

RESEARCH ARTICLE

Social marketing: Using the health belief model to understand breast cancer protective behaviours among women

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The objective of the study was to apply the health belief model (HBM) to understand breast cancer protective behaviours recommended by implementers of social marketing intervention programmes among women in Ghana. A cross-sectional survey using a 5-point Likert scale questionnaire was used to collect data from 363 women. The data were analysed using descriptive statistics, factor analysis, multiple regression, and analysis of variance. The result shows that HBM was significant in explaining 68.9% of the variance in the breast cancer protective behaviours. The study found all the constructs of HBM (perceived susceptibility, perceived benefits, perceived barriers, self-efficacy, and cues to action) with the exception of severity to have statistically significant relationship with the performance of breast cancer protective behaviours. Significant differences were found within respondents' age group and educational levels and the constructs of HBM regarding breast cancer protective behaviours.

1 | INTRODUCTION

The global disease burden posed by cancer is increasing at an alarming pace. At its current pace, cancer could become a global pandemic in no time. According to International Research on Cancer (2013), an estimated 14.1 million new cancer cases and 8.2 million cancer-related deaths occurred in 2012 worldwide, compared with 12.7 million and 7.6 million respectively in 2008. This has made the cancer menace the leading cause of death, causing more deaths than HIV/AIDS, tuberculosis, and malaria put together (American Cancer Society [ACS], 2015; Ferlay et al., 2014). Among the cancerous diseases, breast cancer is the second most common cancer of all the cancers diagnosed in 2012 and ranks fifth as cause of death (Ferlay et al., 2014). Breast cancer is the most common cancer among women globally, accounting for 25% of all new cancer cases in women (ACS, 2015). More than half (53%) of the new cases of breast cancer and deaths (58%) occurred in developing countries (ACS, 2015; De Martel et al., 2012). The sharp increase in breast cancer incidence in developing countries is mainly attributed to changes in reproductive patterns, increase in obesity, and physical inactivity (Dey, Mishra, Govil, & Dhillon, 2015).

In Ghana, the incidence and mortality of breast cancer are on the rise as 2,900 cases and 1,450 deaths were recorded in 2012 (Ministry of Health [MoH], 2012). The high incident-mortality ratio is attributed to the fact that over 70% of breast cancer patients seek medical attention after the disease has reached an advanced stage (MoH, 2012). To reverse the current trend of breast cancer in Ghana, there is the need to determine how social marketing intervention programme (SMIP) can

be used to influence the behaviour of Ghanaian women towards their participation in breast screening and other prevention activities. SMIPs are more successful when they are grounded in the appropriate health behaviour change models (Andreasen, 1994; Frazee, Rivera-Trudeau, & McElroy, 2007). The extant literature indicated that in Ghana, the limited numbers of research carried out on social marketing (SM) have concentrated mostly on HIV/AIDS (Adu-Mireku, 2003; Tweneboah-Koduah & Owusu-Frimpong, 2013), contraceptives, and condom use (Addai, 1999; Tawiah, 1997), alcohol and drug use (Doku, Koivusilta, & Rimpelä, 2012), and malaria (Tweneboah-Koduah, Braimah, & Otuo, 2012). Thus, researchers have focus little attention on SMIPs on breast cancer prevention. The current study therefore seeks to understand how SIMPs could utilize the health belief model (HBM) to prevent the spread of breast cancer among women in Ghana.

2 | SM INTERVENTIONS ON BREAST CANCER

In Ghana, several organizations (Breast Care International [BCI], Ministry of Health, Pink for Africa, the Cancer Society of Ghana, and the National Coalition for Cancer in USA) have embarked on SMIPs to curb the breast cancer menace. For instance, BCI has engaged in several SMIPs such as walk for cure, drug donation, community breast health promoters training, peer navigation training, training nurses on basic oncology, and community outreach programmes (BCI, 2015). These programmes were mainly to change the behaviour of Ghanaian women

by creating awareness on breast cancer and encouraging women to undertake regular self and clinical examination as well as seek early treatment. Irrespective of the various SMIPs on breast cancer in Ghana, incident and mortality rates among women have been increasing consistently over the years (MoH, 2012). This has resulted in the government spending huge sums of money on breast cancer-related activities instead of other productive sectors of the economy.

3 | LITERATURE REVIEW

Application of behavioural change model to SM is necessary to influence, modify, or change peoples' attitude towards the breast cancer disease. This is because many social and health issues have behavioural causes and because the main objective of SM is to influence human behaviour; its application provides a better strategy for promoting and improving health and well-being (McDermott, Stead, & Hastings, 2005). SM is the application of marketing techniques alongside other concepts to influence a target audience to voluntarily accept, reject, or modify a behaviour for the benefit of individuals, groups, or society as a whole (French & Blair-Stevens, 2010). It is clear that the focus of SM is to influence target audience to voluntarily accept a desired behaviour. Sheau-Ting, Mohammed, and Weng-Wai (2013) posit that behaviours adopted voluntarily can be sustained for a longer period of time and SM is unique in achieving this objective. Thus, if people voluntarily adopt positive attitude towards breast cancer prevention, it would yield a positive result that could be sustained for a longer period of time.

SM has grown in popularity and usage within the public health community (Grier & Bryant, 2005). Despite its popularity and influence, previous studies have revealed that many public health professionals have an incomplete understanding of SM and its role in designing an effective intervention to influence behaviour change (Glanz, Rimer, & Viswanath, 2008). Understanding why people behave the way they do is critical to designing an effective intervention (Fishbein & Cappella, 2006). Behavioural change models play an important role in this regard because they serve as a valuable framework to help identify the root cause of any given behaviour, which is an important first step in the development of a successful intervention to change behaviour (Luca & Suggs, 2013). Based on the above literature, the study employs the HBM to identify critical beliefs influencing breast screening and other prevention activities (see Figure 1 below)

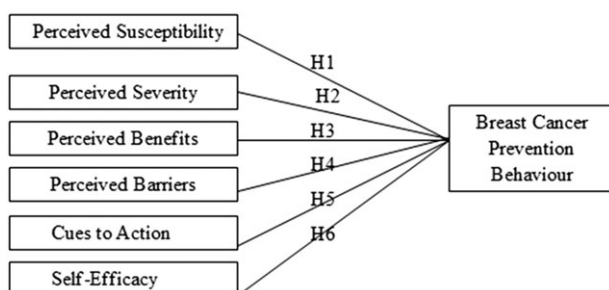


FIGURE 1 Health belief model. Source: Adapted from Yazdanpanah, Forouzani, and Hojjati (2015)

and suggest appropriate SM strategies to help change behaviour towards breast self-examination and early treatment.

The HBM posits that the willingness of an individual to engage in a healthy behaviour to prevent, to screen for, or to control illness conditions is influenced by such factors as perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy (Champion & Skinner, 2008). Perceived susceptibility refers to beliefs individuals have about the likelihood of getting a disease or condition (Champion & Skinner, 2008).

Thus, when individuals perceive that they are at risk to a particular disease such as breast cancer, they are likely to take preventive health measures. Based on the above, the following hypothesis is formulated:

H1: *There will be no relationship between respondents' perceived susceptibility to breast cancer and their performance of breast cancer preventive behaviour.*

Perceived severity refers to the individual's perception of how serious the consequences of contracting the disease is (Kowalski & Czajka, 2015). The more severe the consequences are perceived to be, the more likely the individual is to act to avoid it (Kowalski & Czajka, 2015). Based on the above discussion, the hypothesis below is formulated.

H2: *There will be no relationship between respondents' perceived severity of breast cancer and their likelihood of engaging in breast cancer preventive behaviour.*

Perceived benefits are the individual's perception of the efficacy of the suggested health behaviour in preventing, treating, or improving the impact of the health condition (Kowalski & Czajka, 2015). In other words, the greater the benefit, the higher the likelihood that the target audience will take action to perform the behaviour in question. Hence, the following hypothesis is formulated:

H3: *There will be no relationship between respondents' perceived benefits of breast cancer protective behaviours and their actions to adopt breast cancer preventive behaviour.*

Perceived barriers are obstacles that hinder an individual from pursuing new behaviour. The barriers represent the cost or difficulties the target audience has to overcome in order to perform the behaviour (D'Souza, Zyngier, Robinson, Schlotterlein, & Sullivan-Mort, 2011). The barriers may include embarrassment or fear of pain (Julinawati, Cawley, & Domegan, 2013). A study conducted in Botswana, for instance, reveals that women failed to attend cervical cancer screening due to the absence of female health workers (Ibekwe, Hoque, & Ntuli-Ngcobo, 2011). The above discussions informed the hypothesis below:

H4: *There will be no relationship between perceived barriers associated with the performance of breast cancer preventive behaviour and the performance of breast cancer preventive behaviour.*

Self-efficacy is the individual's belief that he can exercise control over his or her health habits in question irrespective of environmental and social challenges (Bandura, 2004). People's perception of their ability to perform a particular behaviour is fundamental to the adoption

of new habits (Champion & Skinner, 2008). According to Bandura (2004), self-efficacy is the foundation of human motivation to engage in behaviour, and without it, no action would be taken to acquire a new behaviour. The hypothesis below is deduced from the discussions above.

H5: *There will be no relationship between respondents' self-efficacy and their performance of breast cancer preventive behaviour.*

Cues to action refers to anything that triggers or reminds people to take action (Champion & Skinner, 2008). These may include media publicity, advice from friends, and newspaper article on breast cancer (Champion & Skinner, 2008). It is therefore hypothesized as follows:

H6: *There will be no relationship between cues to action and the respondents' performance of breast cancer preventive behaviour.*

4 | METHODOLOGY

This is a cross-sectional survey conducted in Accra, the capital city of Ghana, using the HBM to explain breast cancer protective behaviour among women. Quantitative research method was employed to determine the factors influencing the intention of women to engage in breast cancer protective behaviours. The study focused on women in Accra because most of the breast cancer awareness campaigns had been done in Accra. In order to capture the views of women with different backgrounds, A&C shopping mall and Agbobbloshie market all in Accra were purposively selected. The middle-class women prefer shopping at the A&C Mall due to the convenience, whereas the working-class women do their shopping at the Agbobbloshie market for its low prices. According to 2010 Ghana population and housing census, there are 2,210,054 women in Accra (Ghana Statistical Service, 2013). Using a 95% confidence interval, a sample size of 400 was determined (Bartlett, Kotrlik, & Higgins, 2001). With 46% literacy rate among women in Ghana (Ghana Statistical Service, 2013), 184 women were selected for the survey at the A&C mall and the remaining 216 from the Agbobbloshie market. A convenience sampling technique was used in selecting the respondents for the survey due to lack of a sampling frame for shoppers. A 5-point Likert scale questionnaire was administered face to face to the respondents measuring the degree of agreement of 1 for strongly disagree to 5 for strongly agree. The questionnaire contained three sections that covered sociodemographic profile of age, income, level of education, and marital status. The sections 2 and 3 measured knowledge and impact of SM interventions on breast cancer preventive behaviours and the constructs of HMB, namely, perceived susceptibility, severity, benefits, barriers, self-efficacy, and cues to action. The middle-class women self-completed their questionnaires because they were able to read and understand English language, the official language of Ghana. The questionnaire was however translated into the local Ghanaian language to the working-class women to enhance understanding and cooperation. This was based on the five-step process for translating survey questionnaires by Forsyth, Kudela, Lawrence, Levin, and Willis (2007), which included translation, review,

initial adjudication, cognitive interview pretesting, and final review and adjudication. In all, 363 questionnaires representing 90.75% were used for analysis. The data were analysed using frequencies and multiple regression.

5 | RESULTS, DISCUSSION, AND RECOMMENDATIONS

The results show that majority of respondents (59.3%) were below 35 years of age with 21.5% between ages 35 and 44, 13.2% between ages 45 and 54, and remaining 6% belonging to age 55 and above. A total of 63.4% of the respondents earn below GHS 1,000.00 a month with 47.9% of them having below senior high education and 22.9% had tertiary education. Majority of them (57.9%) were married, 28.1% were single, and 14% cohabitating.

Regarding knowledge on breast cancer, all the women interviewed were aware or had heard about breast cancer. Consistent with the findings of Alharbi, Alshammari, Almutairi, Makboul, and El-Shazly (2012), respondents received SM on breast cancer from TV (62.8%) and radio (16.5) with medical practitioners (5.8%) being the lowest source of information on breast cancer. A total of 26.2% of the respondents identified environmental factors as the major cause of breast cancer, and 44.9% of the respondents attributed breast cancer to such factors as spiritual and too much breast feeding. This is worrying as it suggests that the respondents lack knowledge regarding the actual causes of breast cancer. Of the respondents, 25.1% believe that breast cancer is best prevented through prayer. Although 69.1% of the respondents are aware that the impact of breast cancer is best reduced through regular breast self-examination, 86.5% of them do not know how to perform the breast self-examination.

The proposed measurement model was first validated using confirmatory factor analysis in SmartPLS to assess measurement reliability and validity (Ringle, Wende, & Will, 2005). This was done based on three main criteria: (a) convergent validity; (b) reliability; and (c) discriminant validity following the suggestion of Hair, Hult, Ringle, and Sarstedt (2014). Table 1 indicates that convergent validity of the items was assessed by outer loadings and average variance extracted (AVE). The convergent validity of the measurement scales is supported because all of the outer loadings are above the minimum acceptable threshold of 0.4. Convergent validity was also supported using AVE for each construct being greater than the recommended 0.5 (Gefen & Straub, 2005).

Discriminant validity was evaluated based on the Fornell-Larcker criterion. The Fornell-Larcker criterion suggested by Fornell and Larcker (1981) states that the square root of AVE should be greater than the correlation shared between the construct and the other constructs. The diagonals in Table 2 below presented the square root of the AVE and the correlations among constructs. The correlations among the constructs are less than the square root of the AVE, an indication of discriminant validity. The reliability of each construct was assessed by composite reliability. Table 2 revealed that the reliability measures in this study are above the acceptable satisfactory levels (AVE > .50, composite reliability > .70) as recommended by scholars (Hair et al., 2014; Nunnally, 1978).

TABLE 1 Confirmatory factory analysis

Item	Loading	CR	AVE
Perceived benefits		0.97	.85
Doing regular breast screening is good for me.	.965		
Doing breast self-examination regularly would help me detect breast lump and breast change early.	.946		
Early detection of breast cancer reduces my cost of treatment and enhances my chance of survival.	.938		
Early detection of breast change and seeking early treatment are the best way to prevent breast cancer.	.927		
Regular breast self-examination (BSE) decreases the rate of death from breast cancer.	.836		
Perceived self-efficacy		0.84	0.52
I am confident that I can examine my own breast regularly.	.832		
I am confident in my ability to find small lumps and breast changes when I examine my own breasts	.738		
I can perform breast self-examination correctly using the right parts of my fingers.	.705		
I can recognize any abnormal changes in my breast when I look at it in the mirror.	.686		
I am able to identify normal and abnormal breast tissue when I do breast self-examination.	.614		
Perceived barriers		0.86	0.55
I am afraid my breast would be cut off, if I notice change in my breast and go to the hospital.	.854		
I am afraid of finding lump in my breast if I do regular breast self-examination.	.758		
Examining my breast regularly would make me worry about getting breast cancer.	.727		
Treating breast cancer is expensive.	.683		
Breast self-examination is painful and difficult to perform.	.653		
Perceived susceptibility		0.91	0.77
It is likely that I will get breast cancer.	.973		
My chances of getting breast cancer is high.	.922		
I feel I will get breast cancer sometime during my life.	.707		
Perceived severity		0.84	0.52
The thought of breast cancer scares me.	.852		
It is very serious to get breast cancer.	.803		
Breast cancer is a deadly disease that is difficult to cure.	.668		
Getting breast cancer can affect the relationship with my partner/husband.	.631		
Having breast cancer can affect my relationship with my family and friends.	.627		
Cues to action		0.76	0.62
Seeing pictures about breast cancer prompts me to do breast self-examination to avoid it.	.842		
Hearing from breast cancer patient makes me feel like doing breast self-examination to avoid it.	.727		
Breast self-examination behaviour		0.84	0.63
I do breast self-examination once every month.	.886		
I hardly perform breast self-examination (R).	.832		
I will report any change in my breast to a doctor immediately.	.650		

Note. R = reverse coded. AVE = average variance extracted; CR = composite reliability.

TABLE 2 Interconstruct correlation

	1	2	3	4	5	6	7
1. Breast self-examination behaviour	1						
2. Cues to action	0.42	1					
3. Perceived barriers	0.43	0.03	1				
4. Perceived self-efficacy	0.42	0.32	0.39	1			
5. Perceived severity	0.44	0.46	0.36	0.35	1		
6. Perceived susceptibility	0.46	0.18	0.41	0.34	0.29	1	
7. Perceived benefits	0.41	0.35	0.06	0.40	0.44	0.21	1

In Table 3, multiple regressions were done to test and validate H1 to H6 of the study. An aggregated breast cancer protective behaviour was used as the dependent variable whereas the constructs of HBM

TABLE 3 Regression model

	SE	Beta	T	p
(Constant)	.147		12.224	.000
Susceptibility	.024	.528	10.001	.000
Severity	.018	.084	1.766	.078
Benefits	.013	.753	14.795	.000
Barriers	.023	-.218	-3.604	.000
Efficacy	.015	.659	15.479	.000
Cues to action	.012	.105	2.456	.015
R	.830			
R ²	.689			
Adj. R ²	.683			
Dependent variable: Breast cancer protective behaviour				

were used as independent variables. The regression model was significant in predicting and explaining 68.9% of the variance in the dependent variable ($\text{sig} = .000$, $R^2 = .689$). In other words, the HBM provides a better means of understanding why people do not undertake breast cancer preventive behaviours. Thus, designing and implementing an intervention based on HBM can result in changing behaviour towards breast cancer prevention. This finding corroborates with Parsa, Kandiah, Mohd Nasir, Hejar, and Nor Afiah (2008) and Tavafian, Hasani, Aghamolaei, Zare, and Gregory (2009) who found the model to be effective in predicting breast self-examination among women in Malaysia and Iran, respectively.

Perceived susceptibility was found to have a statistically significant influence on breast cancer protective behaviours ($p = .000$). The finding is consistent with previous studies (Champion & Skinner, 2008; Noroozi & Tahmasebi, 2011; Parsa et al., 2008). However, the result of the descriptive analysis shows that respondents perceive lower levels of susceptibility towards the breast cancer disease. The study recommends that to change the breast cancer protective behaviour of Ghanaian women, SMIP should be designed to raise the susceptibility levels of women in Ghana by making them believe that they are vulnerable to breast cancer.

Even though the respondents perceive breast cancer to be severe, the study found no statistically significant relationship between severity and performance of breast cancer protective behaviours ($p = .078$). This suggests that designing interventions based on severity may not yield effective result of changing behaviour towards breast cancer prevention. This contradicts Kowalski and Czajka (2015) who found severity to be a significant influence on behaviour.

On perceived benefit, the study concludes that there is a positive and statistically significant relationship between perceived benefits and behaviour ($p = .000$). This is in tandem with D'Souza et al. (2011) and Noroozi and Tahmasebi (2011) who assert that the greater the perceived benefit of the suggested behaviour, the higher the likelihood of taking preventive action to prevent the disease. In other words, positioning the benefits of performing breast self-examination as an effective means of preventing or reducing the threat posed by breast cancer would have a significant influence on the performance of the behaviour.

Regarding perceived barrier, the study found a negative but statistically significant relationship between perceived barrier and performance of breast cancer protective behaviours ($p < .000$). This suggests that the higher the barrier, the less likely the respondents are to perform breast cancer protective behaviours. The result from the descriptive analysis shows high perceived barriers, which negatively impacted the women to perform breast cancer protective behaviours. This is consistent with previous findings (Calnan & Moss, 2016; Romano & Scott, 2014), which conclude that when perceived barriers are high, it increases noncompliance levels of the behaviour. The study therefore recommends that the implementers of SMIP on breast cancer should do upstream SM to influence the government to reduce barriers women in Ghana encounter in their attempts or efforts at performing breast cancer protective behaviours.

On self-efficacy, the study found a positive and statistically significant relationship between self-efficacy and performance of breast cancer protective behaviours ($p = .000$). This finding confirms previous

findings (Champion & Skinner, 2008; Noroozi & Tahmasebi, 2011), which conclude that when self-efficacy is high, the compliance level for the recommended behaviour is usually high. The study therefore recommends that interventions should be put in place to increase the self-efficacy of women in Ghana on breast cancer protective behaviours.

Regarding cues to action, the study found positive and statistically significant relationship between cues to action and performance of breast cancer protective behaviours ($p = .015$). This means that if there is enough SMIP to remind women in Ghana on breast cancer protective behaviours, they would protect themselves against breast cancer. This is consistent with Champion and Skinner (2008). Based on this, the study recommends that reminder postcards, newspaper or magazine article on breast cancer, and interviews with breast cancer patients on TV should be a regular feature in SMIP on breast cancer in Ghana.

An analysis of variance was conducted to determine whether there is a significant difference between the women's current level of education and their performance of breast cancer preventive behaviours. The result in Table 4 reveals that on the average, the women irrespective of their level of education disagree that they have adopted breast cancer preventive behaviours (Mean = 2.311). The study however found statistically significant difference ($F = 8.808$, $p < .000$) between the respondents' level of education and their performance of breast cancer preventive behaviours. The women with no formal education are more likely to disagree (Mean = 2.195) that they have performed breast cancer preventive behaviours than their counterparts with levels of education.

This is because the women with no formal education are unable to receive and synthesize SM interventions on breast cancer as compared with their counterparts who are educated.

6 | THEORETICAL IMPLICATIONS AND LIMITATION OF THE STUDY

This study has for the first time applied the HBM to SMIP on breast cancer in the Ghanaian context. The HBM used as the conceptual framework of the study has generally been helpful in predicting and understanding breast cancer-related behaviours of women in Ghana. The study found statistically significant relationship between all the constructs of HBM and the performance of breast cancer protective behaviours except the relationship between severity and performance of breast cancer protective behaviours as proposed by the model. The HBM posits that the more severe the consequence is perceived to be,

TABLE 4 Differences between level of education and breast cancer preventive behaviour

Factor	Education level	Mean	F	p
Behaviour	No formal education	2.1958	8.808	.000
	JHS	2.3575		
	SHS/A' level	2.2642		
	Tertiary	2.3916		
	Total	2.3113		

the more likely the individual is to act to avoid it. However, in the Ghanaian context, the findings do not support this and indicate that there is no statistically significant relationship between perceived severity and performance of breast cancer protective behaviours. The author contends that the women in Ghana perceived severity of getting breast cancer do not affect their intentions to perform breast cancer protective behaviours. On the basis of the findings, the author concludes that HBM is generally applicable to the Ghanaian situation for understanding breast cancer protective behaviours. However, to help design effective SMIP on breast cancer in Ghana, the author recommends the removal of severity as a construct from HBM. The author asserts that the modified HBM will help implementers of SMIPs in Ghana to facilitate an understanding of why women in Ghana are not adopting breast cancer protective behaviours. The study found majority (62.8%) of the respondents receiving SM interventions on breast cancer from television. Therefore, the study recommends that implementers of SMIP on breast cancer should use television as the effective medium to communicate to Ghanaian women. It is also recommended that implementers of SMIP on breast cancer should use local languages to communicate the interventions to women with no formal education.

The study utilized quantitative techniques to understand the relationship between HBM constructs and breast cancer protective behaviours among women in Ghana. Using qualitative method for future research would help provide a deeper understanding of breast cancer-related behaviour based on HBM. Future studies should consider including men as respondents as their knowledge and acceptance of the behaviour may help prevent breast cancer among women.

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