

Got Pink? The Effectiveness of Health Awareness Campaigns on Breast Cancer (BC) Screening in Bahrain

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Abstract

Breast cancer (BC) is the second most common type of cancer in the world and is the most common kind of cancer in women both globally and in the Gulf Cooperation Council (GCC) countries (WHO 2020). This study focuses on the effectiveness of health awareness campaigns on breast cancer (BC) screening in Bahrain. Data was collected from a quantitative survey and qualitative interviews. The survey was conducted following a purposive sampling procedure with 136 women (75 Bahraini and 61 non-Bahraini). Seven media communicators who worked for the BC campaigns were interviewed following semi-structured interviews. The results showed that although there is a high level of BC awareness between the study sample of the Bahraini and non-Bahraini women, there are still many barriers regarding regular mammograms. These barriers are mostly related to some misconceptions about BC screening such as anxiety, shyness, and cancer fatalism. At the same time, although the study sample was convinced by the BC campaigns of October 2020, a high percentage had not taken the appropriate action represented by BC screening. The messages of these campaigns did not take into account any cultural beliefs of non-Arabic women and focused on encouraging and persuading women of the importance of BC screening rather than dealing with the cultural misconceptions about BC and screening.

Keywords: Breast Cancer Screening; Health Awareness Campaigns; The Reasoned Action Theory; Bahrain.

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1. Introduction

Breast cancer (BC) is the second most common type of cancer in the world and is the most common kind of cancer in women both globally and in the Gulf Cooperation Council (GCC) countries (WHO 2020). According to the WHO, each year, 1,675,634 new cases are diagnosed worldwide, and over 520,000 women die annually because of this disease (Stefan & Bianca, 2016). At the same time, almost 60% of cases were diagnosed at advanced stages (Abu Awwad et al., 2020). It is well known that BC has a very high survival rate, an average of 98% if detected early (Javaeed, 2018).

According to the National Oncology Council of Bahrain, BC constitutes 40% of all cancer cases in the country (Akhbar- AL Khaleej 2020). In 2019, lung cancer ranked first as a cause of death in Bahrain, followed by BC (Statista, 2021). BC has been the leading cause of cancer among women in Bahrain since the start of cancer registration in 1998 (Fikree & Oxon 2011).

Generally, in many developing countries, low awareness, fear, and negative cultural beliefs delay help-seeking behaviours regarding the early detection of BC for women, which can contribute to late detection rates for this disease (Schliemann *et al.* 2018). Kawar (2012) found that undergoing BC screening was influenced by cultural misconceptions. In this regard, campaigns for BC screening could encourage women to take early tests.

Health marketing can be considered as a kind of social marketing that aims to implement a specific strategy to improve public health by causing a behavioural change (Bratucu & Bianca 2016, 79-86). Health awareness campaigns usually aim to persuade people to adopt a specific behaviour that influences their lifestyle and improves health. Okorie and Abiodun (2016) argue that health awareness campaigns are also known as information campaigns, used to raise awareness of many diseases, usually with the intent of motivating people to avoid these diseases.

2. Purpose of the study

Hill and Hayes (2015, p. 1749) highlighted that “some breast cancer campaigns literature includes no assessments of the effect of these campaigns on the actual early-stage detection of breast cancer”. Schliemann et al. (2018, p. 2) explained that in many developing countries, media health campaign efforts “have been sporadic, short-lived and lacked rigorous evaluation”. For this reason, this study investigates the influence of Bahrain’s health awareness campaigns on BC screening. It also aimed to compare the effectiveness of these campaigns (conducted in October 2020) on both Bahraini and non-Bahraini women. At the same time, few studies have evaluated the effectiveness of the media awareness campaigns on BC screening in Bahrain.

3. Literature review

3.1 BC Media Awareness Campaigns

Many scholars agree that media awareness campaigns are the cornerstone of health communication interventions. This is because of the multiple communication channels and techniques available to media communicators to increase awareness of health problems (Schliemann *et al.*, 2018). Plackett *et al.* (2020) found that many national BC media campaigns aimed at fundraising rather than actionable messages, and that using social media intensively may improve BC screening and help in early diagnosis. Schliemann *et al.* (2020) concluded that the implementation of BC awareness campaigns in Malaysia that considered cultural background appeared to improve BC awareness and affected the attitude toward BC screening. Nelson and Salawu (2016) investigated the effectiveness of BC awareness campaigns among women in South-West Nigeria. They found a significant difference in the level of knowledge about BC and sources of awareness among women, but no significant difference in the level of women's exposure to media campaigns on BC care. Wakefield *et al.* (2010) concluded that mass media interventions that made use of various media channels to convey BC screening messages have a positive impact on the target audience. Finally, another study's findings in Canada reached health promotion strategies to address at-risk young women based on evidence-based content (Larsen 2022).

3.2 BC Media Awareness Campaigns in the Arab Region

Abu Awad *et al.* (2020) investigated Emirati and non-Emirati women's attitudes towards BC screening and recommended using social media and WhatsApp intensively to distribute information. Farsi, Al- Wassia, and Merdad (2020) found that BC awareness campaigns in Saudi Arabia, directed at either men or women, remain overly critical in increasing knowledge and changing behaviour regarding the early detection of BC. In Jordan, the message content and the stimuli of these campaigns have the most significant role in encouraging women to early BC examination (Azzam & Al Hawamdeh 2019). Alanzi *et al.* (2018) found that the Snapchat mobile social networking application can be effectively used to create BC awareness among Saudi women. Donnelly *et al.* (2015) explained that the promotion of BC via media campaigns in Arab countries should focus on raising awareness about this disease and the benefits of early screening, especially among low-income and low-educated Arab women. Fikree, Hamadeh & Oxon (2011) found that BC knowledge was deficient among Bahraini women, although there were many BC awareness campaigns through public media. They recommended that efforts to improve women's education should be encouraged, and maximum use of all media forms should be encouraged in BC campaigns.

Despite the fact that various studies have examined the role of media health campaigns in creating awareness of BC, their effectiveness in encouraging women on early BC detection and screening has not been extensively discussed in Bahraini studies. Hence, this study will fill the vacuum by examining the effectiveness of the health awareness campaigns on BC screening in Bahrain.

4. Theoretical approach

This study is based on the theoretical framework of the Theory of Reasoned Action (TRA). It assumes that people usually make their decisions rationally and based on the available information. Thus, behavioural intention is responsible for determining individuals' behaviour (Izzatni & Muamar Nur 2020). TRA suggests that attitude is important for persuasive communication. It adds another element to the process of persuasion, behavioural intention (Nelson & Salawu 2016). This theory proposes that many factors limit the influence of attitude on behaviour. So, it separates behavioural intention from behaviour (Nguyen *et al.* 2018). For example, a woman's positive attitude to BC screening will not turn into her behaviour if it is too expensive and she does not have medical insurance. The TRA has been adopted by many scholars to study BC screening behavioural intentions. For instance, Feng *et al.* (2021) incorporated affect, facilitating conditions, and habit into their expanded TRA to predict the rate of mammography participation.

According to Nguyen and Nguyen (2017), the main concepts of TRA are Behaviour, Intention, Attitude, Behavioural beliefs, Norms, and Normative beliefs. Applying TRA in this study, we can state that behaviour means real action towards BC screening by mammogram. Intention is the intent to perform the BC screening. At the same time, intention is usually the best predictor that a desired behaviour will occur. Attitude is the positive or negative feeling towards the BC screening. Behavioral beliefs are the combination of a woman's beliefs regarding the outcomes of BC screening behaviour and her evaluation of the potential outcome. Norms are a woman's perception of other women's opinions regarding BC screening behaviour. Finally, normative beliefs are a combination of a woman's belief regarding other women's views of BC behaviour and her willingness to adopt those views. Furthermore, and based on the main concepts of TRA, a major factor preventing or supporting women in performing BC examination is their beliefs, whether cultural or religious. At the same time, a woman's intention to adopt a healthy lifestyle can only be triggered by information and knowledge delivered by BC awareness campaigns.

5. Study Questions and Hypotheses

The research questions and hypotheses are as follows:

- Q1. What is the frequency of BC medical examinations and monthly BC self-examination?
- Q2. Which kind of mass communication channels did the woman depend on to obtain information regarding BC?
- Q3. How did the sample evaluate the BC awareness campaigns conducted in Bahrain in October 2020?
- Q4. What were the main reasons for being convinced (or not convinced) by the BC campaigns of October 2020?
- Q5. Did BC awareness campaigns of October 2020 encourage women to take action regarding mammograms?
- Q6. Were there any barriers to BC examination among the study sample?
- H1. There are no significant differences between Bahraini and non-Bahraini women in:
 - i) level of knowledge of BC.
 - ii) level of exposure to media on BC.
 - iii) level of persuasion of the BC campaigns conducted in October 2020.

6. Method

This is a mixed method study. Data were collected based on a quantitative survey and qualitative interviews to achieve the objectives of the study. The survey was conducted following a purposive sampling procedure. 136 women (75 Bahraini and 61 non-Bahraini), who watched the BC media campaigns conducted in October 2020 in Bahrain, participated in the survey. These campaigns were produced by many government and private Bahraini institutions, including the Ministry of Health, the Supreme Council for Women, the Ministry of Information Affairs, some universities, and Gulf Air. All these campaigns are delivered through traditional and new mass media.

The non-Bahraini women sample consisted of Indian, Pakistani, Egyptian, and Jordanian women. The women were 40 years and older, as women from this age group have a higher chance of BC: the incidence rate for ages 40 to 44 is twice that for ages 35 to 39, continuing to increase after 45 until age 80 (Bojanic *et al.* 2020).

An online questionnaire, using Google monkey forms, was distributed between 1 December 2020 and to 27 January 2021. It was delivered to all participants in Arabic and English forms. It was designed to obtain information on socio-demographic (age, level of education, marital status, employment status, and family history of BC) and to measure respondents' breast self-examination, knowledge level about BC, exposure level to media on BC evaluation of the BC campaigns of October 2020, level of persuasion of these campaigns, reasons for being convinced (or not convinced) by these campaigns, their real action regarding BC screening, and barriers to BC examination.

The questionnaire was pre-tested on a sample of 30 Bahraini and non-Bahraini women drawn from the target population (not included in the final sample). Cronbach's alpha for measuring reliability or internal consistency was 0.827, indicating that the items have relatively high internal consistency. A reliability coefficient of 0.70 or above is usually considered acceptable in social science research.

Data Collection

Data were collected by an online survey in both English and Arabic, as detailed above. A five-point Likert type scale (from "very important" to "totally unimportant") was used to measure the sample's evaluation of the BC awareness campaigns conducted in Bahrain in October 2020.

Statistical Analysis

All data were analyzed using SPSS (version 15.0). One-way ANOVA with the Scheffé Post Hoc Test were used for multiple comparisons to detect where differences exist between pair-wise groups. The Chi-Square test was used to compare the differences between the demographic variables of Bahraini and non-Bahraini women. The level of statistical significance was set at $P < 0.05$.

In-depth Interviews

Qualitative data were collected based on in-depth interviews conducted from September to October in 2020. Seven media communicators who worked for the BC campaigns were interviewed following semi-structure interviews. The interview questions included: "Have BC campaigns over the past three years achieved their intended goal and were effective in influencing the target audience behaviour regarding BC screening?" "What are the most important persuasion strategies that the BC awareness campaigns in Bahrain contained?" "Did the messages of awareness campaigns against BC target both Bahraini and non-Bahraini women?" "Did these BC awareness campaigns consider the cultural beliefs of Bahraini and non-Bahraini women regarding BC screening behaviour?" "What are the sample's suggestions regarding enhancing the BC awareness campaigns to be more effective in the coming years?"

7. Results

Demographics

Table 1 shows that the age of the women ranged from 40 to 60+. Most of the participants (42.7% of Bahraini women and 36% of non-Bahraini women) were "40-50 years old. A total of 69.3% of the Bahraini women and 57.4% of the non-Bahraini women were enrolled in or graduated from the university. Most of the participants (74.7% of the Bahraini women and 86.8% of the non-Bahraini women) were married. A total of 45.3% of Bahraini women and 32.8% of the non-Bahraini women were employed. Finally, 16% of Bahraini women and 5% of non-Bahraini women have a family history of BC.

Table 1: Demographics of the participants.

Variables	Sub-Groups	Bahraini		Non-Bahraini		Total		X2	df	p-Value
		NO.	%	NO.	%	NO.	%			
Age- Group	40- 50	32	42.7	22	36	54	39.7			
	50-60	27	20	21	34.5	48	35.3			
	60+	16	21.3	18	29.5	34	25			
Level of education	High School	19	25.3	25	41	44	32.4	5.234	4	0.225
	University	52	69.3	35	57.4	87	64			
	Postgraduate	4	5.4	1	1.6	5	3.6			
Marital Status	Single	12	16	5	8.2	17	12.5	1.981	3	0.321
	Married	56	74.7	53	86.8	109	80.1			
	Divorced	7	9.3	3	5	10	7.4			
Employment Status	Student	10	13.3	0	0	10	7.4	7.012	6	0.365
	Employed	34	45.3	20	32.8	54	39.7			
	Unemployed	12	16	25	41	37	27.2			
	Retired	12	16	16	26.2	28	20.6			
	Student and employed	7	9.4	0	0	7	5.1			
Family history of BC.	Yes	12	16	3	5	15	11	7.365	2	0.021*
	No	63	84	58	95	121	89			

*Statistically significant difference, ($p < 0.05$).

The "Chi-square" test was used to compare the differences between the demographic variables of Bahraini and non-Bahraini women. All variables were independent ($p > 0.05$) except "family history of BC" ($p = 0.021$), where there were more Bahraini women with a family history of BC than non-Bahraini women.

Q1. What is the frequency of BC medical examinations and monthly BC self-examination?

The answer of respondents to this question revealed that 17.3% of them went for BC medical examinations every 1 to 2 years. 15.7% went once every two years, 6.5% went once a year, 3.9% went twice a year to review medical checks, while 56.6% of the total sample had never been for a BC examination.

Regarding the monthly BC self-examination, 39.9% of the respondents answered "yes, regularly every month", 22.3% answered "yes, from time to time", while 37.8% responded negatively.

Q2. Which kind of mass communication channels did the women depend on to obtain information regarding BC?

The internet ranked first, with an average of 45.2%, followed by friends and family members (17.2%), then Bahraini TV with 15.5%. The fourth information source was specialized health professionals (12%), followed by radio (5.2%). Finally, newspapers and magazines were placed last with 4.9%.

Q3. How did the sample evaluate the BC awareness campaigns conducted in Bahrain in October 2020?

Responses were measured on a scale ranging from 1 (totally unimportant) to 5 (very important). The average was 4.43, which means that both the Bahraini and non-Bahraini women evaluated the BC campaigns conducted in Bahrain in October 2020 as "important" tools in raising their awareness of BC.

Q4-What were the main reasons for being convinced (or not convinced) by the BC campaigns of October 2020?

Firstly, 87.8% of the sample stated that the awareness campaigns of October 2020 persuaded them to undergo early BC screening; 12.2% responded negatively.

The reasons for being convinced by these campaigns are as follows: "the campaigns explained that patients experience better outcomes as a result of early diagnosis" (75.9%); "the message is clear and logically arranged (70.2%); "the message addressed the target audience rationally, which made it more logical" (62.1%); "the message was made more effective by using the medium of fear of the potential negative effects of the BC" (50.3%); and "the message detailed the procedures required for the BC screening process" (40.6%). The reasons for being unconvinced by the campaign were as follows: "the campaigns did not use famous or influential persons as a persuasive element" (58.1%); "the contents of these campaigns were repeated and similar to previous years, which reduced the strength of their persuasion" (48%); "the broadcast time of these campaigns

was limited to October only, with no reminders throughout the year” (22.1%).

Q5- Did BC awareness campaigns of October 2020 encourage women to take action regarding mammograms?

43.7% of the sample stated that the 2020 BC awareness campaigns encouraged them to have a mammogram (a screening that helps detect BC early), while the rest of the sample (56.3%) responded negatively.

For those who had not yet had a mammogram (56.3% of the total sample), 78.2% stated that they did have the behavioral intention to have one in the future.

Q6. Were there any barriers to BC examination among the sample?

For both Bharani and non-Bahraini women, it seems that barriers to mammograph screening were related to the following reasons: “mammograms might not be helpful for all women” (57.8%). For Bahraini women, “anxiety about the mammography screening test” ranked first (55.2%), followed by “anxiety about radiation exposure” (43.6%), “annual mammograms guarantee that BC will be found early” (33.2%), “shyness of the BC examination” (18.2%), and “death is inevitable when BC is present” (10.3%). Of the non-Bahraini women, 65% stated that they had a problem regarding “the insurance coverage for access to health services”.

Hypothesis Testing

i) There is no significant difference in the knowledge level about BC between Bahraini and non-Bahraini women.

Table 2 shows that 55.2% of the Bahraini women were “very knowledgeable” about BC, while only 12.2% were “insufficiently knowledgeable”. Regarding the non-Bahraini women, 60.3% were “insufficiently knowledgeable” and only 15.5% “very knowledgeable” about BC.

Table 2: Differences in the knowledge levels between Bahraini and non-Bahraini women.

Knowledge level	Origin				
	Bahraini	Non- Bahraini			
1. Very Knowledgeable.	55.2%	15.5%			
2. Sufficiently Knowledgeable.	32.6%	24.2%			
3. Insufficiently Knowledgeable	12.2%	60.3%			
Total	(n)=100%.				
One Way ANOVA Test					
Group	Sum of Square.	Df.	Mean Square	F	Sig.
Between Groups	3.578	2	1.642	3.035	0.003
Within Groups	318.162	562	0.563		
Total	321.641	562			

Table 2 also shows that the F ratio is 3.035 and the probability level 0.003. This result indicates that there is a significant difference between Bahraini and non-Bahraini women in terms of the level of their knowledge of BC. So, the null hypothesis that states that “there is no significant difference in the knowledge level about BC between Bahraini and non- Bahraini women” was rejected.

The Schefft Post Hoc Test was carried out to compare these differences in the level of knowledge. It shows a higher mean score for the Bahraini woman (mean difference (I-J) = 40.651, Sig.= .000), which indicates that the difference between the two groups is significant. That is, we can state that the knowledge level of BC is significantly higher for Bahraini women than non-Bahraini women.

ii) There is no significant difference in the level of exposure to media on BC between Bahraini and non-Bahraini women.

Table 3: Differences in the exposure to mass media about BC between Bahraini and non-Bahraini women.

Exposure to Mass Media	Origin				
	Bahraini	Non- Bahraini			
1. Very Large Extent	10.5%	8.6%			
2. Large Extent	27.2%	23.5%			
3. Rarely	12.6%	17.6%			
Total	(n)=100%.				
One Way ANOVA Test					
Group	Sum of Square.	Df.	Mean Square	F	Sig.
Between Groups	0.038	2	0.021	0.058	0.896
Within Groups	236.765	561	0.419		
Total	256.759	571			

From Table 3 it can be calculated that 50.7% of total respondents had seen or read media (traditional or new) about BC to “a large extent” (27.2% of the Bahraini women and 23.5% of the non-Bahrainis). In addition, 19.1% of respondents (10.5% Bahraini and 8.6% non-Bahraini) indicated they had to a “very large extent” seen or read media messages regarding BC. Of the 30.2% of total respondents who had “rarely” seen or read mass media messages about BC, 12.6% are Bahraini, and 17.6% non-Bahraini.

Table 3 also shows that the F ratio is 0.058, while the probability level (0.896) is not below 0.05. This

indicates that there is no significant difference regarding the exposure to mass media between Bahraini and non-Bahraini women. The null hypothesis, that “there is no significant difference in the exposure to mass media between Bahraini and non-Bahraini women”, was therefore accepted.

iii) *There is no significant difference in the level of persuasion of the BC campaigns of October 2020 between Bahraini and non-Bahraini women.*

Table 4: Differences in the level of persuasion of the breast cancer campaigns of October 2020 between Bahraini and non-Bahraini women.

Level of persuasion		Origin			
		Bahraini	Non- Bahraini		
1. High		17.4%	16.5%		
2. Medium		25.2%	20.6%		
3. Weak		8.3%	12.0%		
Total		(n)=100%.			
One Way ANOVA Test					
Group	Sum of Square.	Df.	Mean Square	F	Sig.
Between Groups	0.045	2	0.129	0.098	0.765
Within Groups	245.745	581	0.428		
Total	268.732	583			

From Table 4 it can be calculated that 33.9% of all respondents experienced a “high” level of persuasion from the BC campaigns (17.4% of the Bahraini and 16.5% of the non-Bahraini women), The respective figures for the “medium” level of persuasion are 45.8,25.2% and 20.6%, and for the “weak” level 20.3%, 8.3% and 12.0%.

Table 4 also shows that the F ratio is 0.098, while the probability level (0.765) is not less than 0.05, which confirms that there is no significant difference in the level of persuasion of Bahraini and non-Bahraini women. The null hypothesis that “there is no significant difference in the level of persuasion of BC campaigns of October 2020 between Bahraini and non-Bahraini women”, was accepted.

8. Discussion

The effective use of the mass media in awareness campaigns has long been recognized in the health communication field, and media awareness campaigns are widely considered as essential tools in influencing public health. This study was undertaken to ascertain the effectiveness of the awareness campaign for early detection of BC on Bahraini and non-Bahraini women. Based on the sample’s answers on the study questionnaire, we can conclude the following points:

- More than half the study sample (56.6%) had not experienced BC screening, despite the great interest in BC awareness shown by much of the Bahraini public and private organizations. It therefore appears that the decision to have a BC mammogram or other screening method is still difficult decision, as it is not mandatory. This suggests that there is a need to increase the number of awareness campaigns and their persuasive level. At the same time, 57.9% of the women stated that they regularly make monthly BC self-examinations, perhaps assuming that medical screening is therefore not required. Therefore, more messages are needed to explain that the monthly BC self-examination is not an alternative to annual BC screening. The message could be as follows: Even if you choose to do BC self-examinations monthly, talk to your doctor about having regular BC mammograms and regular breast checkups. Kelechi et al. (2015) concluded that, although BC self-examination is a safe and easy form of early BC diagnosis, additional tests may be still necessary to check out changes or lumps.

- The internet is the most popular mass communication channel for information between the sample regarding BC. According to the Bahraini Telecommunication Regulatory Authority (TRA), in December 2019, 99% of the population used the internet, with 97% using WhatsApp and YouTube, 95% Instagram, and 90% Facebook and Snapchat (TRA, 2019). According to the Statcounter GlobalStats website (2020), Instagram usage ranked first in Bahrain compared to the other social media platforms. Generally, social media is an essential tool for sharing health content (Elgammal 2021). So, in light of the heavy use by the study sample of the internet, the media communicators in the BC awareness field in Bahrain need to focus on delivering BC messages via social media platforms rather than traditional media.

Mass media include communication channels such as television, radio, news-papers, billboards, posters, the Internet, and smart media (ie, smartphones, smart TVs, and tablets) intended to reach large numbers of people.

7,13,14 Small media are generally

aimed at individuals rather than groups (eg, mailed letters and/or other mailed information [eg. brochures and leaflets], telephone calls, e-mails, text messages [Short Message System], and CDs or videos intended for individuals or small group viewings)

- The highest percentage of the total study sample evaluated the BC awareness campaigns of October 2020 as “important”, 87.8% stating that these campaigns had persuaded them to undertake early BC screening. As mentioned above, 56.6% of the total sample stated that they had not previously undergone the BC examination. So, it seems that although they were convinced by these campaigns, a high percentage of them had not taken the appropriate action represented by BC screening. At the same time, 78.2% of those who had not had BC screening before stated that they intended to have mammograms in the future. Generally, we can conclude that the BC campaign messages affected the behavioural intention more than the real behavior. As mentioned above, the TRA separates behavioural intention from behaviour and assumes that intention is directly responsible for determining individuals’ future behaviour (Izzatni & Muamar Nur 2020).

- One of the most popular reasons for being convinced by these campaigns was “the campaigns explained that patients experience better outcomes as a result of early diagnosis”. So, we can state that giving women a positive message could be more persuasive than one invoking fear, which might be ignored or have less effect over time. The other reasons were ranked as follows: “the message is clear and logically arranged, “the message addressed the target audience rationally, which made it more logical”, and “the message effectively used fear of the potential negative effects of BC. Based on these answers, the persuasive elements of BC messages should be logically arranged, addressing the target audience rationally (logically), and using only a medium level of fear. As mentioned above, the TRA explained that persuasive messages can affect attitudes, which directly affect behaviour. The reasons for not being convinced by the BC campaigns were as follows: “the campaigns did not use famous and influential persons as persuasive elements”, and “the content was repeated from the campaigns of previous years”. Thus, the BC campaign messages should be aligned with persuasive strategies. Vargheese et al. (2016, pp.190-214) highlighted that “using social influencer and social proof are more used persuasive strategies in the health care context”. At the same time, the repeated content in BC campaigns can be very boring. On the other hand, creative BC messages can attract women to follow them. Usually, attention paves the way for persuasion. In addition, the more the BC message content touches the target women, the more attention will they pay to it.

- In light of the high percentage of women who had not previously had mammograms, the barriers appeared to be related to misconceptions about BC screening. These barriers include “it is not helpful for all women” and “the annual mammograms guarantee that BC will be found early”, in addition to reasons related to anxiety, fear, and shyness of BC screening. Another barrier is related to cancer fatalism: a small percentage (10.3%) believed that “death is inevitable when BC is present.” Similarly, Akhigbe and Akhigbe (2012) stated that cancer fatalism is a result of cultural, historical, and social factors that influence beliefs. 65% of the non-Bahraini women stated that they had a problem regarding “the insurance coverage for access to health services”. At the same time, all the Bahraini women understood that BC screening is available free of charge in many medical centers in Bahrain.

Three hypotheses were tested. The first, which proposed that there no significant difference in the knowledge level about BC between Bahraini and non-Bahraini women, was rejected. That is, there is a significant difference in the knowledge level between the two groups. The Scheff Post Hoc Test showed higher mean scores for Bahraini women’s “level of knowledge” of BC. It seems that all BC campaigns targeted Bahraini woman by delivering their messages in the mass media most widely used by them. These campaigns also used the Bahraini dialect. At the same time, as mentioned above, a greater proportion of Bahraini women had a family history of BC than non-Bahraini women, which may affect their motivation to watch these BC campaigns.

The second hypothesis, which stated that there is no significant difference in the level of exposure to media information on BC between Bahraini and non-Bahraini women, was accepted. This could be due to the pluralism of the mass media that usually delivers BC campaigns in Bahrain. As mentioned above, not only do government media publish BC campaigns in October every year, but many private institutions also deliver them at the same time. So, it seems that this extensive use of awareness campaigns by both public and private institutions leads to a high exposure level for both Bahraini and non-Bahraini women. Importantly, as they should be continued throughout the year, to reduce or prevent the damaging effects of BC.

The third hypothesis, that there is no significant difference in the level of persuasion of the 2020 BC campaigns between Bahraini and non-Bahraini women was accepted. This suggests that the persuasive messages were appropriate for women from different cultures and with different literacy levels.

The results of the in-depth interviews with the BC campaign communicators revealed many essential points regarding the BC campaign’s effectiveness in Bahrain, as follows:

- BC is receiving more attention and space in the official media than other types of cancer in Bahrain.
- There is an increasing interest in BC awareness campaigns from government and private sectors and some civil society organizations. The reason is that BC is the most common disease among Bahraini females, at a standard age of 50, followed by colonic, ovarian, lung, and thyroid cancer.
- Many communication activities have been used in the BC awareness campaigns conducted in Bahrain over the last three years. They varied between television, radio, social media, and outdoor ads, in addition to using social

influencers and several seminars conducted by many government and private agencies. This combination of many communication channels had a high impact in raising BC awareness in Bahraini and non-Bahraini women.

- Many institutions have promoted BC awareness campaigns during the last five years. Some of them are governmental, such as the Ministry of Health, the Supreme Council for Women, the Ministry of Information Affairs, Gulf Air, and Bahrain Airport. Private institutions include private health centers and some charitable associations, reflecting the concept of social responsibility and community partnership.
- Regarding the impact of COVID-19 on the nature of communication activities related to BC awareness, the study sample answered that several BC awareness seminars were held through the Zoom platform, and that they witnessed a large presence of Bahraini and non-Bahraini women.
- The participants reported that BC awareness campaigns during the last three years aimed to introduce details of the clinical examination, reducing mortality by increasing awareness of the BC symptoms. They also aimed at training women in periodic self-examination, highlighting the importance of mammogram examination, and focusing on healthy lifestyles. They added that these campaigns have largely achieved their aim and intended goals over the last three years. Most health awareness campaigns in Bahrain are carried out by women, not surprising given the overwhelming presence of Bahraini women in the health sector: some 65% of doctors and 90% of nurses. This also strengthens the reliability of health information among various groups of women.
- The government's policies regarding support for BC campaigns have led to a remarkable improvement in the level of public awareness of BC and a decrease in the late detection of BC cases. This achievement was made possible by the services provided by the Ministry of Health's healthcare services, which offer early detection, diagnosis, and treatment of BC.
- These BC awareness campaigns have included many persuasive appeals, such as those addressing women rationally to urge them to speed up early detection in light of many logical arguments, such as the importance of healthy living. These campaigns also included emotional appeal employed in the context of the family's concern for the health of women, whether wife, mother, grandmother, or daughter. The campaigns also included a moderate degree of fear appeal, that logically explained the consequences of not adhering to BC self-examination and periodic screening.
- The BC campaigns relied on repetition as one of the persuasive strategies, especially in those in October, including combining more than one communication method to increase the persuasion component of the message. They also used the "linking the message to the source" strategy, that is medical or social influencers, to increase the degree of conviction. These two strategies are considered the most important persuasive strategies in healthcare context. (Elgammal 2022)
- The communication messages of the BC campaigns mainly targeted the behavioural level, which aimed at urging women to detect BC periodically. At the same time, the communication activities associated with these campaigns played on the cognitive side to increase knowledge of the cause of this disease and methods of prevention. They addressed the emotional side by urging women to overcome their fear and go to health centers for periodic examinations.
- These BC campaigns mainly targeted Bahraini women by sending the message in the Bahraini dialect, easily understood by those non-Bahraini women who speak Arabic.
- The participants mentioned that these messages did not take into account any cultural beliefs of non-Arabic women and focused on encouraging and persuading women of the importance of BC screening rather than dealing with the cultural misconceptions about BC and screening.
- The efforts of many government and private institutions have worked together towards the BC campaigns' ideas, aims, and slogans. These slogans included: "Do not underestimate the importance of early detection ... your life is precious", "You are the life, check and reassure us", "Do not hesitate ... Your examination now ... means safety."
- The participants' suggestions for making the BC campaigns in Bahrain more effective were as follows:
 - Making use of SMS by delivering short and intensive messages regarding the importance of the early breast screening.
 - Dividing the target audience into age groups and addressing each with appropriate content, arguments, and persuasive strategies.
 - Increasing BC awareness through pleasure, such as songs.
 - Making use of social media influencers by sharing BC facts on their Instagram and Twitter pages.

9. Conclusion

This study extends knowledge about women's behaviour regarding BC examinations and the role of the BC campaigns conducted in Bahrain in October 2020 to encourage Bahraini and non-Bahraini women to undergo breast screening. Although there is great interest from the government and private institutions in delivering BC campaigns in October every year, there remains a high percentage of women who have not yet had BC screening. At the same time, the highest percentage of the study sample stated that they perform a monthly BC self-

examination. This means that future BC campaigns should clarify that self-examination is not an alternative to regular screening. At the same time, the highest percentage of participants were convinced by the 2020 BC awareness campaign, although most had not previously experienced BC screening. This means that the effect of the campaign message was more effective at cognitive and attitudinal levels than the behavioural level. At the same time, the October 2020 campaigns influenced the behavioral intention more than the behaviour itself. More research is therefore needed to explore how BC communicators can turn the women's behavioural intention into real action, through appropriate persuasive appeals, techniques, and strategies.

The study results also revealed that the internet is the most popular mass communication channel through which the study sample obtain information regarding BC. Social media is widely used in BC campaigns in Bahrain to promote early diagnosis of many diseases because it can rapidly deliver health messages to large numbers of women who already are heavy users of this medium. However, future studies are needed to investigate whether social media is effective in encouraging both Bahraini and non-Bahraini women to take advantage of BC screening, and how it might improve outcomes.

Despite the high level of BC awareness among all women, there are still many barriers to receiving regular mammograms, mostly related to misconceptions about BC screening, to anxiety and shyness, and to cancer fatalism. It seems that the 2020 campaigns focused on encouraging and persuading women of BC screening rather than dealing with the cultural misconceptions. So, there is a need for more BC awareness campaigns that highlight the facts and myths about BC screening tests.

As mentioned by the media communicators, the BC campaigns mainly target Bahraini women by sending the message in the Bahraini dialect. Few of these campaigns used English subtitles or considered the cultural beliefs of non-Arabic women living in Bahrain. Correspondingly, the first hypothesis of this study confirmed that Bahraini women were more knowledgeable about BC than non-Bahraini women. In addition, a high percentage of the non-Bahraini women stated that they faced problems regarding medical insurance, which does not cover BC screening. Future studies should focus on ensuring that non-Bahraini women have access to BC information and examination services.

Overall, future BC awareness campaigns should increase knowledge, stress the importance of early detection, eliminate the misconceptions regarding BC screening, and reduce cancer fatalism to improve participation in BC screening among both Bahraini and non-Bahraini women. They should take into consideration improvement in the following areas:

- Conducting more awareness campaigns year-round (not only in October), using more information about BC from doctors or other health personnel.
- Producing copies of BC awareness campaigns translated into English and other languages to target non-Bahraini women who do not speak Arabic.
- Developing culturally sensitive BC awareness campaigns for the non-Bahraini women who live in Bahrain.
- Including testimonies from BC survivors to persuade women of the importance of BC screening.
- Using educational films and programs to persuade women of the need for early BC detection and screening. These programs should also emphasize the need for prevention of BC by avoiding exposure to any potential carcinogens such as frequent X-rays and promoting healthy diets that contain less saturated fat and are rich in fiber, in addition to physical exercise.
- Distributing leaflets to the Bahraini and non-Bahraini women in clinical settings about this disease and the importance of early detection and screening. Although Bahraini television and radio stations seem to be more appropriate media to reach a wider target audience, their benefits may be limited to Bahraini women. Therefore, proper counselling should be regularly given by healthcare providers within clinics and hospitals to improve BC knowledge among both Bahraini and non-Bahraini women, and in this setting, leaflets (in both English and Arabic) may be an effective tool.
- Holding online seminars for university students on misconceptions about BC; these should target not only females but also males, who can influence the decisions of their female relatives regarding screening for early diagnosis of BC.

Finally, future study is needed to assess BC campaigns in risk reduction and behavior change over time. At the same time, further research on the effect of social media BC campaigns on Arab women in light of persuasive techniques may be valuable.

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