

Effects of Health Belief and Cancer Fatalism on the Practice of Breast Cancer Screening Among Nigerian Women

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1. Introduction

Breast cancer has been reported as the highest cause of cancer deaths amongst women worldwide. The incidence and prevalence of cancer is rapidly increasing in the developed and developing countries. More than 10 million people are diagnosed with cancer every year. It is estimated that there will be 15 million new cases every year by 2020 (Horton, 2006)

Rising incidence of breast cancer as well as earlier age of presentation has been reported in developing countries. Since no cure has been found for breast cancer, early diagnosis and early treatment have been found to yield a better survival rate.

There is now strong evidence that an individual's risk of developing cancer can be substantially reduced by healthy behavior such as participating in cancer screening according to recommended guidelines. The American Cancer Society posits that if we can effectively promote healthy behaviors, much of the suffering and death from cancer can be prevented or reduced (American Cancer Society, 2002).

However, poor practice of breast cancer screening methods has been reported in many studies in Nigeria (Akhigbe & Omuemu, 2009; Okobia *et al*, 2006). Beyond poor knowledge, or ignorance, several other factors have been found to influence the practice of breast cancer screening in different countries, including Nigeria.

In Nigeria, late presentation has been described as the hallmark of breast cancer and reasons given include poverty, under-education, lack of knowledge and poor access to care (Akhigbe & Omuemu, 2009; Okobia *et al*, 2006; Atoyebi *et al*, 1997). However, studies have shown that even when these factors are statistically controlled, African-Americans are still less likely to participate in cancer screening (Powe 1996). It was therefore concluded that other factors such as cultural values and beliefs may operate independent of variables such as poverty and education in affecting the decision to go for screening.

Health beliefs differ from culture to culture. In Nigeria, beliefs are usually influenced by cultural and religious values, which in turn influence health behavior such as response to screening awareness campaigns.

The Health Belief Model (HBM) has been used as a theoretical framework to study Breast Self-Examination and other breast cancer detection behaviors. The model stipulates that

health-related behavior is influenced by a person's perception of the threat posed by a health problem and by the value associated with his or her action to reduce that threat (Champion *et al.*, 1997).

Cancer fatalism, the belief that death is inevitable when cancer is present has also been identified as a barrier to participation in cancer screening, detection and treatment. Cancer fatalism is believed to be the result of cultural, historical and socioeconomic factors that have influenced the lived experience of African-Americans (Powe, 1996).

Nigeria is the most populous black African nation and breast cancer screening practice has been extremely poor. As has been found in other parts of the world, people of African origin are less likely to participate in cancer screening programs. (Powe, 1996) Breast cancer tends to be discovered in the later stages, when treatment options are limited and mortality rates increase, which is similar to reports in Nigeria.

If we are to develop materials for educational intervention, they have to be culturally sensitive as the goal of such a drive will be to increase breast cancer knowledge, decrease cancer fatalism and improve participation in breast cancer screening among Nigerian women.

Health beliefs and fatalism have been studied in various populations as means of identifying other strategies to help promote positive health behaviors, such as cancer screening. There is limited information concerning such a study in Nigeria.

1.1 Health belief model

The Health Belief Model (HBM) is by far the most commonly used theory in health education and health promotion (Glanz, Rimer, & Lewis, 2002).

The HBM is a method used to evaluate and explain individual differences in preventative health behavior (Janz *et al.*, 2002). The HBM has had the greatest influence in research related to prediction associated with breast cancer screening behaviors; several studies have used the HBM to understand breast cancer screening behaviors. The HBM model subscales measure six concepts, including perceived susceptibility, perceived seriousness, barriers, benefits, health motivation, and confidence (Champion 1999).

1.1.1 Perceived susceptibility

As the first component of the HBM, perceived susceptibility is defined as a subjective perception of the risk of an illness. One's belief regarding the chances of being diagnosed with a medical condition can be applied by defining populations at risk and risk levels (Janz *et al.*, 2002). Individual risk may be based on personal characteristics or behavior. Comparisons of perceived susceptibility with action risk can also be conducted (Janz *et al.*, 2002). Related to breast cancer screening behaviors, perceived susceptibility may include the risk of a breast cancer diagnosis in the long term or immediate future.

1.1.2 Perceived severity

Perceived severity, formerly called perceived "seriousness" is the second construct of the HBM. Perceived severity speaks to an individual's belief about the severity or seriousness of

a disease and the sequence of events after diagnosis and personal feelings related to the consequences of a specific medical condition (Janz, Champion, & Stretcher, 2002). Possible medical consequences may include death, disability, and pain; possible social consequences consist of effects on work, family life, and social relations (Janz et al., 2002). The combination of perceived susceptibility and perceived severity has been labeled perceived threat.

1.1.3 Perceived benefits

The construct of perceived benefits is a person's opinion of the value or usefulness of a new behavior in decreasing the risk of developing a disease. Also termed as perceived benefits of taking health action, the attitudes of health behavior changes are reliant on one's view of the health benefits for performing a health action (Janz et al., 2002). Perceived benefits play a significant role in the adoption of secondary preventive behaviours, such as screenings. It is widely known and accepted that the earlier breast cancer is found, the greater the chances of survival. It is also known that breast self-examination (BSE), when done regularly, can be an effective means of early detection. But not all women do BSE regularly. They have to believe there is a benefit in adopting this behavior, which is exactly what was found to be true among black women: those who believed breast self-examinations were beneficial did them more frequently (Graham, 2002).

1.1.4 Perceived barriers

Perceived barriers refer to the potential negative aspects of or obstructions to taking a recommended health action. This is the belief about physical and psychological costs of taking health action (Janz et al., 2002). An internal cost benefit analysis occurs, weighing the health action's expected effectiveness against perceptions that it may become an obstacle. Potential barriers may include financial expense, danger, pain, difficulty, upset, inconvenience, and time-consumption (Janz et al., 2002). Perceived barriers to performing breast cancer screening behaviors were emotional, social, and physical.

Even when women know that breast cancer is a serious disease, and one for which women are at risk and one for which the perception of threat is high, the barriers to performing BSE exert a greater influence over the behavior than does the threat of cancer itself (Champion, 1993; Champion & Menon, 1997; Umeh & Rogan-Gibson, 2001). Some of these barriers include difficulty with starting a new behavior or developing a new habit, fear of not being able to perform BSE correctly, having to give up things in order to do BSE, and embarrassment (Umeh & Rogan-Gibson, 2001).

1.1.5 Self-efficacy

Self-efficacy was added to the original four beliefs of the HBM in 1988 (Rosenstock, Strecher, & Becker, 1988). Self-efficacy is the belief in one's own ability to do something (Bandura, 1977). If a person believes a new behavior is useful (perceived benefit), but does not think he or she is capable of doing it (perceived barrier), chances are that it will not be tried. According to Umeh & Rogan-Gibson (2001), a significant factor in not performing BSE is fear of being unable to perform BSE correctly. In other words, unless a woman believes she is capable of performing BSE (that is, has BSE self-efficacy), this barrier will not be overcome and BSE will not be done.

1.1.6 Cues to action

Cues to action, formerly known as motivation, are events, people, or things that move people to change their behavior. Examples of cues include media reports about preventing breast cancer, illness of a family member, and perceived benefits (Graham, 2002).

1.2 Cancer fatalism

Studies have revealed that fatalism may be a deterrent to participation in health promoting behaviours. Fatalism is the belief that all things in the world are under the control of some invisible force, and we are powerless to do anything about it. Fatalism is in general the view which holds that all events in the history of the world, and, in particular, the actions and incidents which make up the story of each individual life are determined by fate (Knight, 2003). Fatalism is the belief that situations, such as illnesses or catastrophic events, happen because of a higher power (such as God), or they are just meant to happen, and cannot be avoided (Talbert PY, 2008). Indeed, fatalism has a strong tie with religion.

Religious beliefs are particularly dominant among Nigerians, and together with a passionate confidence in God are such beliefs in fatalism, magic, witchcraft, and demons. Although Christianity and Islam have replaced traditional religions, the thoughts of the people about life, and their attitude to it, are still shaped by the old worldview. They exhibit this in their day-to-day interpersonal interactions (Jegede, 2002). These beliefs therefore remain, even in educated people long after their possible conversion to Christianity or Islam. As a result, fatalism remains a part of the average Nigerian's worldview. Worldview may be defined as the mental grid through which one sees the world (Sarma, 2007).

Cancer fatalism is a situational manifestation of fatalism in which individuals may feel powerless in the face of cancer and may view a diagnosis of cancer as a struggle against insurmountable odds (Powe & Johnson, 1995).

This study therefore seeks to understand the perception of Nigerian women about breast cancer screening using the health beliefs model with the subscales of perceived susceptibility, perceived severity, perceived benefits and barriers as well as self-efficacy and cues to action, including cancer fatalism.

1.3 Hypotheses

1. There is no significant relationship between the practice of breast self-examination and perceived barriers.
2. There is no significant relationship between participants' use of mammography and perceived barriers.
3. There is no significant association between breast cancer fatalism and breast self-examination.

2. Methodology

This study employed a descriptive correlation design, with health beliefs and cancer fatalism operationalized by the participants' responses to Champion's Health Belief Model Scale and Powe's Cancer Fatalism Scale respectively.

The study evaluated the effects of health belief and cancer fatalism on the practice of breast cancer screening among educated Nigerian women. The dependent variables were breast self-examination and mammography. The independent variables were the components of the health belief model, and cancer fatalism.

2.1 Data collection

Purposive sampling was employed in recruiting two hundred and twenty five participants from among female health professionals (consisting of medical doctors, nurses, pharmacists and radiographers) in the Teaching Hospital and female teachers in secondary schools in the Benin City metropolis, aged between 30 and 60. The choice of purposive sampling technique “ensures that only elements relevant to the research are included and guarantees that extra care is taken to select those elements that satisfy the requirements of the research” (Nworgu, 1991). Informed consent was obtained and participants were assured confidentiality of responses. Participation meant responding to a questionnaire soliciting demographic information as well as the Champion’s Health Belief Model Scale and the Powe Cancer Fatalism Scale.

2.2 Instruments

Champion’s Health Belief Model Scale: HBM scales for measuring beliefs related to breast cancer were assessed for content validity by a panel of three health educators who are familiar with the HBM and breast cancer screenings. It was agreed that the first item in the subscale of perceived susceptibility (*It is extremely likely I will get breast cancer in the future*) might meet with a strong denial by the average Nigerian woman. A pilot testing of the instrument subsequently revealed two items in the Health Belief Model scale that considerably lowered the internal consistency of the subscales. Together with an item in the Cues to action subscale (*I have regular health check-ups even when I am not sick*), these two items were excluded. All HBM scales were measured on a five-point Likert type scale with the following coding: strongly disagree (1); disagree (2); neutral (3); agree (4); and strongly agree (5).

Powe Cancer Fatalism Scale: Participants’ level of breast cancer fatalism was assessed with the Powe Cancer Fatalism Scale (Powe, 1995). The Inventory is a 15-item questionnaire based on the philosophic origins and attributes of cancer fatalism (fear, predetermination, pessimism, inevitable death), with a Yes or No response. Each “Yes” response was scored as one point and a “No” response as zero, giving the possible range of scores from 0 to 15.

Higher scores on the Powe Scale reflect higher degrees of fatalism. A score of zero to five indicates a low degree of fatalism, scores from six to ten indicate a moderate degree of fatalism, and scores from eleven to fifteen reflect a high degree of fatalism. In a study aimed at differentiating higher versus lower levels of cancer fatalism among a sample of African American women, Powe (2001) selected a mean score of 8 as a cut-off point, coding scores of 0 to 8 as low cancer fatalism and scores 9 to 15 as high cancer fatalism. In this study, a cut-off point determined by median split was used to classify participants as “High” and “Low” Breast Cancer Fatalism individuals. Participants with scores equal to or greater than 13 were categorized as “High Fatalism” individuals and those whose scores on this scale were below 13 were classified as “Low Fatalism” individuals.

The Statistical Package for the Social Science (SPSS) computer software programme (version 16 for Windows) was used to conduct frequency analyses and correlations.

3. Results

Cronbach's alpha tests of reliabilities, conducted to assess the internal consistency of the six HBM subscales (i.e., susceptibility, severity, benefits, barriers, self-efficacy, and cues to action) and the fatalism scale are presented in Table 1. All alpha coefficients were in the .82 to .97 which suggests the instrument had acceptable to excellent internal consistency (DeVillis, 2003).

Subscales/Scale	Alpha Coefficient, α	No. of Items
Susceptibility	.90	4
Severity	.82	5
Benefits BSE	.85	4
Benefits MAMMO	.82	5
Barriers BSE	.97	11
Barriers MAMMO	.93	11
Cues to action	.94	4
Self-Efficacy	.82	7
Powe Fatalism Scale	.94	15

Table 1. Cronbach's Alpha Reliabilities.

Demographic data

The survey population consisted of 225 women aged between 30 and 60 years who completed the survey instrument. Majority of the respondents (83.1%) were between 30 - 49 years of age. Most (95.1%) were married.

Educationally, 55.1% had completed University education while 44.9% had post-secondary but not university education. Post-secondary education includes training schools for nursing, medical laboratory science, radiography as well as colleges of education. Until recently, most of these schools offered certificate or diploma courses. Their products work as nurses, laboratory scientists, radiographers and teachers in primary and junior secondary schools. Health professionals, including doctors, pharmacists, nurses, medical laboratory scientists and radiographers accounted for 24.9% of the study population, while the remaining 75.1% were secondary school teachers. Nigeria is a multi-ethnic nation and Benin City is the capital of Edo State where the Binis and Ishans constitute a sizable proportion of the population. The Binis/Ishans constitute 56.4% with the Igbos and Yorubas together with a string of closely related ethnic groups contributing almost equally to the study population. The southern part of Nigeria is predominantly Christian, hence 88.4% professed Christianity as their religion.

None of the respondents has ever been diagnosed with breast cancer but 7.1% reported that a family member or friend has experienced breast cancer. 35.6% of the respondents regularly do breast self-examination while 64.4% do not. Only a minute proportion of the study population (6.7%) has ever had a mammogram done, an overwhelming percentage has never had a mammogram done.

Characteristics	Number N = 225	Percent
Age (Years)		
30-34	59	26.2
35-39	46	20.4
40-44	52	23.1
45-49	30	13.3
50-54	20	8.9
55-59	18	8.0
Marital Status		
Single	34	15.1
Married	180	80.0
Divorced	5	2.2
Separated	2	.9
Widowed	4	1.8
Ethnicity		
Bini/Ishan	127	56.4
Igbo	31	13.8
Yoruba	35	15.6
Urhobo/Itsekiri/Isoko	32	14.2
Education		
Secondary	101	44.9
Post-secondary/University	124	55.1
Occupation		
Health Professional	56	24.9
Teacher	169	75.1
Religion		
Christian	199	88.4
Muslim	26	11.6
Has a family member or friend experienced breast cancer?		
Yes	16	7.1
No	209	92.9
Do you regularly do breast self-examination?		
Yes	80	35.6
No	145	64.4
Have you ever had a mammogram done?		
Yes	15	6.7
No	210	93.3

Table 2. Demographic Characteristics of Study Respondents (n = 225).

3.1 Health belief model characteristics

Participants were asked to indicate the degree to which they agreed or disagreed with statements related to perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy of breast cancer screening.

3.1.1 Perceived susceptibility

Majority of the respondents had high scores on the Perceived Susceptibility subscale. 79.5% either agreed or strongly agreed that their chances of getting breast cancer in the next few years are great. Similarly, majority either agreed or strongly agreed they feel they will get breast cancer sometime in their lifetime (77.3%), and concerned about the likelihood of developing breast cancer (53.3%). Table 3 shows a profile of perceived susceptibility.

3.1.2 Perceived severity

Although majority of participants agreed with the statements: *Breast cancer would threaten a relationship with my boyfriend, husband or partner* (39.6%); and *If I developed breast cancer, I would not live longer than 5 years* (69.3%), many neither agreed nor disagreed with most of the perceived severity subscale items.

3.1.3 Perceived benefits of breast self-examination

An overwhelming majority of the participants either disagreed or strongly disagreed with the statements: *When I do breast self-examination, I am doing something to take care of myself* (75.5%); *Completing breast self-examination each month may help me to find breast lumps early* (77.1%); *Completing breast self-examination each month may decrease my chances of dying from breast cancer* (68%); and *If I find a lump early through breast self-examination, my treatment for breast cancer may not be as bad* (69.3%). This reflects low perceived benefits to all the items in this subscale.

3.1.4 Perceived benefits of mammogram

Majority of the respondents do not agree that mammography has benefits as follows: *When I get a recommended mammogram or x-ray of the breast, I feel good about myself* (54.3%); *When I get a mammogram or x-ray of the breast, I don't worry as much about breast cancer* (52.9%); *Having a mammogram or x-ray of the breast will help me find lumps early* (60.9%); *Having a mammogram or x-ray of the breast will decrease my chance of dying from breast cancer* (51.5%); and *Having a mammogram will help me find a lump before it can be felt by me or a health professional* (58.2%). Very few participants agreed with the statements, while many others neither agreed nor disagreed, as seen in Table 4

3.1.5 Perceived barriers to BSE

Participants were asked to indicate to what degree they agreed or disagreed with statements related to perceived barriers of breast cancer screening. On all the items in this subscale, participants were more in agreement with each statement. However, five items received remarkably higher agreement: *I do not feel I can do breast self-examination correctly* (50.2%); *Doing breast self-examination will make me worry about what is wrong with my breast* (52.3%); *My breasts are too large for me to complete breast self-examination* (83.1%); *My breasts are too lumpy for me to complete breast examination* (81.8%); and *I have other problems more important than doing breast self-examination* (57.8%).

Questions (N = 225)	Strongly Disagree / Disagree		Neither Agree / nor Disagree		Strongly Agree / Agree	
	N	%	N	%	N	%
Susceptibility						
My chances of getting breast cancer in the next few years are great.	37	16.4	9	4.0	179	79.5
I feel I will get breast cancer sometime during my life.	49	21.8	2	0.9	174	77.3
Developing breast cancer is currently a possibility for me	38	16.9	33	14.7	154	68.4
I am concerned about the likelihood of developing breast cancer.	67	29.8	38	16.9	120	53.3
Severity						
I am afraid to think about breast cancer.	81	36.0	65	28.9	79	35.1
Problems I would experience with breast cancer would last a long time.	72	32.0	63	28.0	90	40.0
Breast cancer would threaten a relationship with my boyfriend, husband or partner.	57	25.3	79	35.1	89	39.6
If I had breast cancer my whole life would change.	86	38.2	63	28.0	76	33.8
If I developed breast cancer, I would not live longer than 5 years.	42	18.7	27	12.0	156	69.3

Table 3. Frequency and Percentages of Participants Susceptibility and Severity Responses.

3.1.6 Perceived barriers to mammogram

Majority of respondents agree or strongly agree with most of the statements in this subscale but those who neither agree nor disagree were in the majority on the following: *It is difficult to get transportation for a mammogram or X-ray of the breast* (50.2%); *Having a mammogram or X-ray of the breast costs too much money* (42.2%); *I cannot remember to schedule an appointment for a mammogram or X-ray of the breast* (57.3%).

3.1.7 Self-efficacy

Majority of the participants disagreed with the following statements: *I am sure of the steps to follow for doing breast self-examination* (44.9%); *I am able to tell something is wrong with my breasts when doing breast self-examination* (49.7%); and *I can use the correct part of my fingers when examining my breasts* (50.7%). Fifty-four percent neither agree nor disagree that they could find a breast lump by performing breast self-examination (54.2%).

Questions (N = 225)	Strongly Disagree/ Disagree		Neither Agree/nor Disagree		Strongly Agree/ Agree	
	N	%	N	%	N	%
<i>Benefits of Breast Self-Examination</i>						
When I do breast self-examination, I am doing something to take care of myself	170	75.6	36	16.0	19	8.4
Completing breast self-examination each month may help me to find breast lumps early.	196	87.1	8	3.6	21	9.3
Completing breast self-examination each month may decrease my chances of dying from breast cancer.	153	68.0	30	13.3	42	18.7
If I find a lump early through breast self-examination, my treatment for breast cancer may not be as bad.	156	69.3	43	19.1	26	11.6
<i>Benefits of Mammography</i>						
When I get a recommended mammogram or x-ray of the breast, I feel good about myself.	122	54.2	71	31.6	32	14.2
When I get a mammogram or x-ray of the breast, I don't worry as much about breast cancer.	119	52.9	79	35.1	27	12.0
Having a mammogram or x-ray of the breast will help me find lumps early.	137	60.9	66	29.3	22	9.8
Having a mammogram or x-ray of the breast will decrease my chance of dying from breast cancer.	116	51.6	77	34.2	32	14.2
Having a mammogram will help me find a lump before it can be felt by [me] or a health professional.	131	58.2	47	20.9	47	20.9

Table 4. Frequency and Percentages of Participants Perceived Benefits Responses.

3.1.8 Cues to action

An overwhelming majority of the participants disagreed or strongly disagreed with all the statements in Cues to action subscale: *I want to discover health problems early* (71.5%); *Maintaining good health is extremely important to me* (80.5%); *I search for new information to improve my health* (85%); and *I feel it is important to carry out activities which will improve my health* (75.1%).

Questions (N = 225)	Strongly Disagree/Disagree		Neither Agree/nor Disagree		Strongly Agree/Agree	
	N	%	N	%	N	%
	Barriers of Breast Self-Examination					
I do not feel I can do breast self-examination correctly.	50	22.2	62	27.6	113	50.2
Doing breast self-examination will make me worry about what is wrong with my breast.	88	39.1	42	18.7	95	42.2
Breast self-examination is embarrassing to me.	88	39.1	42	18.7	95	42.2
Breast self-examination takes too much time.	91	40.4	56	24.9	78	34.7
It is hard to remember to do breast examination.	103	45.8	40	17.8	82	36.4
I don't have enough privacy to do breast examination.	64	28.4	61	27.1	100	44.4
Breast self-examination is not necessary if you have a breast exam by a health professional.	43	19.1	79	35.1	103	45.8
Breast self-examination is not necessary if you have a routine mammogram.	62	27.6	68	30.2	95	42.2
My breasts are too large for me to complete breast self-examination.	22	9.8	16	7.1	187	83.1
My breasts are too lumpy for me to complete breast examination.	12	5.3	29	12.9	184	81.8
I have other problems more important than doing breast self-examination.	86	38.2	9	4.0	130	57.8
Barriers of Mammography						
I am afraid to find out there is something wrong when I have a mammogram or X-ray of the breast.	68	30.2	47	20.9	110	48.9
I am afraid to have a mammogram or X-ray of the breast because I don't understand what will be done.	38	16.9	56	24.9	131	58.2
I don't know how to go about scheduling a mammogram or X-ray of the breast	20	8.9	81	36.0	124	55.1
Having a mammogram or X-ray of the breast would be embarrassing.	25	11.1	67	29.8	133	59.1
Having a mammogram or X-ray of the breast would take too much time.	27	12.0	78	34.7	120	53.3
Having a mammogram or X-ray of the breast would be painful.	39	17.3	86	38.2	100	44.4
Having a mammogram or X-ray of the breast would expose me to unnecessary radiation.	58	25.8	82	36.4	85	37.8
It is difficult to get transportation for a mammogram or X-ray of the breast.	21	9.3	113	50.2	91	40.4
I have other problems more important than getting a mammogram or X-ray of the breast.	44	19.6	72	32.0	109	48.4

Questions (N = 225)	Strongly Disagree/Disagree		Neither Agree/nor Disagree		Strongly Agree/Agree	
	N	%	N	%	N	%
	Having a mammogram or X-ray of the breast costs too much money.	67	29.8	95	42.2	63
I cannot remember to schedule an appointment for a mammogram or X-ray of the breast	26	11.6	129	57.3	70	31.1

Table 5. Frequency and Percentages of Participants Perceived Barriers Responses.

Questions (N = 225)	Strongly Disagree/Disagree		Neither Agree/nor Disagree		Strongly Agree/Agree	
	N	%	N	%	N	%
	<i>Self-Efficacy</i>					
I know how to perform breast self-examination	94	41.8	66	29.3	65	28.9
I can perform breast self-examination correctly.	65	28.9	76	33.8	84	37.3
I could find a breast lump by performing breast self-examination	63	28.0	122	54.2	40	17.8
I am sure of the steps to follow for doing breast self-examination.	101	44.9	51	22.7	73	32.4
I am able to tell something is wrong with my breasts when doing breast self-examination.	112	49.8	31	13.8	82	36.4
I am able to tell something is wrong with my breasts when I look in the mirror.	92	40.9	56	24.9	77	34.2
I can use the correct part of my fingers when examining my breasts.	114	50.7	60	26.7	51	22.7
<i>Cues to Action</i>						
I want to discover health problems early.	161	71.6	53	23.6	11	4.9
Maintaining good health is extremely important to me.	181	80.4	41	18.2	3	1.3
I search for new information to improve my health.	193	85.8	32	14.2	0	0
I feel it is important to carry out activities which will improve my health.	169	75.1	36	16.0	20	8.9

Table 6. Frequency and Percentages of Participants Self efficacy and Cues to action Responses.

3.2 Fatalism scores

Majority of the participants were in agreement with all the items of the fatalism scale, with the following items having seventy-five percentile "Yes" scores: *I believe if someone is meant to have cancer, it doesn't matter what they eat, they will get cancer anyway* (69.3%); *I believe cancer will kill most people who get it* (76.4%); *I believe someone can smoke all their life, and if they are not*

meant to get cancer, they won't get it (77.8%);and I believe some people don't want to know if they have cancer because they don't want to know they may be dying from it (82.2%). Total scores on the Fatalism Scale ranged from 0 -15, with means of 10.82 (SD = 4.35). Table 7 shows a profile of Fatalism scores.

ITEM (N = 225)	YES		NO	
	N	%	N	%
1 I believe if someone is meant to have cancer, it doesn't matter what they eat, they will get cancer anyway.	156	69.3	69	30.7
2 I believe if someone has cancer, it is already too late to do anything about it.	135	60.0	90	40.0
3 I believe someone can smoke all their life, and if they are not meant to get cancer, they won't get it.	175	77.8	50	22.2
4 I believe if someone is meant to get cancer, they will get it no matter what they do.	146	64.9	79	35.1
5 I believe if someone gets cancer, it was meant to be.	138	61.3	87	38.7
6 I believe if someone gets cancer, their time to die is near.	115	51.1	110	48.9
7 I believe if someone gets cancer, that's the way they were meant to die.	105	46.7	120	53.3
8 I believe getting checked for cancer makes people think about dying.	136	60.4	89	39.6
9 I believe if someone is meant to have cancer, they will have cancer.	146	64.9	79	35.1
10 I believe some people don't want to know if they have cancer because they don't want to know they may be dying from it.	185	82.2	40	17.8
11 I believe if someone gets cancer, it doesn't matter when they find out about it, they will still die from it.	155	68.9	70	31.1
12 I believe if someone gets cancer a lot of different treatments won't make any difference.	144	64.0	81	36.0
13 I believe if someone was meant to have cancer, it doesn't matter what the doctor tells them to do, they will get cancer anyway.	143	63.6	82	36.4
14 I believe if someone is meant to have cancer, it doesn't matter if they eat healthy foods, they will still get cancer.	153	68.0	72	32.0
15 I believe cancer will kill most people who get it.	172	76.4	53	23.6

Table 7. Scores on the Fatalism Scale.

Hypotheses

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.478 ^a	.229	.189	.43206	.229	5.744	11	213	.000

Table 8. Summary of regression analysis on breast self-examination and perceived barriers.

From Table 8 $r = .478$, $f = 5.744$, $p > .001$. This indicates a significant correlation. Therefore the hypothesis which stated that perceived barriers will have no effect on breast self-examination practice is rejected.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.415 ^a	.172	.129	.23330	.172	4.020	11	213	.000

Table 9. Summary of regression analysis on mammography practice and perceived barriers.

From Table 9 $r = .415$, $f = 4.020$, $p > .001$. This indicates a significant correlation. Therefore the hypothesis which stated that perceived barriers will have no effect on mammography practice is rejected.

Lastly, there is no significant association between breast cancer fatalism and the practice of breast self-examination. These results indicate that there is no statistically significant relationship between breast cancer fatalism and breast self-examination practice $X^2(1, n = 225) = 2.39$, $p = .122$, $\phi = .113$. There is no association between breast cancer fatalism and breast self-examination.

4. Discussion

Majority of women see themselves as susceptible to having breast cancer and yet an abysmally low proportion does nothing to prevent breast cancer by adopting the standard screening practices. Lack of knowledge about preventative measures has been a frequent finding from studies in this environment (Akhigbe & Omuemu, 2009).

The scores on the perceived benefits of breast self-examination subscale reflect low perceived benefits. A low knowledge of screening methods for breast cancer, even among final year medical students had been reported in this environment (Akhigbe *et al*, 2009). The finding of low perceived benefits in the present study is therefore not surprising.

Participants generally do not recognise the perceived benefits of screening mammography. This may explain why mammography use is very low in the study population (6.7%). Previous studies (Oduanya & Tayo, 2001; Akhigbe & Omuemu, 2009; Akhigbe & Igbinedion 2010) have confirmed this low mammography usage in other populations in

Nigeria. There is as yet no national health policy concerning breast cancer screening but several health and advocacy groups have been calling on the relevant health authorities to formulate and implement such a policy. However, appropriate health policy even with government funding will not necessarily increase mammography usage; awareness has to be created and population at risk have to know what benefits they stand to gain from having screening mammography done.

The present study has revealed a high level of breast cancer fatalism among Nigerian women. It is therefore not surprising that the respondents who have shown high levels of perceived susceptibility still do not take preventative measures. It is like 'If it will happen, nothing can stop it from happening'. Powe (1996) observed that many factors affect a person's decision to participate in cancer screening; poor access to care, poverty, under-education, and lack of knowledge regarding cancer have a negative relationship to participation in cancer screening. Studies have shown that being African American is positively correlated with these factors, and that even when these factors are statistically controlled, African Americans are still less likely to participate in cancer screening. Could the findings among African Americans be a 'cultural carry-over' from their roots?

The present study appears to be highly supportive of the preceding conclusion. The academic and professional background of the study participants is clearly remarkable and above average, all of them working as either health professionals or secondary school teachers. They however have high scores in perceived susceptibility subscale of the HBM and very low score in the perceived benefits subscale; besides the practice of BSE and mammography is pitifully low. This poses a problem for working out appropriate, culturally relevant educational protocol for increasing breast cancer screening practices among Nigerian women. Having adequate knowledge of breast cancer and breast cancer screening methods is clearly not enough. Cultural barriers such as breast cancer fatalism will need to be overcome using appropriate educational intervention.

Three hypotheses were tested. The rejection of the first hypothesis shows that perceived barriers have a direct negative effect on the practice of breast self-examination among the study population. Previous studies have noted poor knowledge of breast self-examination practice as a screening method among Nigerian women irrespective of their level of education or professional status (Odusanya & Tayo 2001; Akhigbe & Omuemu 2009). From the item responses on the perceived barrier subscale, such factors as large breast size and inadequate self-efficacy in performing a breast self-examination constitute major barriers. Focused educational intervention remains the obvious solution.

The rejection of the second hypothesis shows that perceived barriers have a direct negative effect on mammography practice among the study population. There is a technology requirement for mammography practice. This makes economic consideration a veritable factor to overcoming this barrier. Unfortunately, health professionals do not seem to fare better in their knowledge and practice of mammography, as this study and previous studies have consistently shown. There is therefore an urgent need for a review of training curricula by health institutions to include cancer awareness and screening methods. This may positively impact on the health behavior of those who are expected to teach others.

The third hypothesis was accepted, that is, there is no significant relationship between cancer fatalism and the practice of breast self-examination. Cancer fatalism is deeply rooted in ethno religious beliefs of the people. The individual, having resigned herself to fate or luck does nothing as prevention. Cancer fatalism, however, is a complex phenomenon with far-reaching implications (Powe & Finnie, 2003).

5. Conclusion

There is paucity of research publications on the effects of health belief model and cancer fatalism with regards to breast cancer among Nigerian women.

There is need for us to understand the psychological and psychosocial barriers that deter Nigerian women from having adequate breast cancer awareness as well as routine screening. Such information will be useful in putting together culturally relevant awareness literature and media content that address these barriers.

From the health belief model, there are significant barriers that impact negatively on the practice of the two main screening methods, breast self-examination for which no tools or economic input is required, and screening mammography with the obvious advantages. Another significant finding is the high level of breast cancer fatalism among the study population. This represents a helpless resignation to accepting whatever the “death sentence” of breast cancer brings to the afflicted. Fatalism has remained a major cultural setback in this setting.

This study therefore represents preliminary findings that should form the basis for further research.

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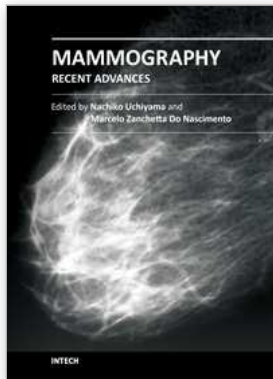
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In this volume, the topics are constructed from a variety of contents: the bases of mammography systems, optimization of screening mammography with reference to evidence-based research, new technologies of image acquisition and its surrounding systems, and case reports with reference to up-to-date multimodality images of breast cancer. Mammography has been lagged in the transition to digital imaging systems because of the necessity of high resolution for diagnosis. However, in the past ten years, technical improvement has resolved the difficulties and boosted new diagnostic systems. We hope that the reader will learn the essentials of mammography and will be forward-looking for the new technologies. We want to express our sincere gratitude and appreciation to all the co-authors who have contributed their work to this volume.

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