The effects of education on breast self-examination knowledge,attitude, and practice among the female employees of Birjand University

Fatemeh Haghighi[1], Seyed Mahmood Hoseini[2], Sudabeh Eshaghi[3], Ghodratollah Naseh[4], Mahmood Reza Tavakoli[5]*

Abstract

Background and Aim: Breast cancer is the most common cancer among women. Early diagnosis of breast cancer is extremely effective in its treatment. The aim of this study was to investigate the impacts of education on breast self-examination knowledge, attitude, and practice among female employees of Birjand University, Birjand, Iran.

Methods: This one-group pretest-posttest quasi-experimental study was conducted in 2012 on 89 female employees of Birjand University who agreed to participate in the study. A three-part researcher-made questionnaire was used for data collection. The first part was a demographic questionnaire containing items such as age, marital status, and education, history of common breast problems, history of breast self-examination, and history of breast cancer among first-degree relatives. The second and the third parts were related to breast self-examination knowledge (20 items) and attitude (ten items). An educational program was implemented for the participants by a pathologist. Educations were provided in a 90-minute session through presenting a lecture, distributing pamphlets, showing a video clip, and using the question-and-answer method. The knowledge and the attitude questionnaires were completed by the participants both before and two months after the study intervention. The data were analyzed by using the SPSS software (v. 15.0) and through performing the Wilcoxon, the Kruskal-Wallis, the Man-Whitney U, and the McNemar's tests. P values of less than 0.05 were considered as significant.

Results: Among 89 participating women, 81 (91%) were married. Participants' average age was 39.2±7.3 years. Compared with the pretest readings, the means of women's breast self-examination knowledge and attitude significantly increased after the intervention (P<0.001). Moreover, after the study, there was a significant difference among women with different educational status regarding the mean scores of knowledge and attitude. However, the differences among different age and gender groups were not significant. The pretest-posttest mean differences of knowledge and attitude were also not significantly related with women's other demographic characteristics

Conclusion: Based on the findings of the present study, education can be effective in improving women's knowledge and attitude about breast cancer screening methods. Consequently, running educational programs is recommended for effective prevention and prompt treatment of breast cancer.

Key Words: Breast Self-Examination; Female; Education; Knowledge; Attitude

Received: August 2, 2014 ***Accepted: July 21, 2015***

Corresponding author; Mahmood Reza Tavakoli, Instructor, Department Of Radiology, Faculty of Paramedical Sciences, Birjand University of Medical Sciences, Birjand, Iran Tel: +989151613245 E-mail: Mrmahmoud@bums.ac.ir

[1] *Associate Professor, Department of Pathology, Faculty of Medicine, Birjand University of Medical Sciences, Birjand, Iran;*

[2] *Instructor, Department of Biostatistics, Faculty of Paramedical Sciences, Birjand University of Medical Sciences, Birjand, Iran;*

[3] *MD, Birjand University of Medical Sciences, Birjand, Iran;*

[4] *Assistant Professor, Department of Surgery, Faculty of Medicine, Birjand University of Medical Sciences, Birjand, Iran;*

[5] *Instructor, Department Of Radiology, Faculty of paramedical Sciences, Birjand University of Medical Sciences, Birjand, Iran.*

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

Introduction

Cancer is the second leading cause of death worldwide (1). Breast cancer is the most common organ cancer among women, the first leading cause of death among 40–45 year-old women, and the cause of death of 19% of all women who suffer from cancer (2). Annually, more than 1.2 million new cases of cancer are diagnosed and more than 500000 patients die due to cancer (3). Breast cancer is also among the most common cancers in Asia. The incidence rate of cancer in Iran has exceeded the rate predicted by the World Health Organization and is 125 cases per 100000 persons (4).

One of the methods for effectively managing breast cancer and reducing its mortality rate is its early diagnosis. If diagnosed early, it can be treated successfully in 90% of cases. However, recovery rate is reduced to 60% in terminal breast cancers. About 96% of all breast cancer cases in Iran are diagnosed in advanced stages (5). As early diagnosis of breast cancer can be associated with better treatment outcomes and lower mortality rate, conducting screening tests is critical (6). The most important screening tests for breast cancer are respectively mammography, clinical breast exam, and breast self-examination (7).

Kashfi et al. (2012) quoted Kent (1999) as saying that breast self-examination (BSE) is a safe, private, and free self-diagnostic technique which require no screening device and if performed correctly and regularly, it can facilitate the early diagnosis and treatment of breast cancer (8). The results of a study conducted in the United States showed that screening mammography and BSE decreased the mortality rate of breast cancer by 25% (9). Mahmoodi and Ramazani et al. (2009) also quoted from the American Cancer Society which reported that a BSE screening program among women older than 40 years decreased mortality rate by 24% (10).

Because of the greater rate of BSE among women in western countries, mortality rate of breast cancer has decreased considerably in these countries (11). However, this is not true for developing countries. Moreover, women's knowledge and proficiency in the area of BSE are limited in developed countries and particularly in developing ones (12). Barriers to women's regular BSE are their fear, anxiety, as well as lack of knowledge about the importance of regular BSE and the accurate method for doing it (13).

Previous studies have shown that improving public knowledge and attitude about cancer can positively affect individuals' screening behaviors (14, 15). One way for improving women's BSE knowledge, attitude, and practice is education (8). Education not only enhances people's knowledge, but also can play a pivotal role in improving their attitude and practice.

Given the critical role of BSE in early diagnosis of breast cancer, this study was done to investigate the effects of BSE education on knowledge, attitude, and practice among female employees of Birjand University, Birjand, Iran.

Methods

This one-group pretest-posttest quasi-experimental study was conducted in 2012 on all female employees of Birjand University, Birjand, Iran, who agreed to participate in the study. After obtaining a letter of introduction from Birjand University of Medical Sciences, Birjand, Iran, we referred to Birjand University and issued an announcement for inviting the employees to the study. Accordingly, 89 women agreed to participate. The objectives of the study were explained to the participants and they were assured of the confidentiality of their information. Then, they completed the study questionnaires.

A three-part researcher-made questionnaire was used for data collection. The first part was a demographic questionnaire containing items such as age, marital status, education, history of common breast problems, history of BSE, and history of breast cancer among first-degree relatives. The second and the third parts were related to BSE knowledge (20 items)

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

and BSE attitude (ten items). Right answers to the knowledge items were scored 1 while wrong and 'I donot know' answers were scored 0. The sum of the scores was considered as the total BSE knowledge score. On the other hand, the attitude items were scored on a likert-type scale from 1 to 5, resulting in a total BSE attitude score of 10–50. The total scores of BSE knowledge and attitude were changed to a scale on which the highest possible score was 100. Scores of greater than 75, 50–75, and less than 50 were interpreted as 'Good', 'Moderate', and 'Poor'. On the other hand, history of performing BSE before and after the study intervention was considered as BSE practice. The validity of the study questionnaire was tested through undertaking content validity assessment. We used experts' comments for designing the questionnaire and determining its scoring. Moreover, items which were considered by the experts as ambiguous were removed. The reliability of the BSE knowledge questionnaire was confirmed by a Cronbach's alpha of 0.74 while the reliability of the BSE attitude questionnaire was assessed by using the test-retest method. Accordingly, 25 women were asked to complete the BSE attitude questionnaire twice with a one-week interval in between. The pretest-posttest correlation coefficient was 0.84.

The participating women were divided into four 20–25-person groups. An educational program was implemented by a pathologist for each group. The contents of educations were an overview of screening procedures, breast disorders, breast tissue, malignant disorders of the breast, and so on. Educations were provided in a 90-minute session through presenting a lecture, distributing pamphlets, showing a video clip, and using the question-and-answer method. All educations were provided by a same person. The BSE knowledge and attitude questionnaires were recompleted by the study participants two month after the intervention. Pretest questionnaires were coded and the code of each questionnaire was provided to the relevant participant. The participants were asked to keep their codes and to write them on their own posttest questionnaire.

The data were entered into the SPSS software (v. 15.0). Primarily, the Kolmogorov-Smirnov test was done to evaluate the normal distribution of the variables. As the variables were distributed non-normally, the Wilcoxon, the Kruskal-Wallis, the Man-Whitney U, and the McNemar's tests were run respectively for pretest-posttest comparison of means, comparing means based on participants' educational status and age, comparing female and male participants, and comparing participants' pretest-posttest BSE practice.

Results

Among 89 participating women, 81 ones (91%) were married. The minimum, maximum, and mean of women's age were 24, 53, and 39.2±7.3 years, respectively. Most of the participants held bachelor's degree. The other demographic characteristics of the participants are shown in Table 1.

Before the intervention, the BSE knowledge and attitude of respectively 27% and 56.2% of the participants was good. After the intervention, these values were 67.4% and 79.8%, respectively. Compared with pretest readings, the means of posttest BSE knowledge and attitude significantly increased after the intervention ($P<0.001$; Table 2).

The results of the Kruskal-Wallis test revealed that before the intervention, the means of BSE knowledge and attitude were not significantly different among women in different age groups and women with different educational status ($P>0.05$). After the study, women in different age groups also did not differ significantly from each other regarding the means of BSE knowledge and attitude ($P>0.05$). However, the differences among women with different educational status regarding these two means were statistically significant ($P<0.05$). The Mann-Whitney U test also indicated that the mean of BSE knowledge among women with master's degree or higher was greater than

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

Table 1: The demographic characteristics of the female employees of Birjand University

Variables		Frequency	%
Age	Less than 35 years	26	29.2
	35–44 years	44	49.5
	More than 44 years	19	21.3
Marital status	Married	81	91
	Single	8	9
Educational status	Associate degree or lower	19	21.3
	Bachelor's degree	54	60.7
	Master's degree or higher	16	18
History of common breast problems	Yes	5	5.6
	No	84	94.4
History of breast self-examination	Yes	32	36
	No	57	64
History of breast cancer among first-degree relatives	Yes	5	5.6
	No	84	94.4

Table 2: Comparing pretest-posttest BSE knowledge and attitude score

Variables	Measurement Time-point	Poor N (%)	Moderate N (%)	Good N (%)	Mean±Standard deviation	The results of the Wilcoxon test
Knowledge	Before	10 (11.2)	55 (61.8)	24 (27)	64.86±14.69	<0.001
	After	0 (0)	29 (32.6)	60 (67.4)	78.90±10.49	
Attitude	Before	10 (11.2)	29 (32.6)	50 (56.2)	70.84±17.94	<0.001
	After	0 (0)	18 (2.20)	71 (79.8)	80.34±8.88	

Table 3: Comparing pretest-posttest BSE knowledge and attitude scores based on participants' age, gender, education, and marital status

	Variables		Before	After	Pretest-posttest mean difference
			Mean±Standard deviation	Mean±Standard deviation	Mean±Standard deviation
Knowledge	Age:	Less than 35 years	61.73±19.13	80.96±8.31	19.23±24.54
		35–44 years	65.06±14.16	78.41±11.70	13.35±15.36
		More than 44 years	68.68±6.20	77.24±10.27	8.55±13.54
	P value for the Kruskal-Wallis test		0.71	0.39	0.21
	Education:	Associate degree or lower	60.39±17.02	69.74±11.87	9.34±19.16
		Bachelor's degree	66.85±13.50	81.06±7.97	14.21±17.14
		Master's degree or higher	63.44±15.27	82.50±10.72	19.06±21.29
	P value for the Kruskal-Wallis test		0.14	<0.001	0.06
	Marital status:	Single	45.00±23.98	78.13±15.68	33.13±35.04
		Married	66.82±11.99	78.98±9.98	12.16±15.00
	P value for the Mann-Whitney U test		0.01	0.84	0.06
Attitude	Age:	Less than 35 years	68.85±22.29	81.54±9.77	12.69±26.54
		35–44 years	70.45±17.21	79.43±8.23	8.98±18.13
		More than 44 years	74.47±12.46	80.79±9.32	6.32±13.32
	P value for the Kruskal-Wallis test			0.80	0.99
	Education:	Associate degree or lower	68.68±19.28	83.42±9.29	14.74±19.04
		Bachelor's degree	71.57±18.06	80.56±8.88	8.98±21.04
		Master's degree or higher	70.94±16.76	75.94±6.88	5.00±17.42
	P value for the Kruskal-Wallis test			0.05	0.12
	Marital status:	Single	56.88±31.84	80.63±11.16	23.75±39.8
		Married	72.22±15.61	80.31±8.71	8.09±16.78
	P value for the Mann-Whitney U test			1.00	0.70

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

Table 4: Performing BSE before and after the study intervention

History of breast self-examination		After		Total
		No	Yes	
Before	No	32 (36)	25 (28.1)	57 (64)
	Yes	6 (6.7)	26 (29.2)	32 (36)
Total		38 (42.7)	51 (57.3)	89 (100)
The McNemar's test			P<0.001	

Six women (6.7%) who had the history of performing BSE before the intervention reported that they did not perform BSE after the study. On the other hand, 25 women (28.1%) with no history of BSE reported performing it after the study intervention. The results of the McNemar's test showed that this pretest-posttest change in the number of women who performed BSE was statistically significant (P<0.001; Table 4).

Discussion

Study findings revealed that BSE knowledge of 27% and 61.8% of the participating women was respectively good and moderate. In line with this finding, Mojahed et al. (2001) reported that only 13.2% of nurses and midwifes working in hospitals located in Yazd, Iran, had deep BSE knowledge while their other participants' BSE knowledge was either moderate or limited (17). However, Freeman et al. (2000) reported that 80% of their participants had deep BSE knowledge (18). Our participants' limited BSE knowledge before implementing the intervention can be probably due to receiving no BSE education. After the study intervention, 67.4% of our participants reported having deep BSE knowledge.

The BSE attitude of 56.2% of the study participants was good while 32.6% of them had moderate attitude to BSE. Reisi et al. (2011) reported that 72.45% of their participants had positive attitude toward breast cancer and BSE (19). However, contrary to our findings, Banaeian et al. (2006) found that only 16.7% of women referring to healthcare settings had positive BSE attitude while the attitude of 67.7% and 15.6% of them was respectively moderate and negative (20).

The findings of the present study revealed that education had significant effects on BSE knowledge and attitude of the female employees of Birjand University. Also Mazloomy et al. (2006) reported that BSE education was effective in improving teachers' knowledge, attitude, and practice (21). Kashfi et al. (2009) also found that education improved women's BSE knowledge, attitude, and practice (8). Moreover, the results of a study undertaken by Shahvari and Gholizade (2006) revealed that education had significant effects on the BSE knowledge, attitude, and practice of healthcare volunteers (22). All these findings are congruent with the findings of the present study.

Tuna et al. (2014) also found online education was effective in significantly increasing women's BSE knowledge, attitude, and practice both one and six months after their intervention (23). Besides, NavvabiRigi et al. (2012) reported that BSE education by using the Health Belief Model had significant effects on teachers' BSE behavior (24). Although Tuna et al. (2014) and NavvabiRigi et al. (2012) provided their educations respectively online (23) and based on the Health Belief Model(24) and our educations were provided through presenting a lecture, distributing pamphlets, showing a video clip, and using the question-and-answer method, the results of all these three studies revealed the positive effects of education on women's BSE knowledge.

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

Katic et al. (1996) noted that BSE knowledge is essential for all women and hence, all women need to be provided with BSE-related educational programs (25). Ghodazandeh et al. (2004) also highlighted that improving public knowledge and attitude about breast cancer has a positive role in shaping women's screening behaviors and increasing the number of patient-requested clinical breast exams and mammography procedures (26).

When women have deeper knowledge about the necessity and the procedure of BSE, they perform it regularly and correctly (27). In other words, women's knowledge about breast cancer can positively affect their practice. However, different studies have shown that BSE rate is low in Iran mainly due to people's limited knowledge about it (28, 29).Thus, given the progressive increase in the rate of breast cancer as well as the late diagnosis of most breast cancers in Iran, employing effective educational and health-promoting strategies for improving people's knowledge and attitude about BSE seems crucial (30).

Conclusion

Based on the findings of the present study, education can significantly improve women's knowledge and attitude about breast cancer screening. Consequently, running educational programs is recommended for enhancing women's knowledge about breast cancer and its screening in order to facilitate its early diagnosis.

References

1. Dündar PE, Özmen D, Öztürk B, Haspolat G, Akyıldız F, Çoban S, et al. The knowledge and attitudes of breast self-examination and mammography in a group of women in a rural area in western Turkey. BMC Cancer. 2006; 6: 43.
2. Danesh A, Amiri M, Zamani A, Tazhibi M, Ganji F. [Knowledge, attitude and practice (KAP) rate of women employees of education organization about breast self-examination, Shahrekord, 1998]. Journal of Shahrekord University of Medical Sciences. 2002; 4(2): 47-52. [Persian]
3. AlizadehSiouki H, Zareban I, Rakhshani F, SHahraki Poor M, Hasanzadeh M, ShamaeianRazavi N, et al. [The effect of peer education on preventive behaviours from aids based on theory of planned behavior in high school second grade students in Zahedan-89]. Horizon Med Sci. 2013; 18(5-supplement): 232-41. [Persian]
4. Keshavarz Z, Simbar M, RamazanKhani A, AlaviMajd H. [Factors influencing the behavior of female-workers in the reproductive age regarding breast and cervical cancer screening based on the Integrated Model of Planned Behavior and Self-Efficacy: A qualitative approach]. Journal of School of Public Health and Institute of Public Health Research. 2012; 9(3): 23-36. [Persian]
5. Harirchi I, Karbakhsh M, Kashefi A, Momtahen AJ. Breast cancer in Iran: results of a multi-cancer study. Asian Pac J cancer Prev. 2004; 5(1):24-7.
6. Avci IA. Factors associated with breast self-examination practices and beliefs in female workers at a Muslim community. Eur J OncolNurs. 2008; 12(2):127-33.
7. Levy S. R.Ph.s encouraged to expand breast cancer counseling. Drug Topics. 1999; 143(12): 44.
8. Kashfi SM, KhaniJeihooni A, Yazdankhah M. The effect of education about breast self-examination on knowledge, attitude and practice of women in NourabadMamasani health clinics, 2009. Pars Journal of Medical Sciences, Journal of Jahrom University of Medical Sciences. 2012; 10(1): 40-5.
9. Bland KI, Copeland III EM. The Brest Compreinsive Management of Benign and Malignant Disorders. 4th ed. Philadelphia: Saunders; 2005.
10. Mahmoodi A, Ramazani AA. [Study of knowledge, attitude, and practice of presenting women to Zabol health centers with regard to breast self examination by Using health belief model (in 2009)]. Modern Care, Scientific Quarterly of Birjand Nursing and Midwifery Faculty. 2011; 8(2): 65-72. [Persian]
11. Parkin DM, Bray FI, Devesa SS. Cancer burden in the year 2000.The global Picture. Eur J cancer. 2001; 37 (suppl 8): S4-66.
12. HadizadehTalasaz F, Latifnezhad R. [The effect of a training curriculum on attitude of female students about breast self examination by using health belief model (HBM)]. Journal of BirjandUniverity of Medical Sciences. 2005; 12(1-2): 25-32. [Persian]
13. Petro-Nustas W. Health-related behaviors and lifestyle factors of patients with breast cancer. Cancer Nurs. 2002; 25(3): 219-29.

[Downloaded from mcj.bums.ac.ir on 2026-11-03]

14. Haji-Mahmoodi M, Montazeri A, Jarvandi S, Ebrahimi M, Haghighat S, Harirchi I. Breast self-examination: knowledge, attitudes, and practices among female health care workers in Tehran, Iran. Breast J. 2002; 8(4): 222-5.

15. Sadjadian A, Kaviani A, Yunesian M, Montazeri A. Patient satisfaction: a descriptive study of a breast care clinic in Iran. Eur J Cancer Care (Engl). 2004; 13(2): 163-8.

16. Champion V, Menon U. Predicting mammography and breast self- examination in African- American women. Cancer Nurs. 1997; 20(5): 315-22.

17. Mojahed SH, Dehghanifiroozabadi R, Dafei M. [Knowledge and practice of the nursing staff hospital in the city of Yazd about breast self examination]. Bimonthly Journal of ShahidSadoughi University of Medical Sciences and Health Services. 2001; 9(1): 82-8. [Persian]

18. Freeman AG, Scott C, Waxman A, Arcona S. What do adolescent females know about breast cancer and prevention? J PediatrAdolesc Gynecol. 2000; 13(2): 96.

19. Reisi M, Javadzadeh SH, Sharifirad G, Yarmohammadi P. [Knowledge, Attitudes and Practice of Breast Self-Examination among Female Health Workers in Isfahan, Iran]. Health System Research. 2011; 7(2): 191-9. [Persian]

20. BanaeianS,Kazemian A, Kheiri S. [Knowledge, attitude and practice about breast cancer screening and related factors among women referred to health care centers in Boroujen in 2005]. Journal of Shahrekord University of Medical Sciences. 2006; 7(4): 28-34. [Persian]

21. MazloomySS, Zare M, Feisal M, Maleki F, Servat F, Ahmadieh MH. [Effects of health education on knowledge, attitude and practice of female teachers in Yazd intermediate schools on breast cancer]. Journal of Birjand University of Medical Sciences. 2006; 13(1): 12-8. [Persian]

22. Shahvari Z, Gholizade L. [The effect of education of breast self examination on knowledge, attitude and practice of health-care volenteers in gachsaran]. Iran Journal of Nursing. 2006; 19(46): 43-52. [Persian]

23. Tuna A, Avdal EU, Yucel SC, Dal NA, Dicle A, Ozkan A, et al.Effectiveness of online education in teaching breast self- examination. Asian Pac J Cancer Prev. 2014; 15(7): 3227-31.

24. NavvabiRigiShD, Kerman Saravi F, Navidian A, Khazaiyan S, Sharaki poor M, SharakiSanavi F, et al. [The effect of teaching breast self-examination based on health belief model in teachers in Zahedan]. Medical-Surgical Nursing Journal. 2012; 1(1): 24-30. [Persian]

25. Katić M, Lang S, Budak A. Evaluation of the general practice program of women education for breast self-examination. Acta Med Croatica. 1996; 50(4-5): 185-91.

26. Ghodazandeh G, Khani H, Khalilian AR,Atarod Z, Montazeri A, Firozjaee MA,et al. Knowledge and practice related to breast cancer prevention in Iranian female population, multi-center study in 2004. Research Journal of Biological Sciences. 2008; 3(3): 282-9.

27. Montazeri A, Vahdaninia M, Harirchi I, Harirchi AM, Sajadian A, Khaleghi F, et al. Breast cancer in Iran: need for greater women awareness of warning signs and effective screening methods. Asia Pac Fam Med. 2008; 7(1): 6.

28. Yavari P, Pourhoseingholi MA. Socioeconomic factors associationwith knowledge and practice of breast self-examination among Iranian women. Asian Pac J Cancer Prev. 2007; 8(4): 618-22.

29. Heidari Z, Mahmoudzadeh-Sagheb HR, Sakhavar N. Breast Cancer Screening Knowledge and Practice among Women in Southeast of Iran. Acta Med Iran. 2008; 46(4): 321-8.

30. Azaiza F, Cohen M. Health belief and rates of breast cancer screening among Arab women. J Womens Health (Larchrmt). 2006; 15(5): 520-30.

[Downloaded from mcj.bums.ac.ir on 2026-11-03]