Medical Science

pISSN 2321–7359; eISSN 2321–7367

Perception, attitude and experience of women living in Jeddah with or without Breast lump towards BSE & mammography: Pre- Post study

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To Cite:
Gouse HSM, Wahid SMA, Al-Gaedy R, Al Ahdal DA, Katib GA, Melebari R, Sultan IE. Perception, attitude and experience of women living in Jeddah with or without Breast lump towards BSE & mammography: Pre- Post study. Medical Science, 2022, 26, ms63e2060. doi: https://doi.org/10.54905/disssi/v26i120/ms63e2060

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Peer-Review History
Received: 29 December 2021
Reviewed & Revised: 31/December/2021 to 04/February/2022
Accepted: 05 February 2022
Published: 12 February 2022

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Background: Breast cancer is the most common cancer among women in Saudi Arabia with a higher mortality rate in comparison to other more advanced countries. This study aims to judge the effectiveness of awareness campaigns by assessing the improvement in knowledge regarding breast cancer and attitude towards screening after attending breast cancer awareness campaign, in addition to exploring areas of defective knowledge. *Materials and Methods*: This cross-sectional study is a community-based pre-post study. A pre-campaign questionnaire was distributed among 119 females to assess their knowledge about cancer of breast and attitude towards its screening methods from September 2020 to September 2021. After which an online awareness campaign was conducted due to Covid-19 restriction to educate the participants on breast cancer and its screening methods. This was followed by the distribution of a post-campaign questionnaire to assess improvement in knowledge and attitude. The collected data was then analyzed using Microsoft Excel software and IBM SPSS. *Results and Conclusion:* A significant increase was observed in the total scores of all participants (p=0.00) along with number of correct answers for knowledge and misconception related questions (p=0.003, p=0.021) after attending the awareness programs. There was a smaller increase in participant percentage with an encouraging attitude towards mammograms than towards BSE after the awareness campaign was conducted. *Recommendations:* More effective awareness campaigns should be conducted across the Kingdom and females need to be reassured regarding their concerns about mammograms.

Keywords: Screening of Breast cancer, Breast Self-Examination (BSE), mammogram, awareness campaign, early detection, metastasis

1. INTRODUCTION

Cancer of breast is most widespread cancer amongst women, in 2018, 2 million new cancers cases diagnosed (23% of all cancers) and ranks second overall (10.9% of all cancers) presently, the most dominant cancer both in advanced and developing countries (Zaidi et al., 2018). The National Saudi Campaign for Breast Cancer Early Detection (BCED) aims to promote primary prevention by avoiding risk factors and secondary prevention through mammography screening every two years for all females aged 40 to 69 years without symptoms of breast cancer (Ministry of Health Saudi Arabia, 2020).

According to a study done in the kingdom, most women over 50 years have never had mammograms in their lives despite the free health services available (El Bcheraoui et al., 2015). Women folk diagnosed with breast cancer at a considerably young age have four times the risk of recurrence or a second primary breast cancer and nearly two times the risk of any future cancers matched to the general population (Lipscomb et al., 2020).

Breast cancer screening should be periodic, can help early detection and more effective treatment with a more promising prognosis (White et al., 2020). Data from United Kingdom in the year 2013 showed that more than 60% of breast cancers discovered by screening were detected at an initial stage (Ditsch et al., 2019; Harkness et al., 2020). Hence necessary to emphasize periodic screening for breast cancer and raise awareness regarding the means of screening among the general public (Al-Khamis et al., 2018; Alrashid et al., 2021).

Thus, this study aspires to recognize the significance of awareness campaigns by assessing the attitude of females in Jeddah towards breast cancer prevention and their knowledge of preventative measures of breast cancer, before and after conducting an awareness campaign during the Covid pandemic. It further aims to explore areas of knowledge that are defective and to explore which misconceptions more strongly need to be corrected and to identify any possible causes of defective knowledge.

2. METHODOLOGY

Study Design

This cross-sectional exploratory study is a community based pre and post study that was conducted over a time frame from September 2020 to September 2021. Data was gathered from 119 participants using non-randomized convenient sampling. The exclusion criteria were males; females lower than 18 years, those residing out of Saudi Arabia, health care workers and did not want their data to be used for research purposes.

Study Tools

Data was accumulated via online Google bilingual (English and Arabic) forms in a multistage process (Radi et al., 2013). A modified validated online questionnaire pilot tested consisting of 5 domains was used; the sociodemographic domain, the knowledge domain regarding common changes seen in breast cancer which was further divided into 3 parts; changes in the nipples, changes to the breast itself and changes in the axillary region, the behavior and attitude towards cancer screening domain, the misconceptions regarding breast cancer domain and the barriers to seeking medical help domain.

Ethical Consideration

Ethical approval was attained from the Research Ethical Committee Board of ISNC, Jeddah (008SRC02082020). Consent was taken from all participants and data confidentiality was maintained.

Data collection process

The first stage involved the training of medical students by the chief investigator to educate the public on breast cancer along with methods of screening. Awareness campaign in bilingual (English and Arabic) was scheduled on online Zoom platform by the same team of medical students and campaign was promoted by brochures distributed via social networking sites such as Facebook, Instagram, Twitter and WhatsApp. Those who wished to attend the awareness campaign were requested to join a WhatsApp group which was used for communication.

The second stage involved the dispersal of the bilingual Google forms to the members of the WhatsApp groups. This was called the pre-campaign test. A total of 40 questions were asked in the pre-campaign test. Third interventional stage when the awareness campaign was conducted in bilingual language. The trained medical students, under the supervision of the chief investigator and with the aid of Microsoft PowerPoint presentations and illustrations, educated the participants on what breast cancer is, its prevalence, its risks and how to manage them, screening methods for breast cancer, how to perform breast self-exams efficiently and common myths and misconceptions regarding breast cancer. The awareness program was recorded and uploaded on YouTube.

The fourth and final stage involved the distribution of another Google form to the members of the WhatsApp groups. This was called the post-campaign test. A few questions of the sociodemographic domain were repeated to facilitate the identification of the participants and all questions of the latter four domains were asked.

Statistical Analysis

Analysis of data was accomplished using Microsoft Excel 2013 with NumXL version 1.66.44235.2 Add-in and version 26 of IBM SPSS Statistics. Participants were given a full score of 0 through 22 based on numeral of question they had correctly answered. They were each asked 11 knowledge-based questions and 11 misconception related questions. Each correct answer was allocated 1 mark. If less than 60% participants answered a question correctly, we considered their knowledge to be flawed in that area. Apart from the participants' sociodemographic details, the data that was obtained was ordinal. A nonparametric test for paired data called Wilcoxon Signed Rank test for detecting significant differences between the participants' test scores and number of correct answers pre and postattendance of the awareness program was performed. The statistical significance was placed at $p<0.05$.

3. RESULTS

Participants were from diverse age groups, mainly the age group 20 to 29 (n=85, 71.4%). Many of them were Saudis (n=82, 68.9%). Most of them received higher education (n=81, 68.1%) and were unmarried (n=80, 67.2%). Only a quarter of them breastfed their children (n=27, 22.7%). The vast majority were participating in a breast cancer awareness program for the very first time (n=104, 87.4%). Concerning their cancer breast history, (n=24, 20.2%) had definite family history but unfortunately most reported that their families were not well aware nor supportive regarding breast cancer screening (n=90, 75.6%) (Table 1 and figure 1).

Table 1 Sociodemographic details and medical history of the participants

Variable		Frequency (n=119)	Percentage (%)
Age	<20 years	8	6.7
	20-29 years	85	71.4
	30-39 years	16	13.4
	≥40 years	10	8.4
Nationality	Saudi	82	68.9
	Non-Saudi	37	31.1
Education	Basic level	38	31.9
	Higher level	81	68.1
Age of menarche	10-12	51	42.9
	13-15	62	52.1
	16-17	6	5.0
Marital status	Married	39	32.8
	Unmarried	80	67.2
Number of children	None	85	71.4
	1-2	21	17.6
	≥3	13	10.9
Breast feeding	Have breast fed	27	22.7
	Never breastfed	92	77.3
Breast cancer- personal history	Present	0	0.0
	Absent	119	100.0
Breast cancer -family history	Present	24	20.2
	Absent	95	79.8
Participation in other breast cancer awareness campaign	Did participate	15	12.6
	Did not participate	104	87.4
Family is aware and supportive regarding	Yes	29	24.4

breast cancer and prevention	No	90	75.6

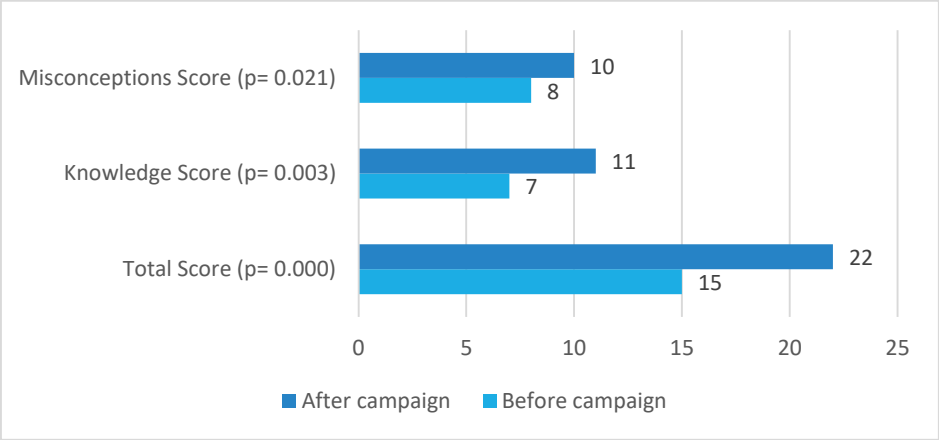

Figure 1 Medians of participants' totals

Table 2 shows the description of each one of the knowledge-based questions asked and how many of the 119 participants answered it correctly before the awareness program was conducted (pre-campaign) and after the awareness program was conducted (post-campaign). Significant distinction between the participants' knowledge regarding breast cancer before and after attending the awareness program (p=0.003) is observed. Table 3 & 4 shows the description of each one of the questions asked regarding common misconceptions concerning breast cancer and how many of the 119 participants answered it correctly before the awareness program was conducted (pre-campaign) and after the awareness program was conducted (post-campaign). Significant difference regarding the misconceptions about breast cancer among the participants pre and post attending the awareness program (p=0.021) was noticed. Having a definite family history of cancer breast is significant predictor of increased knowledge regarding breast cancer (p=0.004).

Table 2 Distribution of studied participants according to correct answers related to knowledge questions in Pre & Post Campaign

Knowledge related Questions	Pre-campaign n (%)	Post-campaign n (%)
Changes in the nipple:		
Position	59 (49.6)	101 (84.9)
Retraction	62 (52.1)	103 (86.6)
Discharge	88 (74.0)	113 (95.0)
Rash	46 (38.7)	95 (79.8)
Shape	74 (62.2)	108 (90.8)
Size	56 (47.1)	107 (89.9)
Changes in breast itself:		
Skin dimpling	64 (53.8)	108 (90.8)
Presence of a lump	103 (86.6)	112 (94.1)
Skin redness	50 (42.0)	96 (80.7)
Changes in the axillary lymph node:		
Swelling	93 (78.2)	114 (95.8)
Pain	88 (74.0)	99 (83.2)
Pre-campaign Median (%) {IQR} :	64 (53.8) {32}	
Post-campaign Median (%) {IQR} :	107 (89.9) {13}	
P value	0.003	

Table 3 Distribution of studied participants according to correct answers related to questions regarding misconceptions in Pre & Post Campaign

Questions regarding misconceptions	Pre-campaign n (%)	Post-campaign n (%)
Breast cancer is prevalent	104 (87.4)	105 (88.2)
Negative family history does not mean no risk	96 (80.7)	111 (93.3)
Mammograms cannot detect all forms of breast cancer	22 (18.5)	61 (51.3)
Mammograms can detect small tumors undetectable by BSE	75 (63.0)	67 (56.3)
Mammograms do not cause existing cancer to spread	104 (87.4)	107 (89.9)
Cancer is not related to breast size	115 (96.6)	111 (93.3)
Females can reduce their breast cancer risk	90 (75.6)	113 (95.0)
Antiperspirants do not cause breast cancer	74 (62.2)	109 (91.6)
Cell phones do not cause breast cancer	95 (79.8)	104 (87.4)
Underwired bras do not cause breast cancer	91 (76.5)	108 (90.8)
Men can get breast cancer	83 (69.7)	110 (92.4)
Pre-campaign Median (%) {IQR} :	108 (90.8) {29}	
Post-campaign Median (%) {IQR} :	92 (76.5) {7}	
P value	0.021	

Table 4 Predictors of pre-campaign levels of knowledge

	Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	Beta			Lower Bound	Upper Bound
(Constant)		12.437	.000	13.752	18.966
Age	.036	.262	.794	-1.527	1.992
Nationality	-.053	-.572	.569	-1.688	.932
Level of Education	-.127	-1.372	.173	-2.201	.400
Age of Menarche	-.104	-.972	.333	-1.801	.616
Marital status	-.048	-.275	.784	-2.746	2.076
Parity	-.100	-.494	.622	-2.441	1.466
Previous breast feeding	-.172	-1.188	.238	-3.619	.907
Positive family history for BC	.265	2.924	.004	.703	3.661
Previous attendance of BC campaigns	-.055	-.605	.547	-2.319	1.235

Figure 2 shows the number and percentage of participants with an encouraging attitude towards BSE before the awareness program was conducted i.e., those who practice it regularly and those with a negative attitude towards BSE before the awareness program was conducted (i.e., those who have never heard of it, those not aware of how to do it and those aware but reluctant to do it). It also shows the number and percentage of participants with an encouraging attitude towards mammograms before the awareness program was conducted, i.e., those who have had mammograms done or who want to do so also including those with a damaging attitude towards mammograms, i.e., those who have never heard of it and those who are aware but reluctant to do it.

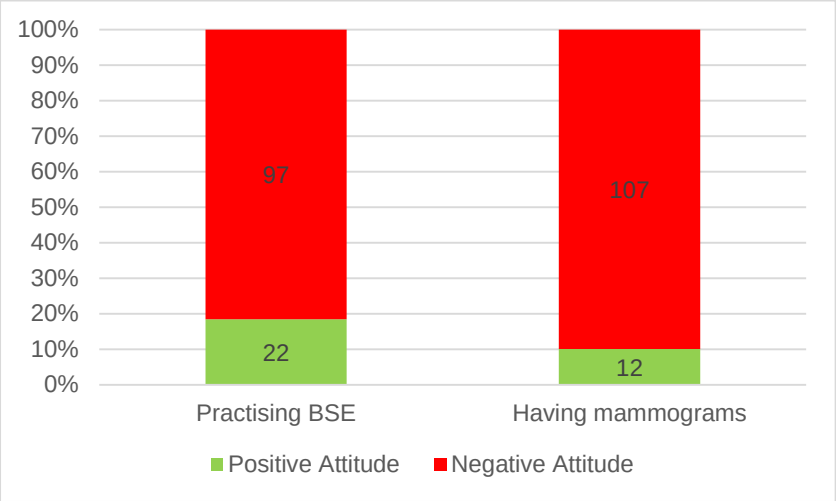

Figure 2 Attitudes towards practicing BSE and having mammograms during pre-test campaign

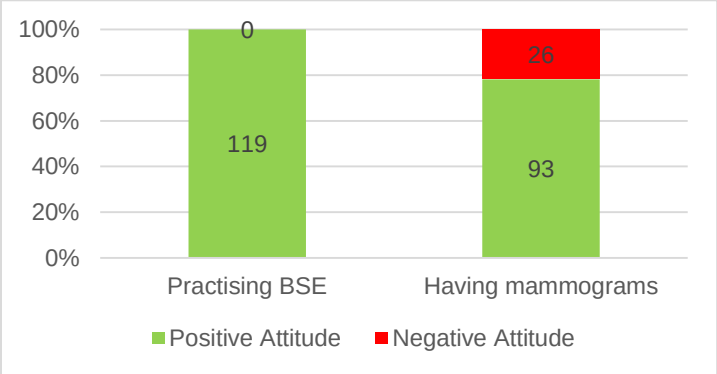

Figure 3 Attitudes towards practicing BSE and having mammograms during post-test campaign

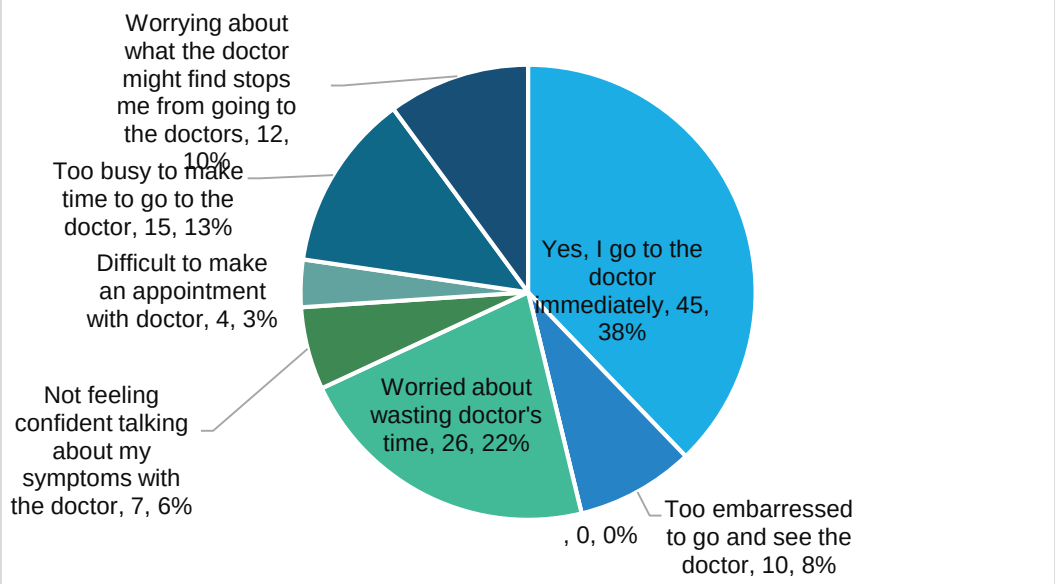

Figure 4 Barriers to seeking professional help reported during the pre-test campaign

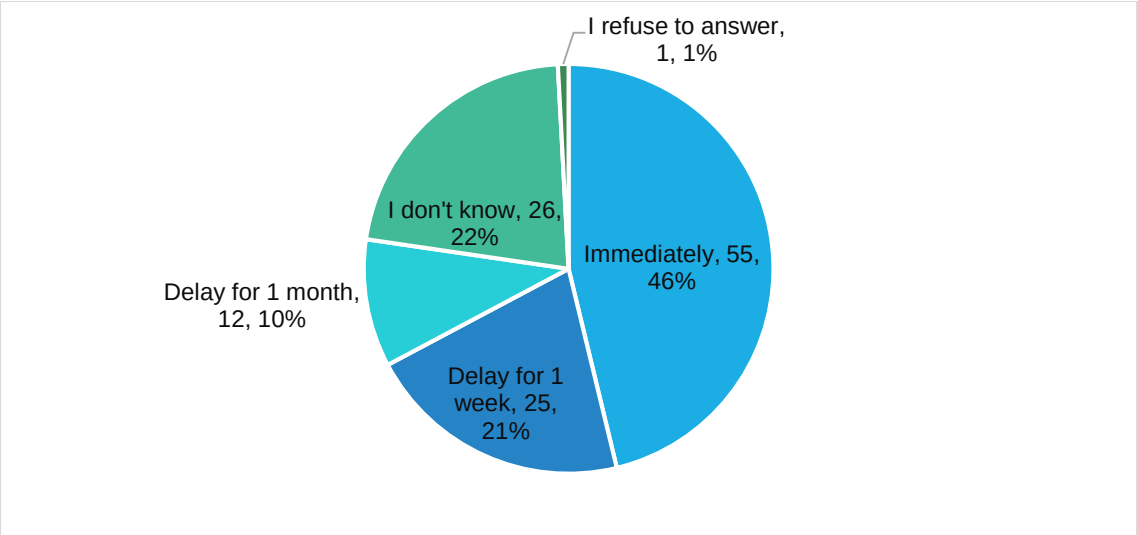

Figure 5 Responses when asked "How soon would you contact your doctor if you notice a change in your breast?" during pre-test campaign

Figure 3, 4 and 5 shows that all participants had an encouraging attitude towards BSE after the awareness program was conducted, i.e., they stated that they will practice BSE on a routine basis from then on. It also shows the number and percentage of participants who had an uplifting attitude towards mammograms after the awareness program was conducted, i.e., those who stated that they will have mammograms done when they reach the recommended age or from then on if they fall under the age group that annual mammograms are endorsed for and those who still had a pessimistic attitude towards mammograms, i.e., those who were reluctant to have mammograms even after attending the awareness program.

4. DISCUSSION

Most of participants were of the age group 20 to 29 most likely because this age group has the most internet access and usage compared to the other age groups (Simsim et al., 2011) though 28.6% of the participants reported having children, only 79.4% of these mothers reported to have breastfed their kids. The question might have been misunderstood or the mothers' may have had contraindications to breastfeeding which were not questioned about. However, this finding can be supported by other reports of lesser than optimal amounts of breast feeding amongst mothers in the kingdom (Al Jassir et al., 2006). More awareness needed towards women who have delivered that breast feeding for 12 months, consecutively or inconsecutively (Collaborative group, 2002). This will lessen a female breast cancer risk by 4.3% and has many other benefits to both mother and baby (Pérez-Escamilla et al., 2020)

Clear family history of cancer breast responded significantly better (p=0.004) in the pre-campaign test for knowledge and misconceptions than the females who did not have such a family history. This is a kin to the significant association of an encouraging family history of breast cancer with an uplifting attitude towards mammography observed in the eastern area of the kingdom (Al-Mulhim et al., 2001). During pre-campaign test there were many areas in which the participants had defective knowledge regarding the common breast cancer signs. This was significantly improved after attending the awareness programs (p=0.003) and was not considered defective (all questions were answered correctly by >60% of the participants). Similarly, a significant improvement noticed in number of appropriate answers for questions regarding misconceptions during post-campaign test (p=0.021). However, it was observed that there were two areas with misunderstanding even after attending the awareness programs.

The participants were informed that mammograms cannot detect all breast cancer types (Nazari et al., 2018) but the understanding of this remained substandard even during post-campaign test and despite being informed that mammograms are more effective than breast self-examination in detecting small tumor (Ditsch et al., 2019) the percentage of correct answers during post-campaign test had decreased. Certain misconceptions are generally more strongly embedded in the public opinion which requires more focus when being corrected. Initially nearly 90% of the sample had a harmful attitude towards mammograms. After attending the awareness program that was conducted, the percentage of females with a harmful attitude towards mammograms reduced drastically to about 20%. Though this change on its own may seem drastic, in contrast to change over observed in the females' attitudes towards BSE, which was 100% positive after attending the awareness campaign, it is still much lower. This was

also observed in another study where considerably poor knowledge and a negative attitude towards mammography were found among woman of all age groupings and levels of education in the eastern province (Al-Mulhim et al., 2001). The low levels of positive attitude towards mammograms during pre-test may be credited to the fact that only 8.4% of the samples were over 40 years, which is the first recommended age group for annual mammograms (Smith et al., 2019).

Many of the females may not have been informed about mammograms by their physicians or their friends or family due to their young age or lack of awareness regarding the subject among their friends and family. 10% of the participants when asked about what stops them from seeking medical attention reported that the fear of what the physician might discover stops them from doing so. This fear among the females of Saudi Arabia was also reported in other studies carried out across the Kingdom and may perhaps bebasis for not wanting to get a mammogram done (Al-Mulhim et al., 2001). It may also be ascribed to the fear of the pain experienced during mammography (Allohaibi et al., 2021) which was also a worry raised by the participants while the awareness program was being conducted. However, frequency of breast cancer reported in women under 40 years in Saudi is greater than twice that of what is reported in North America and Europe (Ezzat et al., 1997) reflecting the necessity of raising awareness regarding the subject regardless of the age group.

Only 38% of the participants testified that they seek immediate medical help when required and do not face any barriers. The remaining 62% had reasons they considered as barriers to seeking medical help. Out of them, the majority worried about wasting the doctor's time, which may be compared to the results carried out in the eastern kingdom study which observed that many females were reluctant to have mammograms without having a complaint regarding their breasts (Al-Mulhim et al., 2001). However, when asked about seeking medical help specifically after spotting a change in their breasts, a bigger percentage of females were willing to see their doctors immediately than when asked about seeking medical help in general (Gouse et al., 2021). Probably due to the fear coupled along with breast cancer common among younger educated females (Aguirre-Camacho et al., 2021).

Overall, we found that our online awareness program due to Covid-19 restriction was effective in eliciting a positive change in both knowledge and attitude of all contributors despite the absence of direct contact. We believe that it was possible to bring about this change because of the way the awareness campaign was tailored, addressing the most important areas of knowledge and most widespread misconceptions, and keeping the participants engaged by including interactive sessions for discussion and asking questions.

Limitations

Though the steps of BSE were shown in illustrations and videos to the participants during the campaign, it was not possible to assess their ability to effectively perform a BSE.

5. CONCLUSION

Significant improvement in the participants' knowledge and awareness about common myths and misconceptions after the awareness campaign was conducted indicating the success of the online awareness campaign. After attending the awareness campaign 100% participants had an encouraging attitude towards BSE and testified that they will practice it monthly and 78.2% of them had an encouraging attitude towards mammography and reported that they will practice it annually as they attain the advised 40 years. However, more hesitance and misconceptions were observed around the subject of mammography.

Recommendations

More awareness programs of similar nature should be conducted across the Kingdom to boost the awareness of screening methods of breast cancer, increase early detected cases and reduce its incidence in the younger age groups. Females need to be reassured regarding their concerns about mammograms and well informed. Physicians need to reassure their patients and actively refer women within the target group from healthcare centre to early detection clinics.

Acknowledgements

We thank all the participants in this study for cooperating in this research by completing both precampaign and post campaign surveys and attending our awareness campaign.

Disclosure

Authors have no conflict of interests, and the work was not supported or funded by any drug company.

Author Contributions

Details of contribution of each authors regards manuscript work & production.
Helen Suban Mohammed Gouse - Idea, Literature review, Data analysis, drafting manuscript
Sherehan Mohammed Ali Wahid- Literature review, Data analysis, drafting manuscript
RenadAlGaedy- Data collection, Data analysis, drafting manuscript
Dania Abdu al ahdal- Data collection, Data analysis, drafting manuscript
Ghadeer Abbas Katib - Data collection, Data analysis, drafting manuscript
Riham Melebari - Data collection, Data analysis, drafting manuscript
Intessar Emam Sultan – Statistical analysis

Ethical approval

The study was approved by the Research Ethical Committee Board of Ibn Sina National College for Medical studies, Jeddah (ethical approval code: 008SRC02082020, IEC No-H-08-13082020).

Funding

The study did not receive any external funding.

Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

Appendix

Questionnaire Based Survey

Section 1- Sociodemographics (Only in Presurvey)

1. What is your age? ____
2. What is your nationality?_____
3. What is your highest education level?
4. At what age did you get your periods? _____
5. Are you married?
6. How many children do you have? _____
7. Did you breastfeed your children?
8. Period of Breastfeeding
9. Past history of Breast Cancer
10. Do you have a relative affected by breast cancer?
11. Have you participated in breast cancer program?
12. Does your family give reminder about breast cancer screening?

Please answer the following questions as Yes or No.

Section 2 – Knowledge about Breast Cancer

Related to Nipple changes

13. Do you think a change in position of your nipple could be a sign of breast cancer?
14. Do you think pulling in(retraction) of your nipple could be a sign of breast cancer?
15. Do you think discharge or bleeding from your nipple could be a sign of breast cancer?
16. Do you think a nipple rash could be a sign of breast cancer?
17. Do you think changes in the shape of your breast or nipple could be signs of breast cancer?
18. Do you think changes in the size of your breast or nipple (breast or nipple asymmetry) could be signs of breast cancer?

Related to Breast itself

19. Do you think puckering or dimpling of your breast skin (like an orange peel or like dents) could be a sign of breast cancer?

20. Do you think a lump or thickening in your breast could be a sign of breast cancer?
21. Do you think the redness of your breast skin could be a sign of breast cancer?
    Related to Axillary lymph nodes
22. Do you think a lump or thickening under your armpit could be a sign of breast cancer?
23. Do you think the pain in one of your breast or armpits could be a sign of breast cancer?

Section 3- Description of practice of Breast Cancer Screening

24. Do/Will you perform Breast Self examination (BSE)?
25. How often do you check your breasts?
    - Never
    - Atleast once every 6 months
    - Atleast once a month
    - Atleast once a week
26. Do you perform Clinical Breast Examination (CBE)
27. Do/will you perform mammogram?
28. How soon would you contact your doctor if noticed change in breast?
    - Immediately
    - Delay for a week
    - Delay for 1 month
    - Not visit/ contact doctor

Section 4- Myths about Breast Cancer

29. Do you think breast cancer isn't very common?
30. Do you think only women with a family history of breast cancer will get it?
31. Can Mammograms catch EVERY breast cancer?
32. Regular mammograms can't detect small tumors any sooner than women could find themselves (BSE)! *
33. Having a mammogram can cause breast cancer or can cause an already existing cancer to spread.
34. Women with small breasts can't get breast cancer
35. A woman can do nothing to reduce her risk of developing breast cancer.
36. Antiperspirants and deodorants cause breast cancer
37. Cell phone usage causes breast cancer.
38. Wearing an underwire bra causes cancer. *
39. Men do not get breast cancer

Section 5- Barriers to seek medical advice (Only in Presurvey)

40. Do you seek medical help, if no why?
    - Yes, I go to the doctor immediately
    - Too embarrassed to go and see the doctor
    - Too scared
    - Worried about wasting doctor's time
    - Not feeling confident talking about my symptoms with the doctor
    - Difficult to make an appointment with doctor
    - Too busy to make time to go to the doctor
    - Worrying about what the doctor might find stops me from going to the doctor

REFERENCES AND NOTES

1. Aguirre-Camacho A, Hidalgo B, González-Cuevas G. Fear of breast cancer among young Spanish women: Factor structure and psychometric properties of the Champion breast cancer fear scale. Plos one 2021; 16(4):e0249562.
2. Al Jassir MS, El Bashir BM, Moizuddin SK, Abu Nayan AA. Infant feeding in Saudi Arabia: mothers' attitudes and practices. East Mediterr Health J 2006; 12 (1-2), 6-13.

3. Al-Khamis NK. Low Awareness of Breast Cancer and Considerable Barriers to Early Presentation among Saudi Women at a Primary Care Setting. J Cancer Educ 2018; 33(2):391-397. doi: 10.1007/s13187-016-1119-x. PMID: 27722912.
4. Allohaibi A, Yousef F, Joudah G, Rajab H, Sindi I, Albaik M. Knowledge of Breast Cancer and the Practice of Breast Self-Examination in Saudi Women: An Online Survey. Asian J Pharm Res Health Care 2021;13(2):187-96.
5. Al-Mulhim FA. Knowledge and attitude towards screening mammography among 400 women in the eastern province of saudiarabia. J Family Community Med. 2001; 8(3):73-8.
6. Alrashid FF, Idris SA, Elamin AAE, Alnajib AMA, Elmisbah HOI, Hussien TMA. Perspicacity of medical students towards breast self-examination. Medical Science 2021;25(108):440-446
7. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 2002; 360(9328):187-95. doi: 10.1016/S0140-6736(02)09454-0.
8. Ditsch N, Untch M, Thill M, Müller V, Janni W, Albert US, Bauerfeind I, Blohmer J, Budach W, Dall P, Diel I. AGO recommendations for the diagnosis and treatment of patients with early breast cancer: update 2019. Breast Care 2019; 14(4):224-45. doi: 10.1159/000501000.
9. El Bcheraoui C, Basulaiman M, Wilson S, Daoud F, Tuffaha M, AlMazroa MA, Memish ZA, Al Saeedi M, Mokdad AH. Breast cancer screening in Saudi Arabia: free but almost no takers. Plos one. 2015; 10(3):e0119051. doi: 10.1371/journal.pone.0119051. Erratum in: PLoS One. 2015; 10(4):e0124850.
10. Ezzat A, Raja M, Rostom A, Zwaan F, Akhtar M, Bazarbashi S, Ingemansson S, Al-Abdulkareem A. An overview of breast cancer. Ann Saudi Med 1997; 17(1):10-5. doi: 10.5144/0256-4947.1997.10.
11. Gouse HS, Wahid SM, Garout RM, Ayub FM, Youssef MA, Gouse SM. Gynecological Complaints and Seeking Medical Help Among Female Adolescents Living in Jeddah, Saudi Arabia. Asian J Pharm Res Health Care 2021;13(3):230-7.
12. Harkness EF, Astley SM, Evans DG. Risk-based breast cancer screening strategies in women. Best Pract Res Clin Obstet Gynaecol 2020; 65:3-17.doi: 10.1016/j.bpobgyn.2019.11.005.
13. Lipscomb J, Escoffery C, Gillespie TW, Henley SJ, Smith RA, Chociemski T, Almon L, Jiang R, Sheng X, Goodman M, Ward KC. Improving screening uptake among breast cancer survivors and their first-degree relatives at elevated risk to breast cancer: Results and implications of a randomized study in the state of Georgia. Int J Environ Res Public Health 2020; 17(3):977. doi: 10.3390/ijerph17030977.
14. Ministry of Health Saudi Arabia. Breast Cancer Early Detection, 2020. https://www.moh.gov.sa/en/Ministry/Projects/breast-cancer/Pages/default.aspx.
15. Nazari SS, Mukherjee P. An overview of mammographic density and its association with breast cancer. Breast cancer 2018; 25(3):259-67. doi: 10.1007/s12282-018-0857-5.
16. Pérez-Escamilla R. Breastfeeding in the 21st century: How we can make it work. Soc Sci Med 2020; 244:112331. doi: 10.1016/j.socscimed.2019.05.036
17. Radi SM. Breast Cancer awareness among Saudi females in Jeddah. Asian Pac J Cancer Prev 2013; 14(7):4307-4312. doi: 10.7314/apjcp.2013.14.7.4307
18. Simsim MT. Internet usage and user preferences in Saudi Arabia. J King Saud Univ Eng Sci 2011; 23(2):101-7. doi: 10.1016/j.jksues.2011.03.006
19. Smith RA, Andrews KS, Brooks D, Fedewa SA, Manassaram-Baptiste D, Saslow D, Wender RC.. Cancer screening in the United States, 2019: A review of current American Cancer Society guidelines and current issues in cancer screening. CA Cancer J Clin 2019; 69(3):184-210. doi: 10.3322/caac.21557
20. White MC, Kavanaugh-Lynch MMHE, Davis-Patterson S, Buermeyer N. An Expanded Agenda for the Primary Prevention of Breast Cancer: Charting a Course for the Future. Int J Environ Res Public Health 2020; 17(3):714. doi: 10.3390/ijerph17030714.
21. Zaidi Z, Dib HA. The worldwide female breast cancer incidence and survival, 2018. Clin Cancer Res 2019; 79(13):4191. doi: 10.1158/1538-7445.AM2019-4191.