated as 'very important' that the treatment "not be dangerous", that it should "get rid of the cancer " (93.6%), that it would "reduce chances the cancer will come back" (95.6%), that it would "cure you" (90.9%), and that it would "give you peace of mind" (87.9%).

Most high percentages in the 'very important' category were related to statements concerning treatment outcome. The vast majority rated as 'very important' that the treatment would "reduce chances the cancer will come back" (95.6%) and that it would "get rid of the cancer" (93.6%). Many were concerned about the side effects of treatment; an overwhelming majority desired that the treatment should "not be dangerous" (82.2%) and that it should "give you peace of mind" (87.9%). Practical consideration of expense and time taken to recover was rated 'less important'. Only 18.7% rated as 'very important' that treatment be affordable or to "allow you to get back to work soon" (38.1%).

Breast cancer treatment values and sociodemographic factors

Table 1 presents the influence of sociodemographic characteristics of the participants' ratings of values of breast cancer treatment. The sociodemographic factors considered – age, employment status, occupation, education, belief in God, family history of breast cancer, residence in urban or rural areas, living with alone or with others, and private health insurance coverage – were found to be influencing sociodemographic background variables. Younger participants were more likely than older participants to to rates as 'very important' the treatment outcome, "let you live a long life" (p=0.003), but 'less important' that it "helps you get completely well" (p=0.022). Participants who rated as 'very important' that the treatment should "cure you" were on average >10 years younger and more likely to be employed than participants who rated this as 'less important' (p=0.0090, p=0.0122, respectively).

Of the participants who rated "get rid of the cancer" as 'very important', 68.3% were currently employed compared with 45.0% rated this as of 'average importance' (p = 0.0234). Employment showed a similar trend in the treatment outcome "reduce chances the cancer will come back", although this was not significant (p = 0.098).

Discussion

Treatment values

The study identified that treatment outcomes were the most important consideration for selecting hypothetical medical treatment. These findings are consistent with other studies of women diagnosed with breast cancer [23,48]. Understanding information about the precise types of treatment that are important to individual women is critical for nurses, so that they can provide more focused information support to aid women's decision–making, reduce their distress levels and increase their psychological wellbeing [49]. By contrast, non-focused information can increase women's uncertainty and anxiety, and lead to depression and post-decision regret [8,9,50].

In decision-making, if the attractiveness between the alternatives are small, people will often seek further information [9,51,55]. Nurses require careful consideration to frame the problems of each treatment alternative, because this discussion may alter the women's preferences [52,53]. A study about women choosing adjuvant therapy following surgery reports that the global presentation of information is more important to the decision-making for women than other factors [54].

In this study 93.1% of the participants also rated as 'average important' and 'very important' that the treatment outcome "allow you to get well quickly". This result is not surprising since a diagnosis and treatment of breast cancer can have dramatic financial effects on the lifestyle of women and their ability to care for children and perform their daily activities [5]. In addition, given the remoteness of parts of Australia, women often have difficulty accessing information and services. Nurses who care for women in North Queensland anecdotally report that some women in this area may choose to undergo mastectomy (even if this is not the preferred option), so they can return home more quickly (particularly if living and running the family farm), rather than the time and travel needed to undertake radiation therapy.

Women's needs and preferences for decision involvement, specific types of information and psychosocial support , change throughout the course of the treatment and require frequent individualised [55] review and assessment by nurses. Inability to differentiate between treatment alternatives can lead to less satisfactory decisions [56] and post-decision regret [9]. Women need to understand clearly the differences between each alternative and the information should be individually customised to explain the consequences characteristic of each type of treatment[50] so that they can choose a treatment that matches their values and preferences[22].

Women will individually experience a myriad of psychological and emotional changes following diagnosis and in the treatment phase[12], and following breast cancer treatment one-third of women can experience severe psychological adjustment disorders such as anxiety and depression[57,58]. In Australia, a recent study of 132 women diagnosed with early breast cancer and prior to any initial treatment, found 23.5% were depressed and 28.8% were experiencing anxiety[59] measured using the Brief Symptom Inventory -18[60]. Therefore, nurses need to consider how they can provide short- and long-term psychological support and interventions for women after their initial treatment to increase their quality of life and improve their psychological wellbeing[12]. Women are being offered early discharge after treatment from some centres, and nurses need to assess their social support. If early discharge from hospital after surgery for breast cancer is safe and is well received by patients, early discharge seems to enhance the opportunity for social support within the family[61].

Almost three-quarters of the participants reported that they would hypothetically choose a lumpectomy with radiation therapy if they were diagnosed with early breast cancer, but 60% of Australian women diagnosed with breast cancer undergo a total mastectomy[62]. One possible explanation for this result in the study may be that the information is presented differently in a clinical setting when women are actually given a definitive diagnosis of early breast cancer and told that radiation treatment can be between six to nine weeks, as opposed to undergoing one operation. Because treatment outcome values were rated highest, diagnosed women may unconsciously choose the treatment (mastectomy) that they believe will best fulfill these values. Success of outcome appears more important than problems with body image despite the rational knowledge that both treatments are equal in outcome.

Women who have chosen a mastectomy often experience more difficulty with their self image and self esteem, whereas women with conservation surgery are often more concerned with a recurrence of breast cancer[50]. Consequently, nurses also need to provide women with information about the newer and safer techniques for breast reconstruction[63]. Individualised assessment of women's social support, resourcefulness and self esteem is essential to predict the wellbeing[64] and long-term psychological adjustment of women[22].

While many Australian nurses report that information about the physical aspect of breast cancer is integral to the provision of nursing care, and that they understand psychological support is important, they also feel that they often do not have the skills and time to provide this support[65,66]. In Australia, the role of specialist breast care nurses is evolving. More nurses in more locations can identify and care for women who are at increased risk of psychological morbidity[67,68]. Women who are separated or divorced or financially disadvantaged by earning a low income have little social support or specific cultural needs[6]

Socio-demographic variables

In the present study there was a positive correlations between participants' age treatment decision-making, and this is consistent with previous studies of women diagnosed with breast cancer[15,16,17]. For example, younger women want more information than older women[17,69], although older women often are less knowledgeable about breast cancer[70]. In addition, older women may not be as computer literate as younger women and nurses need to offer non-internet forms of information to meet individual preferences. Moreover, threatening information can lead to reacting in an adaptive or maladaptive manner. The order of the information may affect a women's adaptation[71] and requires careful planning by nurses.

Employed women were more likely to choose radical surgical treatment. Women in the sample were on average younger (mean=53yrs) and well educated (33.8% with university education). Reasons for this finding are not clear, but may include women taking notice of the education campaigns and reading more in media reports about the side effects of breast cancer treatment. Furthermore, this result raises questions about the possible relationship between education levels and the processing of information by women. Possibly, they understood that some negative treatment consequences might be necessary to achieve health. Positive correlations were found between participants' university education and perceptions of themselves and their bodies.

Participants with a family history of breast cancer were more likely to hypothetically prefer treatment that did not have negative psychological consequences of sadness or depression. These women possibly have experienced an affected family member suffering significant psychological problems, such as depression and anxiety. Likewise, women with a family history of breast cancer often experience a significant level of psychological distress that requires counselling[72]. There is evidence[73] that a woman's psychological state before breast cancer is one of the best predictors of adjustment following breast cancer treatment.

Limitations

The limitations of this study were the convenience sampling method and the fact that the sample consisted of women who were undergoing routine mammography screening for breast cancer and had not been diagnosed with breast cancer. The participants were asked to imagine if they had been diagnosed with early breast cancer and to consider what factors would be important to them in choosing between the equal alternatives of mastectomy or lumpectomy (conservation surgery). However, many women who undergo routine mammography screening experience anxiety[74,75,76] and fear a diagnosis of breast cancer[75,77]. The possible implications of being diagnosed with cancer are usually to the fore in a woman's mind at the time of mammography screening. Therefore, the results are probably similar to what they would report if they were diagnosed with early breast cancer.

The participants responded to questions while undergoing some stress from the mammography screening, but not necessarily the intense psychological distress experienced by women newly diagnosed with breast cancer. Therefore, the participants may have been able to process the treatment information more effectively and match their treatment choices with their values, preferences and belief system better than those in distress, and possibly make better decisions. The sample reflected a higher percentage than the general population of women who were university educated. Further research is required to examine the influence of education in women's treatment values. However, the findings suggest that factors influencing choice of medical treatment vary dramatically. Therefore, it is recommended that women receive individual assessment by nurses to determine their values, access to information, problem solving ability and desired level of engagement in decisions and decision support, when choosing medical treatment for early breast cancer.

Conclusion

This preliminary study provides baseline data about Australian women's unaided prediagnostic decision-making values for early breast cancer treatment. Participants in the study indicated that if they were hypothetically diagnosed with early breast cancer, treatment outcomes were the most important deciding consideration. Other treatment factors, such as the side effects and emotional consequences, were less important. Therefore, it is imperative that nurses assess the values and preferences that a woman brings to the decision-making process of treatment choice for early breast cancer. In addition, nurses should assess a woman's understanding and access to important information relating to treatment options and her ability to problem solve in designing an action plan with her doctor. Nurses need to provide focused information supports that frame the problems of each treatment alternative, so women can clearly differentiate between treatment options and make decisions that match their values and lifestyle, and use the current evidence available, such as the Psychosocial Clinical Practice Guidelines for women with breast cancer developed by the National Breast Cancer Centre[12].

Acknowledgement

Financial support for this study was provided by a Merit Research Grant from James Cook University, Australia. The researchers wish to thank Dr Cherrell Hirst and her staff at the breast clinic site for their support in the study, and Dr Rosemary Dunn for her editorial comments.

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