

## Original Research Article

# Knowledge and perception of breast cancer and its treatment among Malaysian women: Role of religion

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Received: 10 September 2016

Revised accepted: 8 March 2017

### Abstract

**Purpose:** To investigate the association between religiosity, perceptions, and knowledge of breast cancer and its treatment among women in Malaysia.

**Methods:** Knowledge and perceptions of breast cancer and its treatment were determined via a questionnaire adapted from previous studies. The Duke Religion Index was used to measure participants' religiosity. The questionnaires were distributed among women in public areas in Kuala Lumpur.

**Results:** A total of 384 women participated in this study. Non-organisational religious activity (NORA;  $r = -0.113$ ,  $p < 0.05$ ) and intrinsic religiosity (IR;  $r = -0.183$ ,  $p < 0.01$ ) were significantly negatively correlated with knowledge of breast cancer. NORA ( $r = 0.115$ ,  $p < 0.05$ ) and IR ( $r = 0.229$ ,  $p < 0.01$ ) were positively, significantly correlated with the perception that patients who underwent treatment for breast cancer can enjoy good quality of life. There was also a significant positive correlation between NORA ( $r = 0.175$ ,  $p < 0.05$ ) and IR ( $r = 0.249$ ,  $p < 0.01$ ) on the statement that spiritual support improves treatment for breast cancer. IR was the only subscale positively, significantly associated with the perception of choosing breast-conserving surgery as a primary treatment choice ( $r = -0.111$ ,  $p < 0.05$ ) and dietary therapies ( $r = 0.126$ ,  $p < 0.05$ ) or acupuncture ( $r = 0.120$ ,  $p < 0.05$ ) as alternative treatments for breast cancer.

**Conclusion:** Religiosity should be considered in improving women's knowledge and perceptions of breast cancer and its treatment.

**Keywords:** Breast cancer, Knowledge, Perceptions, Religiosity

Tropical Journal of Pharmaceutical Research is indexed by Science Citation Index (SciSearch), Scopus, International Pharmaceutical Abstract, Chemical Abstracts, Embase, Index Copernicus, EBSCO, African Index Medicus, JournalSeek, Journal Citation Reports/Science Edition, Directory of Open Access Journals (DOAJ), African Journal Online, Bioline International, Open-J-Gate and Pharmacy Abstracts

## INTRODUCTION

The incidence rate of breast cancer is the second highest across all types of cancers and ranks as the fifth cause of cancer deaths overall [1]. Breast cancer has an age-standardized incidence rate of 38.7 for every 100,000 people in Malaysia, which is higher than the average incidence for the rest of South-Eastern Asia at 34.8 for every 100,000 people [2].

Malaysia, with Thailand, is encountering increased breast cancer mortality rates, in contrast to other Asia-Pacific countries. Malaysia recorded an increment of 6 % per year between 1997 and 2008, practically identical to the increment in Thailand, reported as 7 % per year from 2000 to 2006 [2]. However, the problem of late diagnosis in Malaysia is significant; approximately 50–60 % of women are typically in stages 3 or 4 at the first diagnosis of breast cancer. It is believed that several factors have

contributed to delays in presentation with breast cancer, such as strong beliefs in traditional medicine, negative sociocultural perceptions of breast cancer, poverty, lack of education, fear, and denial [3].

According to the Handbook of Religion and Health [4], the associations of religiosity with health behaviours and mental and physical health have been studied. Religiosity is the degree of religious activity among those who are religious and includes attendance at a place of worship, religious group participation, faith in a god, prayer, reading of scriptures, and religious attitudes [5]. Religiosity has been mostly evaluated for its effect on quality of life, well-being, and perceptions of illness in cancer research [6]. Research has reported a significant influence of religiosity on health outcomes for conditions such as kidney disease and depression [7,8].

Studies have been conducted in Malaysia on knowledge of breast cancer and the practice of breast self-examination [9], awareness [10], knowledge, and perceptions of breast cancer among women [11]. However, none have investigated how religion affects knowledge and perceptions of breast cancer.

As Malaysia is a multi-racial country with various religious beliefs, religiosity may be an important factor associated with knowledge and perceptions of breast cancer and its treatment among Malaysian women.

## METHODS

### Study design

A cross-sectional study was conducted from August to December 2015 on the associations between religiosity and knowledge and perceptions of breast cancer and its treatment among women. This study commenced following ethical approval by the Research Ethics Committee of the authors' academic institution (UKM 1.5.3.5/244/NF-051-15) and conducted according to the principles expressed in the Declaration of Helsinki [12]. Three hundred and eighty-four (384) women from Kuala Lumpur participated in the study. Women aged  $\geq 18$  years with no personal or family history of breast cancer, who could read and understand the questionnaires were included in this study. However, women with cognitive problems (e.g. Alzheimer's disease, mental retardation, or dementia), a psychiatric illness, or poor understanding of the language used were excluded.

### Questionnaire survey

A set of questionnaires in both English and Malay languages were distributed to women at public areas (e.g. shopping malls, recreational parks, and bus terminals), who met the inclusion/exclusion criteria. The target sample was identified through convenience sampling. The self-administered questionnaires were divided into four sections, viz, A, B, C, and D. Section A included socio-demographic data such as age, sex, ethnicity, religion, income, marital status, education level, and employment status; Section B consisted of the Duke University Religion Index (DUREL), used with permission to measure the religiosity of women in the general public [13]. DUREL consists of five questions that are related to three subscales pertaining to religious activities, namely, organisational religious activity (ORA), non-organisational religious activity (NORA), and intrinsic religiosity (IR). Each of these subscales had to be analysed independently. Responses for both ORA and NORA ranged from scores of 1 (rarely or never) to 6 (more than once a week). The IR scale had three questions, with each response ranging from a score of 1 (definitely not true) to 6 (definitely true of me). A Malay version of DUREL had been translated and validated for use by Nurashikin *et al* [14].

Questions about knowledge and perceptions of breast cancer were presented in sections C and D, respectively. The questions in both sections were adapted from an instrument used in a study by Hadi *et al*, from whom permission was obtained [11]. For section C, the questions were divided into three parts: four questions on general knowledge, ten questions on knowledge of risk factors, and eight questions on knowledge of symptoms and screening. A rank score (yes/no/not sure) was applied to knowledge items. The scoring method was '1' for correct answers and '0' for incorrect or unsure answers. The total score on knowledge (general knowledge + risk factor + symptoms and screening) was calculated and used for analysis. Knowledge was categorised based on the total score obtained, as shown in Table 1 below.

**Table 1:** Knowledge categorization

Total score	Knowledge
< 8	Very poor
8 – 11	Poor
12 – 16	Moderate
17 – 20	Good
> 20	Very good

For section D, the questions were mainly on perceptions of breast cancer and its treatment. It incorporated nine questions associated with outcomes and treatment choices for breast cancer.

A Likert-type scale was used to evaluate the perceptions of women in the general public. Scores of '5', '4', '3', '2', and '1' were assigned to 'strongly agree', 'agree', 'neutral', 'disagree', and 'strongly disagree', respectively. Reverse coding was used for negative statements. The questionnaire was pretested (piloted) prior to full commencement of the study to ensure its suitability for the studied population.

### Statistical analysis

The IBM Statistical Package for the Social Science (SPSS®) version 22.0 was used for statistical analysis. Continuous data were analysed descriptively through means and standard deviations for normally distributed data (i.e., parametric), or medians and interquartile ranges if the data were not normally distributed (i.e. non-parametric); categorical data were expressed in frequencies and percentages. Scores on each part relating to knowledge of breast cancer (general knowledge, risk factors, symptoms, and screening) and overall scores were summed up to obtain the median knowledge score.

Non-parametric tests such as the Kruskal-Wallis were used to evaluate the knowledge score of women in the general public based on socio-demographic variables. Post-hoc tests determined which pairwise groups showed significance. Spearman's rho correlation was used to determine the association between religiosity and knowledge of breast cancer, as well as religiosity and perceptions of breast cancer. All analyses were set as two-tailed with a confidence interval of 95 % and a p-value less than 0.05 was considered statistically significant.

## RESULTS

### Socio-demographic characteristics and religiosity among respondents

Table 2 provides the details about respondents' socio-demographic data. The mean age of the respondents was  $31.9 \pm 11.68$  years and half of the total respondents were Malay (194, 50.5 %); hence, Islam (186, 48.4 %) was the dominant religion among them. In addition, more than half of the respondents were single (214, 55.7 %) and had tertiary education (251, 65.4 %).

**Table 2:** Respondents' socio-demographic data

Variable	Number (%)
<b>N=384</b>	
<b>Age (years)</b>	
Mean: $31.9 \pm 11.68$	
18-24	138 (35.9)
25-34	124 (32.3)
35-44	69 (18.0)
45-54	34 (8.9)
55 and above	19 (4.9)
<b>Race</b>	
Malay	194 (50.5)
Chinese	140 (36.5)
Indian	44 (11.5)
Others	6 (1.6)
<b>Religion</b>	
Islam	186 (48.4)
Buddhism	104 (27.1)
Christian	49 (12.8)
Hinduism	39 (10.2)
Others	6 (1.6)
<b>Marital status</b>	
Single	214 (55.7)
Married	163 (42.4)
Divorced	1 (0.3)
Widow/widower	6 (1.6)
<b>Educational level</b>	
Primary	11 (2.9)
Secondary	116 (30.2)
Tertiary	251 (65.4)
(College/University)	6 (1.6)
None	
<b>Employment status</b>	
Government	49 (12.8)
Private	147 (38.3)
Unemployed	64 (16.7)
Retiree	5 (1.3)
Self-employed	27 (7.0)
Student	92 (24.0)
<b>Monthly income</b>	
<1000	54 (14.1)
1000-3000	116 (30.2)
3001-5000	54 (14.1)
5001-10000	25 (6.5)
>10000	7 (1.8)
None	128 (33.3)

A total of 119 (31.0 %) women attended their respective places of worship a few times a year, followed by a few times a month (89, 23.2 %). Ninety-four (24.5 %) women were involved in private religious activities (e.g. prayer, meditation, or reading the 'Al-Quran' or 'Bible') daily. Eighty-nine (23.2 %) women rarely or never engaged in such private religious activities in their lives.

### Religiosity and knowledge of breast cancer

A total of 176 respondents (45.8 %) obtained a moderate score of knowledge on breast cancer, with a total median knowledge score of 12.50. Most of the respondents demonstrated limited

knowledge of breast cancer's risk factors, with a median score of 4.00 out of 10.00. However, knowledge of symptoms of breast cancer was good, with a median score of 6.00 out of 8.00. Details of respondents' breast cancer knowledge are shown in Table 3.

All subscales of religiosity were studied to evaluate the association between religiosity and knowledge of breast cancer. There was no significant association between ORA and knowledge of breast cancer (ORA:  $r = -0.007$ ,  $p > 0.05$ ). However, NORA and IR were significantly negatively correlated with knowledge of breast cancer (NORA:  $r = -0.113$ ,  $p < 0.05$ ; IR:  $r = -0.183$ ,  $p < 0.01$ ).

### Religiosity and perceptions of breast cancer and its treatment

More than two thirds of respondents agreed that patients undergoing treatment of breast cancer

could enjoy good quality of life (81.3 %) without embarrassment (76.8 %). About half of the respondents agreed that breast cancer treatment is a long and painful process (54.9 %), though it did not result in loss of physical beauty (51.6 %). Table 4 summarises respondents' responses on perceptions of breast cancer and its treatment.

Table 4 shows the associations between religiosity and perceptions of breast cancer and its treatment. ORA was not significantly correlated with any perception of breast cancer and its treatment. However, NORA and IR were positively, significantly correlated with the perception that a woman can enjoy good quality of life after receiving treatment for breast cancer (NORA:  $r = 0.115$ ,  $p < 0.05$ ; IR:  $r = 0.228$ ,  $p < 0.01$ ). NORA and IR also showed a positive significant correlation with the perception that spiritual support improves treatment of breast cancer (NORA:  $r = 0.175$ ,  $p < 0.05$ ; IR:  $r = 0.249$ ,  $p < 0.01$ ). Moreover, IR was positively significant-

**Table 3:** Knowledge of breast cancer among respondents

Item	Range	Median (IQR)	Correct, n(%)	Incorrect, n(%)
<b>General knowledge</b>	1 – 4	2.00 (1.00)		
Only females are affected by breast cancer			263 (68.5)	121 (31.5)
Breast cancer can be transmitted from one person to another			316 (82.3)	68 (17.7)
Breast cancer is the leading cause of death in Malaysian women			86 (22.4)	298 (77.6)
The estimated life time risk of developing breast cancer in Malaysian women is 1 in 19			151 (39.3)	233 (60.7)
<b>Knowledge of breast cancer risk factors</b>	1 – 10	4.00 (3.00)		
Old age			169 (44.0)	215 (56.0)
Family history of breast cancer			301 (78.4)	83 (21.6)
Cigarette smoking			183 (47.7)	201 (52.3)
Low-fat diet			243 (63.3)	141 (36.7)
First child after the age of 30 years			131 (34.1)	253 (65.9)
Early onset of menses (before the age of 12 years)			131 (34.1)	253 (65.9)
Late menopause (after the age of 55 years)			128 (33.3)	256 (66.7)
Use of oral contraceptive			115 (29.9)	269 (70.1)
Large breast			105 (27.3)	279 (72.7)
Breastfeeding			252 (65.6)	132 (34.4)
<b>Knowledge of breast cancer symptoms</b>	1 – 8	6.00 (3.00)		
Painless breast lump			223 (58.1)	161 (41.9)
Lump under armpit			265 (69.0)	119 (31.0)
Nipple discharge (excluding milk)			253 (65.9)	131 (34.1)
Change in breast shape			299 (77.9)	85 (22.1)
Pain in breast region			318 (82.8)	66 (17.2)
Dimpling of breast skin			195 (50.8)	189 (49.2)
BSE (breast self-examination) is recommended for females once a month			297 (77.3)	87 (22.7)
CBE (clinical breast examination) is recommended for females once a year			295 (76.8)	89 (23.2)
Total knowledge score	0 – 22	12.50 (5.00)	Moderate knowledge	

\*n = number of respondents; IQR = interquartile range

**Table 4:** Perceptions of breast cancer and its treatment, as well as its association with religiosity

Perception	Religiosity ( <i>P</i> -value) <sup>a</sup>							
	SA	A	N	DA	SDA	ORA	NORA	IR
A woman after receiving treatment for breast cancer can enjoy a good quality of life	137 (35.7)	175 (45.6)	52 (13.5)	19 (4.9)	1 (3)	0.037 (0.471)	0.115* (0.024)	0.229** (0.000)
Treatment for breast cancer is a long and painful process	52 (13.5)	159 (41.4)	113 (29.4)	55 (14.3)	5 (1.3)	-0.007 (0.888)	0.010 (0.841)	-0.023 (0.650)
Treatment for breast cancer are more helpful to young people	62 (16.1)	137 (35.7)	117 (30.5)	57 (14.8)	11 (2.9)	0.053 (0.299)	0.067 (0.193)	0.152** (0.003)
Treatment for breast cancer is embarrassing	15 (3.9)	22 (5.7)	52 (13.5)	144 (37.5)	151 (39.3)	0.003 (0.949)	0.073 (0.156)	0.083 (0.104)
Treatment of breast cancer results in loss of physical beauty	25 (6.5)	89 (23.2)	72 (18.8)	140 (36.5)	58 (15.1)	-0.044 (0.389)	-0.043 (0.400)	-0.129 (0.011)
Total breast removal is a better primary treatment choice than breast conserving surgery	39 (10.2)	129 (33.6)	121 (31.5)	72 (18.8)	23 (6.0)	-0.054 (0.290)	-0.064 (0.213)	-0.111* (0.030)
Macrobiotics, megavitamins or other dietary supplements are good alternative medicine for treatment of breast cancer	28 (7.3)	138 (35.9)	139 (36.2)	70 (18.2)	9 (2.3)	0.001 (0.982)	0.067 (0.189)	0.126* (0.014)
Treatment of breast cancer using acupuncture is useful	22 (5.7)	62 (16.1)	173 (45.1)	106 (27.6)	21 (5.5)	-0.060 (0.242)	0.049 (0.339)	0.120* (0.018)
Spiritual support helps in improving treatment of breast cancer	153 (39.8)	148 (38.5)	60 (15.6)	20 (5.2)	3 (0.8)	0.091 (0.076)	0.175** (0.001)	0.249** (0.000)

a = Spearman's Rho Correlation Test; \*significant at  $p < 0.05$  level (2-tailed); \*\* significant  $p < 0.01$  level (2-tailed)

ly correlated with the perception that treatment of breast cancer is more helpful to young people ( $r = 0.152$ ,  $p < 0.05$ ). A positive significant correlation was found between IR and the perception that macrobiotics, megavitamins, or other dietary supplements are good alternative medicines for breast cancer treatment ( $r = 0.126$ ,  $p < 0.05$ ), and with the usage of acupuncture in treatment of breast cancer ( $r = 0.120$ ,  $p < 0.05$ ). On the other hand, a negative significant correlation was found between IR and the perception that total breast removal is a better choice than breast conserving surgery ( $r = -0.111$ ,  $p < 0.05$ ).

## DISCUSSION

Women with frequent private religious activities had significantly poorer knowledge of breast cancer in the present study. Perhaps they spend most of their time reading their respective religious materials (e.g., the Al-Quran or Bible) and allocate less time to searching for medical health information. Thus, they are less likely to learn and read information concerning breast cancer. Women with stronger intrinsic religiosity also had significantly poorer knowledge of breast cancer. Women with higher intrinsic religiosity believe that everything that occurred in their lives is attributable to their god. They may treat their god as the protector who will guide and keep them alive [15]. Additionally, the fatalistic beliefs of women that stressful events such as breast cancer were 'fated' and unavoidable may also result in the refusal to seek any knowledge and treatment about their illness [16].

Women with higher scores on NORA perceived that women could enjoy good quality of life after receiving breast cancer treatment. This may be explained by the fact that frequent practice of private religious activities such as prayer or meditation can foster a sense of control over stressful events through attainment of a faithful relationship with a god who provides guidance and support for them [17]. Further, people with strong religious beliefs or coping may experience improved emotional states such as happiness, compassion, and hope when dealing with stress; thus, they are bound to enjoy good quality of life after breast cancer treatment [4].

Women with higher scores on IR perceived that women could enjoy good quality of life after receiving breast cancer treatment. They believed that a positive religious belief can improve quality of life among patients with advanced diseases such as cancer [18]. Someone with higher levels of religiosity tends to perceive his or her disease less negatively and generally has good quality of

life along with treatment [7]. A study by Koenig *et al* also found that depressive symptoms diminished faster among depressed patients with higher intrinsic religiosity [19].

Women with higher scores on NORA and IR also tend to agree more that spiritual support improves breast cancer treatment. In fact, studies have shown that spirituality and religiosity were positive health mediators for the achievement of better health outcomes [20]. Women undertaking frequent acts of prayer or meditation or higher personal religious commitment will build a stronger relationship with a god or a higher power. They may feel less depressed and accept events from a spiritual perspective as a means of coping with breast cancer. Further, patients with greater spirituality will have better immune defences during treatment [21]. This is because depression and stress may increase levels of adrenal stress hormones that negatively affect immune function [22].

Spiritual support is linked to calmness and improves breast cancer treatment [15]. Another study also showed that spiritual support was associated with patients' peace of mind through the nurturing of their relationship with their god, as well as better quality of life [23]. Adolescents with severe illness, including cancer have heightened spirituality and spiritual coping strategies to manage their illness [24]. This is similar to the present study's results that women with higher intrinsic religiosity perceived breast cancer treatment as more helpful to young people. A study by Ganz *et al* also showed that overall physical functioning and quality of life among younger breast cancer patients after breast treatment were better than in older patients [25].

Women with higher intrinsic religiosity tended to reject the perception that total breast removal is a better choice of primary treatment for breast cancer than breast conserving surgery is. This could be explained by the fact that highly religious women believe that their god made their body, mind, and soul. Hence, they would not intend to remove a whole breast as a primary treatment choice. Studies have shown no significant differences between the two types of surgical treatments for early breast cancer in terms of overall survival rate [26].

Women with higher intrinsic religiosity tended to agree with the use of dietary therapies as alternative treatments for breast cancer. Those with higher religiosity may choose spiritual recovery instead of conventional treatment;

hence they may be more receptive toward dietary treatment (e.g. megavitamins and macrobiotics) alongside divine healing. However, according to Cancer Research UK, to date, there is no evidence on the curability of cancer through alternative therapies. In fact, dietary therapies could lead to harmful side effects that may influence the efficacy of conventional medical treatment [27].

Women with higher intrinsic religiosity also tended to agree that acupuncture therapy is useful as an alternative treatment for breast cancer. They trusted that traditional therapy such as acupuncture was a more 'natural' approach and compatible with their religious philosophy [28]. This was further supported by their disagreement with conventional treatment due to its adverse effects [29]. To date, there is no evidence that acupuncture therapy can cure cancer. However, acupuncture showed beneficial effects with regard to relieving cancer-related fatigue [30] and hot flushes caused by anti-estrogenic drugs among breast cancer patients [31].

### Limitations of the study

The convenience sampling method might have introduced selection bias, as highly motivated respondents were more likely to participate in the study, compared to others. The results obtained may not be generalised to the whole Malaysian population, as the study was mainly conducted in Kuala Lumpur. Furthermore, other factors related to religion, such as social support or stress coping, that could have influenced the knowledge and perception of breast cancer and its treatment were not investigated in the present study.

### CONCLUSION

Women around the Kuala Lumpur area demonstrate moderate knowledge of breast cancer. There are significant negative correlations between knowledge of breast cancer and aspects of NORA and IR. Women with higher NORA and IR scores agree that women receiving treatment for breast cancer enjoy good quality of life. They also agree that spiritual support improves treatment for breast cancer. IR is the only subscale that positively correlate with the perception of breast-conserving surgery as a primary treatment choice and dietary therapies or acupuncture as alternative treatments for breast cancer. Women with higher IR scores also agree that breast cancer treatment is more helpful to young people. Addressing religiosity is crucial when designing interventions to improve

knowledge and perceptions regarding breast cancer and its treatment in the general public.

### DECLARATIONS

#### Acknowledgement

The authors would like to thank the respondents for completing the questionnaire. This research was funded by the local university (UKM) grant (Grant code: KOMUNITI-2014-009).

#### Conflict of Interest

No conflict of interest associated with this work.

#### Contribution of Authors

The authors declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by them.

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