

Relationship of fear and fatalism with breast cancer screening among women using Health Belief Model

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Abstract

Despite the potential benefits of screening in discovering breast cancer, many women still do not follow recommended screening regimens. Fear of cancer detection and fatalistic beliefs were identified by previous studies as the main reasons given by women for noncompliance with breast cancer screening. The aim of this descriptive study is to explore relationship of fear and fatalism with breast cancer screening among a convenience sample of 136 women recruited during their visit to the Gynecology Clinic at the Maternity University Hospital in Alexandria, Egypt. The study tool consists of four parts: (1) Bio-sociodemographic information; (2) Champion Breast Cancer Fear Scale (CBCFS); (3) Powe Fatalism Inventory (PFI); (4) abridged version of the Champion Health Belief Model Scale (CHBMS). The findings revealed that only 3.7% and 14.7% of women practiced regular breast self-examination and had previously had mammography, respectively. Negative correlations were found between fatalism and health beliefs; and between fear and health belief. A positive correlation was found between fatalism and fear. The findings of this study add some experimental support for the relationships between fear, fatalism, and breast cancer screening behavior.

Keywords: Fear, Fatalism, Breast cancer screening, Health Belief Model.

Introduction

Cancer is a serious community health problem that entails many social and ethical considerations alongside its physical, biomedical problems. Various forms of malignant diseases are endemic throughout the world, and disease and death rates associated with cancer differ according to the developmental level of the countries and population features (Abolfotouh et al., 2015; Altintas et al., 2017). Globally, breast cancer is the most prevalent form of oncological malignancy among women, and the leading cause of death among them (Amoran & Toyobo, 2015; Ibnawadh et al., 2017). It represents about thirty to forty percent of all the cancers in women globally (Charkazi et al., 2013; Che et al., 2014). WHO (2018) acknowledges that breast cancer is the most prevalent cancer among women, affecting more than two million women annually, and it causes about fifteen percent of all cancer deaths among women (WHO, 2018).

The incidence of breast cancer in developing countries is rising due to numerous factors, including general issues such as increased life expectancy, urban growth, and Western lifestyles (Azim & Ibrahim, 2014). In 2018 breast cancer was the main cause of cancer mortality among Egyptian women, accounting for 21.3/100,000 (10.8%) of all deaths related to cancers, with an incidence rate 52.4/100,000 (17.9%) (International Agency for Research on Cancer [IARC] & WHO, 2019). It is commonly discovered at delayed stages. Many women miss early detection and treatment opportunities due to deficiency of knowledge regarding breast cancer and cancer screening tests (Ahmadian & Samah, 2012).

Breast self-examination (BSE) and mammography are considered secondary level prevention methods, and such screening plays an important role in the early detection of breast cancer, reducing mortality and improving survival (Ahmadian et al., 2011; Arevian et al., 2011). BSE is done autonomously by women, and it does not require any tools. About twenty percent of the time breast cancer is discovered by physical examination, thus it is recommended that all women perform BSE regularly as an important aspect of their breast cancer screening plan (Hanson et al., 2019). According to the American Cancer Society's guidelines for the early detection of breast cancer, women are advised to start annual breast cancer screening with mammography between the ages of 40 to 44 if they wish to do so (as a precautionary measure), and those aged 55 years or more should carry out mammography once every two years (Oeffinger et al., 2015). Despite the potential benefits of screening in discovering breast cancer, many women still do not practice the recommended screening tests. Fear of cancer detection and fatalistic beliefs have been identified as the main reasons given by women for noncompliance with breast cancer screening recommendations (Choi et al., 2015).

Despite there being different definitions of fear and fatalism, both of them present distinct concepts to interpret individual behavior adaptation. Fear is considered in terms of being a sufficiently strong emotion that is a biologically driven, motivated state, wherein selected features from the environment guide behavior, especially concerning a particular perceived threat. Fear affects judgment, behavior, and standard practices. Some women may agonize over the expected pain that they think mammography investigation will entail, or be anxious about actually being diagnosed with breast cancer (Wu et al., 2019). Fatalism is another psychosocial obstacle for cancer prevention and screening behavior, defined as a general inclination to ratify events that occur because of attributing them to the agency of an external force or higher power, whereby nothing can be done to change the course of events and outcomes (Flórez et al., 2009). Fatalistic beliefs concerned with cancer, portrayed cancer as a pre-established condition that cannot be avoided regardless of human action, or as a confirmed cause of death when it is diagnosed (Altintas et al., 2017).

The theoretical and conceptual framework for the current study is the psychological side of women's attitudes, beliefs, and behavioral intentions. The Health Belief Model (HBM) is a commonly used paradigm for the investigation of individual attitudes, such as perceptions of susceptibility, barriers, and health behaviors. HBM helps to investigate why some women are unwilling to screen themselves for breast cancer, and addresses the behavior of women who are noncompliant with breast cancer screening recommendations (Azaiza & Cohen, 2006). Researchers have also utilized the HBM to investigate the shortage of public participation in health screening and prevention programs (Abolfotouh et al., 2015). In particular, Champion 1999 explored the constructs of perceived susceptibility to breast cancer, barriers, and action, and in conjunction added the trans-theoretical model (TTM), to understand the barriers by stages of mammography adherence among women (Champion, 1999).

To the researchers' knowledge, few studies have explored the role of fear and fatalism within the HBM framework with regard to BSE and mammography screening compliance among Egyptian women, thus this research seeks to address this gap. The results of the current exploratory study provides a general understanding and identifies areas of concern for more detailed investigation, and its insights can inform the design of future intervention programs for the early detection and treatment of breast cancer.

Aim of the study

The study aims to explore the relationship of fear and fatalism with breast cancer screening among Egyptian women.

Hypotheses

Hypothesis 1: Fear among women is negatively correlated with health beliefs concerning breast cancer screening.

Hypothesis 2: Fatalism among women is negatively correlated with health beliefs concerning breast cancer screening.

Methods

Study design, sample, and setting

A descriptive study was utilized to attain the aim of current study using the HBM as a theoretical framework to investigate the relationship of fear and fatalism with breast cancer screening among women using a convenience sampling method (Maiman & Becker, 1977). The required sample size was calculated using the Steven (2012) equation (Suresh & Chandrashekara, 2012), considering a confidence level of 95% and a precision rate of 0.05. The estimated sample size was 124 women; 10% was added to compensate for dropouts, so the total sample size was 136 women. The participants were chosen according to the following criteria: aged 35 years or more; free from current or previous history of cancer; and not pregnant or lactating. The participants were interviewed during their visit to the Gynecology Clinic at the Maternity University Hospital in Alexandria, Egypt, which is a tertiary hospital with capacity of 376 beds. It receives morbid women who needed maternity, obstetrics, and gynecological care and interventions.

Study tool

The study tool consists of four parts, as described below:

(1) Bio-sociodemographic data, including age, marital status, qualifications, employment status, family history of cancer, health insurance, previous mammogram X-ray, and practicing breast self-examination.

(2) Champion Breast Cancer Fear Scale (CBCFS) (Champion et al., 2004). This scale was developed specially to evaluate the perceived fear of breast cancer, and it analyzes the general emotional or physiological arousal relating to human behavior regarding mammography testing. The CBCFS is an eight-item instrument using a three-point Likert scale, with a scoring range of 1 (strongly disagree/ disagree) to 3 (strongly agree/ agree). Individual scores are calculated to determine a total score for fear, whereby higher total scores indicate a greater level of fear. The scale has been tested for reliability and validity, with a Cronbach's alpha coefficient of 0.91 (Talbert, 2018).

(3) An adapted version of the Powe Fatalism Inventory (PFI), which has accepted reliability, indicated by a Cronbach's alpha coefficient of 0.84 (Powe, 1995). This 15-item scale was used to determine participants' perceptions of cancer fatalism, whereby women were directed to provide a response of "Yes" or "No" to each item. These scores are binary coded ("Yes" is scored as 1, and "NO" as 0). The maximum possible score on the PEI is 15, and the minimum is zero. Scores from 0 to 8 are considered to indicate a low perception of cancer fatalism, while scores from 9 to 15 indicate a high perception of cancer fatalism.

(4) The abridged version of the Champion Health Belief Model Scale (CHBMS). Originally designed in the 1980s (Champion, 1984), this study used the updated and abridged version of the CHBMS (Champion, 1999). The scale examines attitudes and beliefs to predict behaviors related to an individual's health. The abridged version of CHBMS consists of 30 items distributed over six main domains: (1) perception about susceptibility to breast cancer; (2) seriousness of the breast cancer; (3) perceived benefits of mammography; (4) perceived barriers of mammography; (5) self-efficacy; and (6) clues to action. Answers use a three-point Likert scale, with scoring ranging from 1 (strongly disagree/ disagree) to 3 (strongly agree/ agree). The reliability of the CHBMS is indicated by a Cronbach's alpha coefficient of 0.88 (Champion, 1999).

The content validity of the CBCFS, PFI, and CHBMS scales has been demonstrated in previous studies (Champion et al., 2004; Leung, 2018; Parsa et al., 2008; Talbert, 2018). The study tool was translated into Arabic language and back-translated by the researchers to check the fidelity of the translated version. The content validity of the Arabic tool was checked by a panel of experts in the nursing field. The total research tool item's content validity index (I-CVI) was 0.81, and its content validity ratio (CVR) was 0.83. The Cronbach's alpha coefficient for the Arabic versions of the instruments was 0.81.

The study tool was piloted on 15 participants who were excluded from the study subjects to measure the accuracy, time required to complete the questionnaires, and the applicability of the data collection process. Required modifications were applied according to the results of the pilot study.

Data collection

Required permission for data collection was obtained from the Director of the Hospital to carry out the current study. The researchers coordinated a meeting with the Head Nurse of the Gynecological Clinic to clarify the aim of the study and data collection process. The data collection was conducted from January to February 2020, during which time the researchers visited the hospital three times per week. On each occasion the researchers invited about 5-7 women to participate. Those who agreed to consent completed the questionnaires within 25 to 30 minutes (each).

Ethical considerations

The participant's rights were maintained by explaining to them the purpose and the significance of the study and their duties, they were assured that their information would be kept confidential and would be used for research purpose only. It was explained to them that no personally identifying data would be reported; that their participation was entirely voluntary; that they were free to discontinue participation in the study at any time; and that their decision to participate or decline would not affect the care they received or their statutory rights. The data collection was carried out in a private room in the hospital. The Research Institutional Review Board of Alexandria University in Egypt approved the study proposal and study tool.

Statistical analysis

Data collected from the studied sample was revised, coded, and entered using a PC. Computerized data entry and statistical analysis were conducted using SPSS version 22. Data were presented using descriptive statistics in the form of mean and standard deviation (SD). Linear regression model was used as a linear approach for modeling the relationship between scalar responses and explanatory variables. Pearson's correlation coefficient was deployed to test statistical relationships or associations between continuous variables, determining relations that are insignificant (>0.05), significant ($0.01 - 0.05$), or highly significant (<0.01).

Results

Table (1) shows the frequency and percentage distribution of participants according to their sociodemographic characteristics. It can be seen that the mean age of the women was 42.8 (± 8.66); the majority of them (70.6%) were married; and 80.9% of them had a bachelor's degree. The results also indicated that practicing regular breast self-examination and previous mammography rates among women were estimated at 3.7%, and 14.7%, respectively. Meanwhile, 44.9% of them had a positive family history of cancer.

Table (1): Number and percentage distribution of studied women according to their characteristics (n=136).

Characteristics	N	%
Age		
35<45	101	74.3
45<55	24	17.6
55 - 65	11	8.1
$\bar{x} \pm SD 42.8 \pm 8.66$		
Marital status		
Married	96	70.6
Not married	40	29.4
Qualification		
Illiterate	0	0
Read and write	0	0
Secondary	26	19.1
Bachelor's degree or higher	110	80.9
Employment		
Not employee	68	50
Employee	68	50
Family history related cancer		
Yes	61	44.9
No	75	55.1
Health insurance		
No	63	46.3
Government	43	31.6
Especial	30	22.1
Previous mammogram X ray		
Yes	20	14.7
No	116	85.3
Practice of breast self-examination		
Regular	5	3.7
Irregular	51	37.5
No	80	58.8

Table (2) illustrates mean score and SDs of women’s perceptions of breast cancer screening according to HBM. The results revealed high mean scores related to clues to action, benefits of mammography, and self-efficacy (13.4, 12.36, and 11.38, respectively). Low mean scores were related to women’s perceptions of breast cancer susceptibility (9.05) and barriers to mammography utilization (9.27). The total mean score was 66.39 out of 90.

Table (2): Mean score and standard deviations of women’s perceptions of breast cancer screening according to HBM (n=136).

Domains	Max	Min	Mean±SD
Susceptibility to breast cancer	14	5	9.05±2.01
Seriousness of breast cancer	15	5	10.87±2.2
Benefits of mammography	15	5	12.36±2.1
Barriers of mammography	15	5	9.27±2.3
Self-efficacy	15	5	11.38±2.6
Clues to action	15	7	13.4±1.6
Total	80	49	66.39±5.9

Figure (1) illustrates percentage distribution of studied women according to their perception of mammography benefits. It shows that the majority of women (72.80%) mentioned that mammography would help them find tumors early. Approximately 60% of participants stated that the mammography would help them discover tumors before they could feel them by self-examination, or detection/ diagnosis by a healthcare professional. Furthermore, around 50% of women mentioned that the mammogram would reduce their chance of dying from breast cancer.

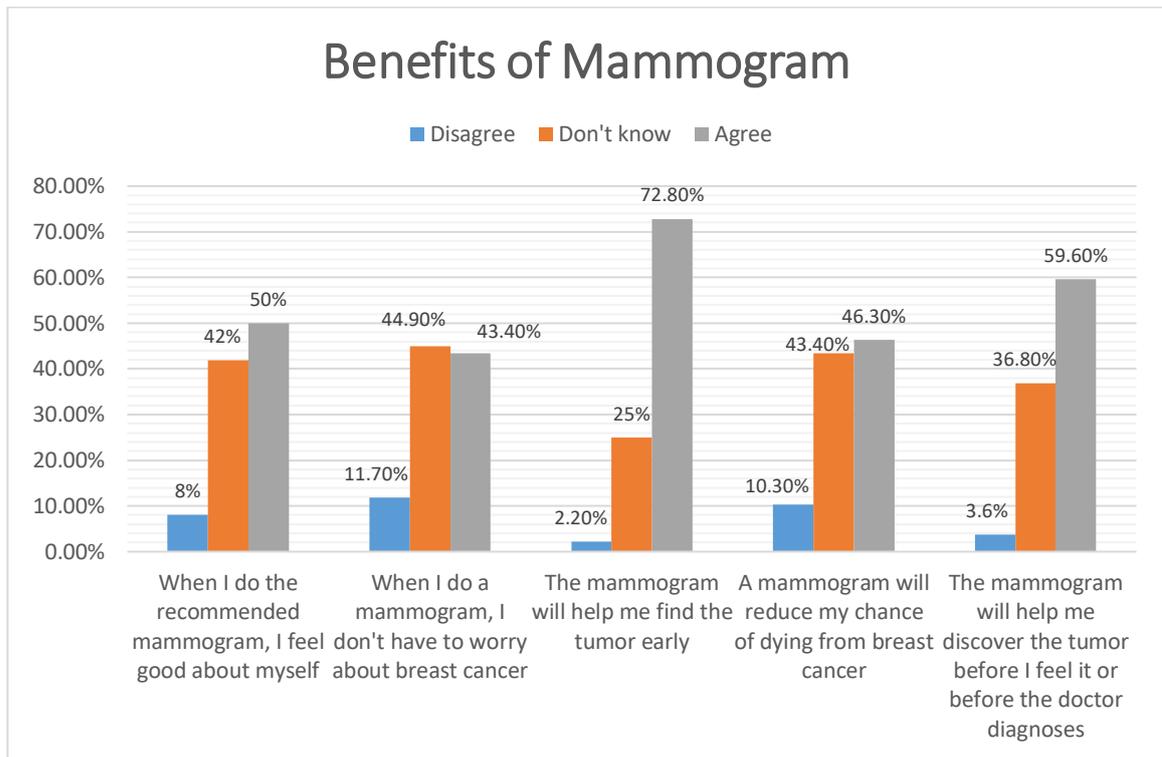


Figure (1): Percentage distribution of studied women according to their perception of mammography benefits.

Figure (2) illustrates the percentage distribution of studied women according to their perception of mammography barriers. The figure shows that over 60% of women mentioned that they do not know if a mammogram costs a lot of money, it takes a lot of time, or it is painful. About a quarter (24%) stated that mammogram makes them anxious about breast cancer, and 18.40% of them mentioned that mammography is embarrassing.

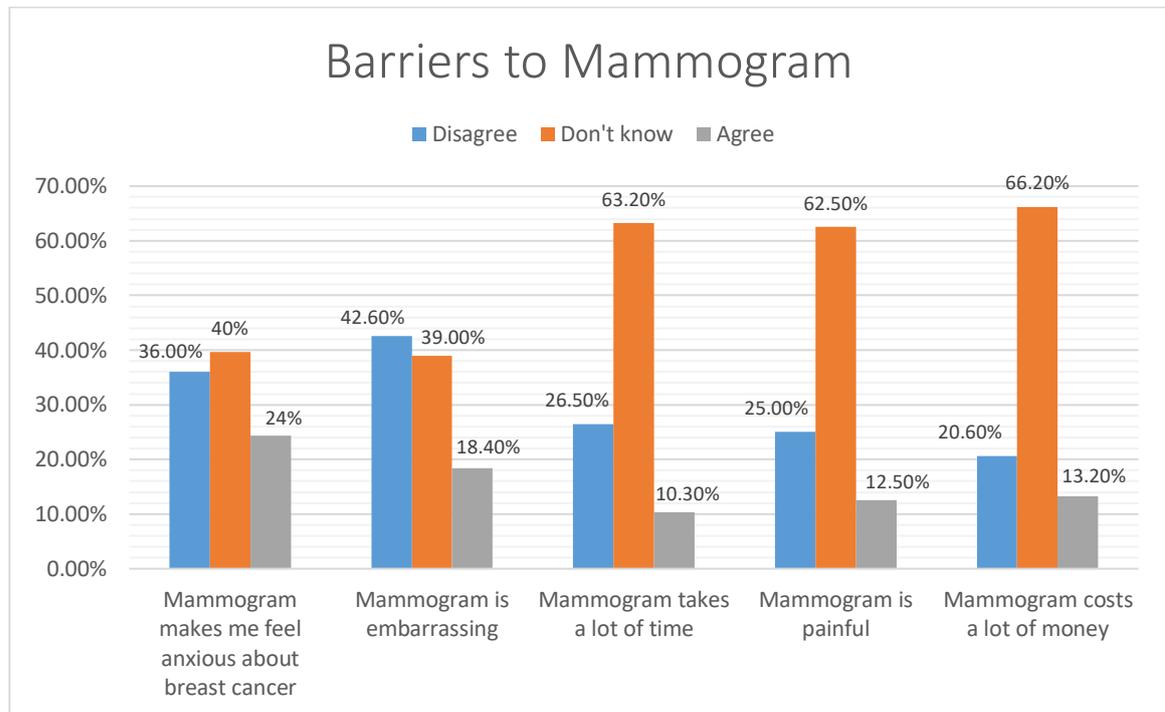


Figure (2): Percentage distribution of studied women according to their perception of mammography barriers.

Table (3) shows the frequency, percentage, and mean distribution of the study participants according to the PFI. It was noted that 60.29% of the women believe that if someone gets breast cancer “it was meant to be”, and above half (52.20%) mentioned that some people do not want to check for breast cancer because this makes them scared that they may really have it, and they do not want to know that they may be dying from it. However, only 11.02% of the participants stated that breast cancer would kill them no matter when it is found and how it is treated. The findings also revealed that majority of the women disagree with the statements “If someone was meant to have breast cancer, it does not matter whether they find it early or late” (87.5%), and “Whatever doctors and nurses tell them to do, they will get breast cancer anyway” (80.8%). Moreover, a small number of the women believed that “if someone has breast cancer, it is already too late to be treated for it” (6.62%), and breast cancer is the way that they “were meant to die” (8.82%). Finally, the total mean score for the PFI was 19.19 ± 2.8 out of 30.

Table (3): Frequency, percentage, and mean distribution of the study participants according to PFI (n=136)

Fatalism scale items	Yes		No		Mean±SD
	No.	%	No.	%	
I think if someone is meant to have breast cancer, it doesn't matter what kinds of food they eat, they will get breast cancer anyway	50	36.7	86	63.23	1.36±.43
I think if someone has breast cancer, it is already too late to get treated for it.	9	6.62	127	93.38	1.06±.244
I think someone can eat fatty foods all their life, and if they are not meant to get breast cancer, they won't get it.	54	39.70	82	60.29	1.39±.49
I think if someone is meant to get breast cancer, they will get it no matter what.	33	24.26	103	75.73	1.24±.43
I think if someone gets breast cancer, it was meant to be.	82	60.29	54	39.70	1.10±.30
I think if someone gets breast cancer, their time to die is soon.	14	10.29	122	89.70	1.08±.28
I think if someone gets breast cancer, that is the way they were meant to die.	12	8.82	124	91.17	1.52±.50
I think getting checked for breast cancer makes people scared that they may really have it.	71	52.20	65	47.79	1.24±.43
I think if someone is meant to have breast cancer, they will have breast cancer.	33	24.26	103	75.73	1.52±.50
I think some people don't want to know if they have breast cancer because they don't want to know they may be dying from it.	71	52.20	65	47.79	1.12±.33
I think if someone gets breast cancer, it doesn't matter whether they find it early or late, they will still die from the breast cancer.	17	12.5	119	87.5	1.39±.49
I think if someone has breast cancer, and gets treatment for it, they will probably still die from the breast cancer.	54	39.70	82	60.29	1.19±.39
I think if someone was meant to have breast cancer, it doesn't matter what doctors and nurses tell them to do, they will get breast cancer anyway.	26	19.12	110	80.88	1.21±.41
I think if someone is meant to have breast cancer, it doesn't matter if they eat healthy foods, they will still get breast cancer.	29	21.32	107	78.67	1.17±.36
I think breast cancer will kill you no matter when it is found and how it is treated.	15	11.02	121	88.97	1.11±.31
Total					19.19±2.8

Table (4) shows the frequency, percentage, and mean distribution of the study participants according to the CBCFS. It was noticed that a large majority of the women (70%) do not like to think about breast cancer, and over half feel unhappy (58.82%), anxious (58.85%), and uneasy (56.62%) when they think about breast cancer; 65.4% feel scared when they think about it. Moreover, the total mean score for the CBCFS was 34.6±7.66 out of 50.

Table (4): Frequency, percentage, and mean distribution of the study participants according to CBCFS (n=136).

Items	Agree	Don't know	Disagree	Mean±SD
	N (%)			
When I think about breast cancer, I get scared	89 (65.44)	32 (23.53)	15 (11.03)	3.85±.98
I don't like to think about that	96 (70.59)	25 (18.38)	15 (11.03)	3.86±.95
I may have this disease	29 (21.32)	96 (70.59)	11 (8.09)	3.16±.63
When I think about breast cancer, I feel nervous	82 (60.29)	32 (23.53)	22 (16.18)	3.62±.92
When I think about breast cancer, I get unhappy	80 (58.82)	34 (25.0)	22 (16.18)	3.59±1.02
When I think about breast cancer, I get depressed	67 (49.26)	31 (22.79)	38 (27.94)	3.35±1.11
When I think about breast cancer, I get Edgy	52 (38.24)	39 (28.68)	45 (33.09)	3.16±1.12
When I think about breast cancer, my heart beats faster	39 (28.68)	43 (31.62)	54 (39.71)	2.91±1.07
When I think about breast cancer, I feel uneasy	77 (56.62)	36 (26.47)	23 (16.91)	3.52±1.01
When I think about breast cancer, I feel anxious	80 (58.85)	31 (22.79)	25 (18.38)	3.54±1.03
Total	34.6±7.66			

Table (5) shows the correlation between fear, fatalism, and health belief of breast cancer screening among the studied women. The findings revealed that a negative correlation was found between fatalism and health belief. In addition, a negative correlation was found between fear and health belief. This means that greater fatalism and fear entail decreased health belief concerning breast cancer screening among women. A positive correlation was found between fatalism and fear, which implies that increased fatalism increases fear.

Table (5): Correlation between fear, fatalism, and health belief of breast cancer screening among the studied women.

		Health belief	Fatalism	Fear scale
Health belief	r.		-.174	-.234
	p		.043*	.021*
Fatalism	r.	-.174		.437
	p	.043*		.000**
Fear scale	r.	-.234	.437	
	p	.021*	.000**	

Table (6) shows multiple linear regression analysis for breast cancer screening performance among studied women. It can be seen from the P values that fatalism (.043) and fear (.021) had a high effect on women's health belief of breast cancer screening, along with women's age (.039), marital status (.038), and X (.019). Qualification, employment, and family history of cancer had low effects on women's health belief.

Table (6): Multiple linear regression analysis for breast cancer screening performance among studied women.

Predictors	Unstandardized Coefficients		Standardized Coefficients	T	P. value
	B		β		
Age	.261		.454	2.482	.039*
Qualification	.108		.154	2.825	.051
Marital status	.211		.308	2.407	.038*
Employment	.087		.156	.351	.745
Family history related cancer	.102		.199	1.011	.068
Fatalism	.509		.417	2.001	.043*
Fear	.466		.510	3.164	.021*
ANOVA					
Model	df		F	P value	
Regression	9		2.699	.036*	

a. Dependent Variable: Health belief model

b. Predictors: (constant) Age, Qualification, Marital status, Employment, Family history related cancer, Fatalism, and Fear.

Discussion

Breast cancer is the most common cancer among women globally and one of the leading causes of death from cancer universally (Siegel et al., 2018). Although detecting breast cancer through screening at an early stage has been clearly shown to be an effective strategy, the screening participation rate among women remains low. The aims of the Healthy People 2020 program by the US Office of Disease Prevention and Health Promotion includes decreasing the mortality rate of breast cancer, decreasing the quantity of individuals with delayed stage cancer, and increasing the sharing of women in breast cancer screening, and such goals ought to be globally advocated (Masoudiyekta et al., 2015). The current study indicated that practice of regular breast self-examination was found to be only 3.7% among the studied women. This could be attributed to deficiency of knowledge of how to practice BSE, which underscores the importance of educational programs to increase women's awareness of the significance of practicing BSE.

This finding supports the implications of a previous study carried out among university students in Malaysia (Al-Naggar et al., 2012), which revealed that 55.4% of subjects mentioned that they had never conducted BSE. Another study carried out in Saudi Arabia revealed that only 18.7% of study subjects conducted BSE (Jahan et al., 2006). Similarly, Hanson et al. (2019) noted that about half of their study subjects in a rural Community in South Western, Nigeria did not perform BSE. Some demographic characteristics importantly affect the practice of the BSE. Poor information, absence of symptoms, myths, and being afraid of being diagnosed with breast cancer were the most common obstacles to performing BSE identified in previous studies. It had been emphasized by some studies that participants are more likely to perform BSE if they are less fatalistic (Azaiza et al., 2010).

The findings of the current study indicated that Egyptian women have low perceived susceptibility to and seriousness of breast cancer. This underscores the necessity of continued work in educating women regarding breast cancer awareness. Concerning women's perception of mammography benefits, our study revealed that the majority of participants perceived greater benefits of mammography and stated that mammography helped to discover breast tumors early. Also, around fifty percent of the women mentioned that mammography decreases the mortality rate from breast cancer. These findings are in harmony with those of Smith et al. (2010), who indicated that women generally have positive perceptions of mammography. Nevertheless, despite these positive understandings, many women do not perform regular mammograms.

In the same context, Charkazi et al. (2013) and Nelson et al. (2016) mentioned that early discovery of breast cancer through compliance with screening test is a main tool in the effective management and outcomes of this malignancy that can decrease morbidity, and improve survival and quality of

life. One surprising finding was that despite 44.9% of participants in this study having positive family history of malignancy, the vast majority (85.3%) of women surveyed do not perform mammography. This could be attributed to some barriers like fear of results, and feeling embarrassed, as stated by the women. This is consistent with Ahmadian and Samah's (2012) findings in Iran, which revealed that most women were antipathetic to BSE and other screening practices that involved their bodies being touched by and exposed to physicians, so such screening options were habitually ignored by them. Aside from body issues and cultural sensitivity associated with screening measures themselves, many women worldwide are negligent to perform screening because of a “lack of any manifestations of cancer” and the view that “such screening practices were unnecessary” (Izanloo et al., 2018); however, this general passivity is compounded in contexts where fatalism and fear are identified as pervasive obstacles (Smith et al., 2005). A study in China also reported that a lack of time and costs are major reasons for Chinese women refrain from performing mammography testing (Chua et al., 2005).

Our study revealed that approximately 60% of the women believed that if someone was meant to have breast cancer, they would get breast cancer. In this context, (Powe & Finnie, 2003) defined fatalism as the belief that all life events were determined by a superior power, and that individuals cannot control their lives (Akhigbe & Akhigbe, 2012). Similarly, (Cohen, 2013) findings indicated that cancer fatalism concerns the conceptualization of cancer as a matter of transcendent predestination (e.g. God’s will, fate, or chance), which is understood to imply that an individual’s self-management and self-efficacy is ultimately of no avail; this can be associated with the perception of cancer diagnosis as a death sentence. Studies have found that women’s awareness of breast cancer is particularly affected by fatalism (Altintas et al., 2017; Kulakci et al., 2015).

However, our study findings indicated that the majority of the participants (87.5%) disagree that if someone was meant to have cancer, it is not important whether they detected early or late. This result is contradictory with the other findings on beliefs cited above, and other study results which defined cancer fatalism as “individual perceptions considering cancer as a confirmed cause of death” (Baron-Epel et al., 2009). This belief is usually attached with perceptions that early detection of cancer by screening interventions are not fruitful because the death is certain, thus it is not significant at which stage the cancer is diagnosed (Abraído-Lanza et al., 2007).

Our results revealed that few women believed that if a woman has breast cancer she would delay seeking treatment. This indicates that the majority of participants know that breast cancer can be treated, and can be given a good prognosis when discovered early. This is consistent with another study which indicated that most women were of the opinion that breast cancer could be cured if detected early (Azubuike & Okwuokei, 2013). However, it was observed from current research

findings that the majority of women prefer not to think about breast malignancy, and over half of participants feel unhappy, anxious, and uneasy when they think about breast cancer, and a large percentage of women feel scared of it. In this context, (Hay et al., 2005) defined cancer fear as a negative emotional reaction to the threat of cancer. In this context, scholars have noted that in some cultures the word “cancer” itself is an object of fear, and it is instead referred to euphemistically as “the big C” or “that disease” (Jones et al., 2014; Taha et al., 2012),.

Our study found a negative correlation between fatalism and health belief of breast cancer screening among study subjects. A negative correlation was also found between fear and health belief. Similar results were found by Akhigbe and Akhigbe (2012), who revealed no significant relationship between cancer fatalism and BSE practice, contrary to the view that individuals who resigned themselves to fate or luck do nothing as prevention. Cancer fatalism, however, is a complex phenomenon with far-reaching implications (Powe & Finnie, 2003). In this context Niederdeppe & Levy, (2007), mentioned that people believe that if the occurrence or non-occurrence of cancer is not in the individual’s hands, this suggests that a healthy manner or screening would not amend one’s personal fate. On the other hand, current research indicated that there is a strongly positive correlation between fatalism and fear. (Beeken et al., 2011; Miles et al., 2008) mentioned that cancer fear and fatalism are distinct, but associated constructs: cancer worry refers to the emotional response to the threat of cancer, while cancer fatalism refers to cognitions concerning cancer. The two are moderately correlated; a lot of fatalistic attitudes towards cancer tend to be related to being very afraid of it.

Our findings indicated that women’s age and marital status had high effect on their health beliefs. These findings corroborate previous studies which indicated that over-screener for mammography were more likely to be younger, and social determinants such as marital status may be important indicators of health-seeking behaviors (Hanske et al., 2016; Price et al., 2010). On the other hand, the results showed that family history of cancer had low effect on women’s health belief. This finding is in contrast with another study which showed that the majority of women at increased familial risk of breast cancer complied with screening guidelines for mammography (Price et al., 2010).

The findings of our study add some experimental support for the relationships between fear, fatalism, and breast cancer screening behavior. To ensure that women, especially high-risk groups perform mammography for breast cancer screening, it is important to understand obstacles that prevent women from having mammography (Molaei-Zardanjani et al., 2019).

Conclusion and recommendations

The results of the present study identify features and barriers of breast cancer screening among Egyptian women that are of note to healthcare providers serving this population. Breast cancer screening remains a health challenge for women, and the results suggest that a more holistic approach is needed in order to address the barriers of fear and fatalism. The findings of the current study concluded that a negative correlation was found between fatalism and health belief of breast cancer screening. In addition, a negative correlation was found between fear and health belief of breast cancer screening. A positive correlation was found between fatalism and fear; when fatalism increases, so does fear.

Nurses have an important role in giving women significant education for improving preventive behaviors and encouraging a healthy lifestyle. They can provide continuing education about breast cancer screening and its importance, and help their clients to discover early signs of breast cancer. Nurses and other health team members should understand women's fear and worries about their health, and know barriers to and facilitators of screening. There is a need to increase women's awareness regarding BSE early in their lives through media, schools, premarital examinations, and maternity clinics.

Implications for clinical practice and future research

The results of this study can be utilized in designing the content of education programs directed towards increasing early screening and diagnosis of the disease. The most important strength of this study is that the results can be used in practice and for research purposes. The findings of this study illustrate the greater need for health interventions that are culturally specific, with the purpose of promoting the psychological aspects of health to manage fear and fatalism. Future research should focus on effect of educational program on changing women's worries and beliefs about breast cancer screening measures.

References

- Abolfotouh, M. A., Banimustafa, A. A., Mahfouz, A. A., Al-Assiri, M. H., Al-Juhani, A. F., & Alaskar, A. S. (2015). Using the health belief model to predict breast self examination among Saudi women Health behavior, health promotion and society. *BMC Public Health*, *15*(1), 1–12. <https://doi.org/10.1186/s12889-015-2510-y>
- Abraído-Lanza, A. F., Viladrich, A., Flórez, K. R., Céspedes, A., Aguirre, A. N., & De La Cruz, A. A. (2007). Commentary: Fatalismo reconsidered: A cautionary note for health-related research and practice with Latino populations. *Ethnicity and Disease*, *17*(1), 153–158.

- Ahmadian, M., Abu Samah, A., Redzuan, M., & Emby, Z. (2011). Barriers to mammography among women attending gynecologic outpatient clinics in Tehran, Iran. *Scientific Research and Essays*, 6(27), 5803–5811. <https://doi.org/10.5897/SRE11.1384>
- Ahmadian, M., & Samah, A. A. (2012). A literature review of factors influencing breast cancer screening in Asian countries. In *Life Science Journal* (Vol. 9, Issue 2, pp. 585–594). <http://www.lifesciencesite.com>.
- Akhigbe, A., & Akhigbe, K. (2012). Effects of Health Belief and Cancer Fatalism on the Practice of Breast Cancer Screening Among Nigerian Women. In *Mammography - Recent Advances*. <https://doi.org/10.5772/31176>
- Al-Naggar, R. A., Bobryshev, Y. V., & Al-Jashamy, K. (2012). Practice of breast self-examination among women in Malaysia. *Asian Pacific Journal of Cancer Prevention*, 13(8), 3829–3833. <https://doi.org/10.7314/APJCP.2012.13.8.3829>
- Altintas, H. K., Ayyildiz, T. K., Veren, F., & Topan, A. K. (2017). The Effect of Breast Cancer Fatalism on Breast Cancer Awareness Among Turkish Women. *Journal of Religion and Health*, 56(5), 1537–1552. <https://doi.org/10.1007/s10943-016-0326-4>
- Amoran, O., & Toyobo, O. (2015). Predictors of breast self-examination as cancer prevention practice among women of reproductive age-group in a rural town in Nigeria. *Nigerian Medical Journal*, 56(3), 185. <https://doi.org/10.4103/0300-1652.160362>
- Arevian, M., Nouredine, S., & Abboud, S. (2011). Beliefs Related to Breast Cancer and Breast Cancer Screening Among Lebanese Armenian Women. *Health Care for Women International*, 32(11), 972–989. <https://doi.org/10.1080/07399332.2011.580405>
- Azaiza, F., & Cohen, M. (2006). Health beliefs and rate of breast cancer screening among Arab women. *Journal of Women's Health*, 15(5), 520–530. <https://doi.org/10.1089/jwh.2006.15.520>
- Azaiza, F., Cohen, M., Awad, M., & Daoud, F. (2010). Factors associated with low screening for breast cancer in the Palestinian authority: Relations of availability, environmental barriers, and cancer-related fatalism. *Cancer*, 116(19), 4646–4655. <https://doi.org/10.1002/cncr.25378>
- Azim, H. A., & Ibrahim, A. S. (2014). Breast cancer in Egypt, China and Chinese: Statistics and beyond. *Journal of Thoracic Disease*, 6(7), 864–866. <https://doi.org/10.3978/j.issn.2072-1439.2014.06.38>
- Azubuiké, S., & Okwuokei, S. (2013). Knowledge, attitude and practices of women towards breast

- cancer in Benin City, Nigeria. *Annals of Medical and Health Sciences Research*, 3(2), 155. <https://doi.org/10.4103/2141-9248.113653>
- Baron-Epel, O., Friedman, N., & Lernau, O. (2009). Fatalism and Mammography in a Multicultural Population. *Oncology Nursing Forum*, 36(3), 353–361. <https://doi.org/10.1188/09.onf.353-361>
- Beeken, R. J., Simon, A. E., Von Wagner, C., Whitaker, K. L., & Wardle, J. (2011). Cancer fatalism: Detering early presentation and increasing social inequalities? *Cancer Epidemiology Biomarkers and Prevention*, 20(10), 2127–2131. <https://doi.org/10.1158/1055-9965.EPI-11-0437>
- Champion, V. L. (1984). Instrument development for health belief model constructs. *ANS. Advances in Nursing Science*, 6(3), 73–85. <https://doi.org/10.1097/00012272-198404000-00011>
- Champion, V., Skinner, C. S., Menon, U., Rawl, S., Giesler, R. B., Monahan, P., & Daggy, J. (2004). A breast cancer fear scale: Psychometric development. *Journal of Health Psychology*, 9(6), 753–762. <https://doi.org/10.1177/1359105304045383>
- Champion, Victoria L. (1999). Revised susceptibility, benefits, and barriers scale for mammography screening. *Research in Nursing and Health*, 22(4), 341–348. [https://doi.org/10.1002/\(SICI\)1098-240X\(199908\)22:4<341::AID-NUR8>3.0.CO;2-P](https://doi.org/10.1002/(SICI)1098-240X(199908)22:4<341::AID-NUR8>3.0.CO;2-P)
- Charkazi, A., Samimi, A., Razzaghi, K., Kouchaki, G. M., Moodi, M., Meirkarimi, K., Kouchaki, A. M., & Shahnazi, H. (2013). Adherence to Recommended Breast Cancer Screening in Iranian Turkmen Women: The Role of Knowledge and Beliefs. *ISRN Preventive Medicine*, 2013, 1–8. <https://doi.org/10.5402/2013/581027>
- Che, C. C., Coomarasamy, J. D., & Suppayah, B. (2014). Perception of breast health amongst Malaysian female adolescents. *Asian Pacific Journal of Cancer Prevention*, 15(17), 7175–7180. <https://doi.org/10.7314/APJCP.2014.15.17.7175>
- Choi, E., Lee, Y. Y., Yoon, H. J., Lee, S., Suh, M., Park, B., Jun, J. K., Kim, Y., & Choi, K. S. (2015). Relationship between cancer worry and stages of adoption for breast cancer screening among Korean women. *PLoS ONE*, 10(7), 1–13. <https://doi.org/10.1371/journal.pone.0132351>
- Chua, M. S. T., Mok, T. S. K., Kwan, W. H., Yeo, W., & Zee, B. (2005). Knowledge, perceptions, and attitudes of Hong Kong Chinese women on screening mammography and early breast cancer management. *Breast Journal*, 11(1), 52–56. <https://doi.org/10.1111/j.1075-122X.2005.21480.x>

- Cohen, M. (2013). Cancer fatalism: Attitudes toward screening and care. In *Psychological Aspects of Cancer: A Guide to Emotional and Psychological Consequences of Cancer, Their Causes and Their Management* (Vol. 9781461448, pp. 83–99). Springer US. https://doi.org/10.1007/978-1-4614-4866-2_6
- Flórez, K. R., Aguirre, A. N., Viladrich, A., Céspedes, A., Cruz, A. A. D. La, Abraído-Lanza, A. F., De La Cruz, A. A., & Abraído-Lanza, A. F. (2009). Fatalism or destiny? A qualitative study and interpretative framework on Dominican women's breast cancer beliefs. *Journal of Immigrant and Minority Health, 11*(4), 291–301. <https://doi.org/10.1007/s10903-008-9118-6>
- Hanske, J., Meyer, C. P., Sammon, J. D., Choueiri, T. K., Menon, M., Lipsitz, S. R., Noldus, J., Nguyen, P. L., Sun, M., & Trinh, Q. D. (2016). The influence of marital status on the use of breast, Cervical, And colorectal cancer screening. *Preventive Medicine, 89*, 140–145. <https://doi.org/10.1016/j.ypmed.2016.05.017>
- Hanson, V. F., El-Kader, R. G. A., & Ilesanmi, R. E. (2019). Practice and Barriers of Breast Self-Examination Among Women in a Rural Community in South Western, Nigeria. *International Journal of Studies in Nursing, 4*(3), 46. <https://doi.org/10.20849/ijsn.v4i3.588>
- Hay, J. L., Buckley, T. R., & Ostroff, J. S. (2005). The role of cancer worry in cancer screening: A theoretical and empirical review of the literature. In *Psycho-Oncology* (Vol. 14, Issue 7, pp. 517–534). <https://doi.org/10.1002/pon.864>
- Ibnawadh, S., Alawad, M., Alharbi, S., Alduawihi, N., Alkowiter, F., Alsahy, A., Alzahrani, A., & Alenizy, L. (2017). Knowledge, attitude and practice of breast self-examination among females in medical and non-medical colleges in Qassim University. *Journal of Health Specialties, 5*(4), 219. https://doi.org/10.4103/jhs.jhs_137_16
- International Agency for Research on Cancer IARC & World Health Organization. (2019). *The Global Cancer Observatory: Colon Source: Globocan 2018*. <https://gco.iarc.fr/today/data/factsheets/populations/818-egypt-fact-sheets.pdf>
- Izanloo, A., Ghaffarzadehgan, K., Khoshroo, F., Haghiri, M. E., Izanloo, S., Samiee, M., Tabatabaei, A., Mirshahi, A., Fakoor, M., Moghadam, N. J., & Sadrzadeh, S. M. (2018). Knowledge and attitude of women regarding breast cancer screening tests in Eastern Iran. *Ecancermedicalscience, 12*. <https://doi.org/10.3332/ecancer.2018.806>
- Jahan, S., Al-Saigul, A. M., & Abdelgadir, M. H. (2006). Breast cancer. Knowledge, attitudes and practices of breast self examination among women in Qassim region of Saudi Arabia. *Saudi*

- Medical Journal*, 27(11), 1737–1741. <http://www.ncbi.nlm.nih.gov/pubmed/17106553>
- Jones, C. E. L., Maben, J., Jack, R. H., Davies, E. A., Forbes, L. J. L., Lucas, G., & Ream, E. (2014). A systematic review of barriers to early presentation and diagnosis with breast cancer among black women. *BMJ Open*, 4(2). <https://doi.org/10.1136/bmjopen-2013-004076>
- Kulakci, H., Ayyildiz, T. K., Yildirim, N., Ozturk, O., Topan, A. K., & Tasdemir, N. (2015). Effects of breast cancer fatalism on breast cancer awareness among nursing students in Turkey. *Asian Pacific Journal of Cancer Prevention*, 16(8), 3565–3572. <https://doi.org/10.7314/APJCP.2015.16.8.3565>
- LEUNG, D. Y. P. (2018). Psychometric Properties of the 15-item Fatalism Scale in a Chinese Older Adult Sample: A Cross-validation Study. *DEStech Transactions on Social Science, Education and Human Science, icssd*. <https://doi.org/10.12783/dtssehs/icssd2017/19203>
- Maiman, L. A., & Becker, M. H. (1977). The Health Belief Model: Origins and Correlates in Psychological Theory. *Health Education & Behavior*, 2(4), 336–353. <https://doi.org/10.1177/109019817400200404>
- Masoudiyekta, L., Dashtbozorgi, B., Gheibizadeh, M., Malehi, A. S., & Moradi, M. (2015). Applying the Health Belief Model in Predicting Breast Cancer Screening Behavior of Women. *Jundishapur Journal of Chronic Disease Care*, 4(4). <https://doi.org/10.17795/jjcdc-30234>
- Miles, A., Voorwinden, S., Chapman, S., & Wardle, J. (2008). Psychologic predictors of cancer information avoidance among older adults: The role of cancer fear and fatalism. *Cancer Epidemiology Biomarkers and Prevention*, 17(8), 1872–1879. <https://doi.org/10.1158/1055-9965.EPI-08-0074>
- Molaei-Zardanjani, M., Savabi-Esfahani, M., & Taleghani, F. (2019). Fatalism in breast cancer and performing mammography on women with or without a family history of breast cancer. *BMC Women's Health*, 19(1), 116. <https://doi.org/10.1186/s12905-019-0810-6>
- Nelson, H. D., Fu, R., Cantor, A., Pappas, M., Daeges, M., & Humphrey, L. (2016). Effectiveness of breast cancer screening: Systematic review and meta-analysis to update the 2009 U.S. Preventive services task force recommendation. In *Annals of Internal Medicine* (Vol. 164, Issue 4, pp. 244–255). American College of Physicians. <https://doi.org/10.7326/M15-0969>
- Niederdeppe, J., & Levy, A. G. (2007). Fatalistic beliefs about cancer prevention and three prevention behaviors. *Cancer Epidemiology Biomarkers and Prevention*, 16(5), 998–1003.

<https://doi.org/10.1158/1055-9965.EPI-06-0608>

- Oeffinger, K. C., Fontham, E. T. H., Etzioni, R., Herzig, A., Michaelson, J. S., Shih, Y. C. T., Walter, L. C., Church, T. R., Flowers, C. R., LaMonte, S. J., Wolf, A. M. D., DeSantis, C., Lortet-Tieulent, J., Andrews, K., Manassaram-Baptiste, D., Saslow, D., Smith, R. A., Brawley, O. W., & Wender, R. (2015). Breast cancer screening for women at average risk: 2015 Guideline update from the American cancer society. *JAMA - Journal of the American Medical Association*, *314*(15), 1599–1614. <https://doi.org/10.1001/jama.2015.12783>
- Parsa, P., Kandiah, M., Mohd Nasir, M. T., Hejar, A. R., & Nor Afiah, M. Z. (2008). Reliability and validity of Champion's Health Belief Model Scale for breast cancer screening among Malaysian women. *Singapore Medical Journal*, *49*(11), 897–903.
- Powe, B. D. (1995). Fatalism among elderly African Americans: Effects on colorectal cancer screening. *Cancer Nursing*, *18*(5), 385–392. <https://doi.org/10.1097/00002820-199510000-00008>
- Powe, Barbara D., & Finnie, R. (2003). Cancer Fatalism: The State of the Science. *Cancer Nursing*, *26*(6), 454–467. <https://doi.org/10.1097/00002820-200312000-00005>
- Powe, & Finnie, R. (2003). Cancer Fatalism: The State of the Science. *Cancer Nursing*, *26*(6), 454–467. <https://doi.org/10.1097/00002820-200312000-00005>
- Price, M. A., Butow, P. N., Charles, M., Bullen, T., Meiser, B., McKinley, J. M., McLachlan, S. A., & Phillips, K. A. (2010). Predictors of breast cancer screening behavior in women with a strong family history of the disease. *Breast Cancer Research and Treatment*, *124*(2), 509–519. <https://doi.org/10.1007/s10549-010-0868-1>
- Siegel, R. L., Miller, K. D., & Jemal, A. (2018). Cancer statistics. *CA: A Cancer Journal for Clinicians*, *68*(1), 7–30. <https://doi.org/10.3322/caac.21442>
- Smith, Pope, C., & Botha, J. L. (2005). Patients' help-seeking experiences and delay in cancer presentation: A qualitative synthesis. *Lancet*, *366*(9488), 825–831. [https://doi.org/10.1016/S0140-6736\(05\)67030-4](https://doi.org/10.1016/S0140-6736(05)67030-4)
- Smith, S. M., Ford, J. S., Rakowski, W., Moskowitz, C. S., Diller, L., Hudson, M. M., Mertens, A. C., Stanton, A. L., Henderson, T. O., Leisenring, W. M., Robison, L. L., & Oeffinger, K. C. (2010). Inconsistent mammography perceptions and practices among women at risk of breast cancer following a pediatric malignancy: A report from the childhood cancer survivor study.

Cancer Causes and Control, 21(10), 1585–1595. <https://doi.org/10.1007/s10552-010-9587-5>

Suresh, K., & Chandrashekara, S. (2012). Sample size estimation and power analysis for clinical research studies. In *Journal of Human Reproductive Sciences* (Vol. 5, Issue 1, pp. 7–13). <https://doi.org/10.4103/0974-1208.97779>

Taha, H., Al-Qutob, R., Nyström, L., Wahlström, R., & Berggren, V. (2012). “Voices of Fear and Safety” Women’s ambivalence towards breast cancer and breast health: A qualitative study from Jordan. *BMC Women’s Health*, 12, 21. <https://doi.org/10.1186/1472-6874-12-21>

Talbert, P. Y. B. (2018). Adapting Champion’s Breast Cancer Fear Scale to Explore the Correlation of Fear and Fatalism Among African American Middle Class (AAMC) Women: A Quantitative Study. *Acta Scientific Medical Sciences*, 2(4), 39–49.

WHO. (2018). *WHO | Breast cancer*. <https://www.who.int/cancer/prevention/diagnosis-screening/breast-cancer/en/>

Wu, Z., Liu, Y., Li, X., Song, B., Ni, C., & Lin, F. (2019). Factors associated with breast cancer screening participation among women in mainland China: A systematic review. *BMJ Open*, 9(8). <https://doi.org/10.1136/bmjopen-2018-028705>