

Investigation of the Knowledge and Behaviors of Pregnant Women on Early Diagnosis Methods of Breast Cancer and Risk Factors

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ABSTRACT

Objective: To investigate the knowledge and behaviors of pregnant women about early diagnosis methods of breast cancer.

Methods: The study has a descriptive, cross-sectional design. Data collection was performed by using a questionnaire created by the researcher in light of the literature. Data were collected in a state hospital between October and December in 2018. The study population included all pregnant women presenting to the study hospital and experiencing their second and third trimesters at the time of data collection. The study sample involved 194 pregnant women accepting to participate in the study.

Results: Age at the first pregnancy was 30 years or older in 4.5% of the women, 13.6% of the women was nulliparous and 8.8% of the women had a familial history of breast cancer. Thirty-two-point five percent of the women heard about breast self-examination and 61.3% of the women performed breast self-examination before their pregnancy. During their pregnancies, 74.7% of the women did not perform breast self-examination and 95.9% of the women did not have clinical breast examinations.

Conclusion: Evaluation of risk factors and performing clinical breast examination and ultrasound in the first prenatal follow-up visit will help to make early diagnosis of breast cancer. Pregnant women should be informed about breast self-examination to raise their awareness about pregnancy-associated breast cancer.

Keywords: Breast cancer, pregnancy, risk factor, early diagnosis

1. INTRODUCTION

Pregnancy-associated breast cancer involves breast cancer emerging in pregnancy, in postpartum one year or at any time during lactation (1,2). Although pregnancy-associated breast cancer is rare, it is the most frequent cancer appearing during pregnancy (3). Duranni et al. reported that it has an incidence of one in 3000 pregnant women and can reach up to 3% (1). American Cancer Society (ACS) categorized risk factors of breast cancer into four: unchangeable risk factors, lifestyle-related risk factors, uncertain risk factors and unproven risk factors. Unchangeable risk factors are the female gender, advanced age, history of breast cancer, breast tissue density, benign breast diseases, early menarche, late menopause and receiving radiation to breasts. Lifestyle-related risk factors are alcohol intake, obesity or being overweight, lack of physical activity, not having children, not breastfeeding, contraceptives, hormone replacement therapy after menopause and breast implants. Uncertain risk factors are diet, vitamin intake, chemicals in the environment, smoking and working at night. Unproven risk factors are antiperspirants, wearing bras and induced abortion (4).

Personal characteristics of women, family history, breast cancer gene mutation and the number of deliveries in addition to age play an important role in development of breast cancer in pregnancy (5,6). At present, women tend to postpone becoming pregnant due to their work life and personal choices. Many women become pregnant when they are in their thirties and forties and this increases the incidence of breast cancer (7). The median age of pregnancy-associated breast cancer has been reported to be 33 years (8). For these reasons, it is predicted that the incidence of breast cancer increases in pregnant women and that pregnancy-associated breast cancer becomes an important problem (7,9).

It can be difficult to diagnose breast cancer in pregnancy. It may be that physiological changes in breast tissue during pregnancy are considered as normal and that women are unable to discriminate abnormal masses from normal tissue (10,11). Diagnosis of breast lumps can be considerably delayed in pregnant women compared to unpregnant women. Pregnant women can consider physiological changes in their breasts as pregnancy-associated benign

changes (12). An increase in density and firmness of breast tissue is another factor preventing recognition of breast masses (10,13). Pregnancy-associated breast cancer is most frequently diagnosed with palpation of masses. Therefore, it is recommended to perform a clinical breast examination (11,14). It is suggested that this examination should be carried out in the first prenatal visit in the first trimester (2). Although breast self-examination (BSE) does not help to make a differential diagnosis, it causes women to recognize changes earlier and see their doctors (10,11). In summary, so that pregnancy-associated breast cancer can be diagnosed earlier, clinical breast examination (CBE) and ultrasonography should be carried out in the first prenatal visit. In addition, women’s awareness should be raised about performing BSE during pregnancy and lactation. These attempts can allow early diagnosis and treatment of pregnancy-associated breast cancer (15). There have not been any studies directed towards examining the knowledge and behavior about early diagnosis methods. Therefore, the aim of this study was to investigate the knowledge and behaviors of pregnant women about early diagnosis methods of breast cancer.

Research Questions

1. What are the risk factors of breast cancer in pregnant women?
2. What is the knowledge and behavior of pregnant women about early detection methods of pregnancy-associated breast cancer?

2. METHODS

2.1. Participants

The study is descriptive and cross-sectional and was conducted in a state hospital in a city located in Central Anatolia Region. Data were collected between October and December in 2018. The study population comprised of the pregnant women presenting to the gynecological and obstetric outpatient clinic of the hospital and experiencing the second and third trimesters at the time of data collection. The study sample involved 194 pregnant women volunteering to participate in the study.

Inclusion criteria were being pregnant, experiencing the second or third trimester and not being diagnosed with breast cancer before (2).

2.2. Data Collection and Instruments

A questionnaire prepared by the researcher in light of the literature was utilized to collect data (4,9,16).

The questionnaire was composed of four questions about socio-demographic features (age, occupation, education and income), 12 questions about risk factors of breast cancer (age at the first pregnancy, working at night, alcohol intake, smoking, age at menarche, breastfeeding, duration of breastfeeding, familial history of breast cancer, having children and benign breast diseases), six questions about

information and behavior concerning early diagnosis of breast cancer before pregnancy (four questions about BSE and two questions about ultrasonography and mammography) and seven questions about knowledge and behavior of women regarding early diagnosis methods of breast cancer during pregnancy. After the pregnant women were informed about the study, those accepting to participate in the study were asked the questions in the questionnaire and data were collected by the researchers. It took about ten minutes to fill in the questionnaire.

2.3. Data Analysis

Data were analyzed with Statistical Package Program for Social Sciences 22 by using numbers, percentages, mean, standard deviation (SD) and minimum and maximum values.

2.4. Ethical Considerations

Ethical approval was obtained from the ethical committee of Çankırı Karatekin University (Approval number: 2018/47). Written permission was taken from the administration of the state hospital where the study was carried out. The participants were assured that the obtained data would be used for scientific purposes and published, and their oral consent was obtained in accordance with the Declaration of Helsinki.

3. RESULTS

3.1. Participants’ Characteristics

The mean±SD age of the women included in the study was 27.31±0.41 years (range: 18-42 years), 35.1% of the women were secondary school graduates, 16.5% of the women were university graduates and 79.4% of the women were housewives. Sixty-eight-point six percent of the women had an income equal to their expenses (Table 1).

Table 1. Socio-Demographic Features of the Pregnant Women (n=194)

Socio-demographic features	X±SD	Range
Age	27.31±0.41	18-42
	n	(%)
Education		
Primary school	38	(19.6)
Secondary school	68	(35.1)
High school	56	(28.8)
University	32	(16.5)
Occupation		
Housewife	154	(79.4)
Worker	12	(6.2)
Government officials	8	(10.3)
Having one’s own business	20	(4.1)
Income		
Income lower than expenses	17	(8.8)
Income equal to expenses	133	(68.5)
Income higher than expenses	44	(22.7)
Total	194	(100)

X±SD: mean±standard deviation

3.2. Risk Factors for Breast Cancer

Age at the first pregnancy was 29 years and lower in 95.5% of the women. Eighty-four-point three percent of the women had 1-3 deliveries. Age at menarche was 12 years or higher in 94.3% of the women. Ninety-six-point seven percent of the women breastfed their babies after their previous deliveries, 76.1% of the women fed their babies exclusively with breastmilk for six months and 51.3% of the women breastfed their babies until their babies were at least two years old. Seventeen-point five percent of the women had night shifts at their workplaces, 10.8% of the women were smokers and 8.8% of the women had a family history of breast cancer (mother and aunt etc.). Seven-point seven percent of the women had breast problems before pregnancy and 53.4% of these women had fibroadenoma (Table 2).

Table 2. Risk Factors for Breast Cancer

Risk factors	n	(%)
Age at the first pregnancy		
29 years old or younger	185	(95.5)
30 years old or older	8	(4.5)
Number of deliveries (n=140)		
0	19	(13.6)
1-3	118	(84.3)
4 or more	3	(2.1)
Age at menarche		
12 years old or older	183	(94.3)
11 years old or younger	11	(5.7)
Breastfeeding status after previous deliveries (n=121)		
Yes	117	(96.7)
No	4	(3.3)
Duration of exclusive breastfeeding (n=117)		
Minimum six months	86	(76.1)
Shorter than six months	28	(23.9)
Total duration of breastfeeding (n=117)		
2 years or longer	60	(51.3)
Shorter than 2 years	57	(48.7)
Familial history of breast cancer (mother, aunt, etc.)		
Yes	17	(8.8)
No	177	(91.2)
Smoking		
Yes	21	(10.8)
No	173	(89.2)
Alcohol intake		
Yes	0	(0)
No	194	(100)
Night shifts at work		
Yes	7	(17.5)
No	33	(82.5)
Benign breast diseases before pregnancy		
Yes	15	(7.7)
No	179	(92.3)
Diagnosis of the breast conditions (n=15)		
Lipoma	2	(13.3)
Hormonal changes	2	(13.3)
Fibroadenoma	8	(53.4)
Mastitis	3	(20.0)
Total	194	(100)

3.3. Knowledge and Behavior of Women Regarding Early Diagnosis Methods of Breast Cancer

Sixty-seven-point five percent of the women had heard about BSE before. Thirty-eight point seven percent of the women performed BSE before pregnancy and 26.7% of these women performed the examination regularly. The most frequent three signs of breast cancer evaluated during BSE were masses (97.7%), depression in the nipples (19.8%) and blood and clear fluid oozing from the nipples (19.8%). Twelve-point nine percent and 3.6% of the women had breast ultrasonography and mammography before pregnancy respectively (Table 3).

Table 3. Knowledge and Behavior of Women Regarding Early Diagnosis Methods of Breast Cancer Before Pregnancy-1

Features	n	%
Hearing about BSE		
Yes	131	(67.5)
No	63	(32.5)
Performing BSE before pregnancy		
Yes	75	(38.7)
No	119	(61.3)
Frequency of performing BSE before pregnancy (n=75)		
Regularly every month	20	(26.7)
Not regularly	55	(73.3)
Signs of breast cancer evaluated during BSE (n=86)*		
Mass	84	(97.7)
Depression in the nipples	17	(19.8)
Pits in the breasts	11	(12.8)
Blood and clear fluid oozing from the nipples	17	(19.8)
Wounds on the breasts	15	(17.4)
Orange peel appearance	14	(16.3)
Pain	9	(10.5)
Having breast ultrasonography before pregnancy		
Yes	25	(12.9)
No	169	(87.1)
Having mammography before pregnancy		
Yes	7	(3.6)
No	187	(96.4)
Total	194	(100)

*Women signed multiple options; BSE: Breast Self-Examination

Twenty-five-point three percent of the women performed BSE during pregnancy and 32.7% of these women performed it regularly every month. Four-point one percent of the women had a health professional (doctors, midwives and nurses) perform their breast examination during pregnancy. All the women had this examination in their first trimester. Seven-point seven percent of the women felt anxious about changes in their breasts and 60% of these women were referred to a health professional due to these changes. All the women who were referred to a health professional due to breast problems thought that these were normal conditions resulting from pregnancy (Table 4).

Table 4. Knowledge and Behavior of Women Regarding Early Diagnosis Methods of Breast Cancer During Pregnancy-2

Features	n	%
Performing BSE during pregnancy		
Yes	49	(25.3)
No	145	(74.7)
Frequency of performing BSE during pregnancy (n=49)		
Regularly every month	16	(32.7)
Not regularly	33	(67.3)
Having a clinical breast examination by health professionals (doctors, midwives and nurses)		
Yes	186	(95.9)
No		
Feeling anxious about changes in breasts during pregnancy		
Yes	15	(7.7)
No	179	(92.3)
Breast conditions causing anxiety (n=15)		
Excess enlargement of one or two breasts	5	(33.4)
Mass and discharge in the breasts	5	(33.4)
Changes in color of the breast skin	2	(13.2)
Pain	3	(20.0)
Seeing a health professional for breast problems (n=15)		
Yes	9	(60.0)
No	6	(40.0)
Having breast ultrasonography during pregnancy		
Yes	194	(100)
No		(0)
Total		

BSE: Breast Self-Examination

4. DISCUSSION

4.1. Risk Factors

Knowledge about risk factors for breast cancer appearing in pregnancy or the postpartum period is limited (16). In the present study, the pregnant women were evaluated in terms of unchangeable risk factors (family history, benign breast diseases and early menarche). Women having menarche before the age of 12 years have a higher risk of breast cancer since they are exposed to more estrogen and progesterone during their life. Breast cancer in one first-degree relative (mother, aunt or sister) increases the risk of breast cancer by about twofold, breast cancer in two first-degree relatives increases the risk by about threefold and both typical and atypical proliferative lesions also raise the risk (4,17). In the current study, 8.8% of the women had a familial history of breast cancer, 7.7% of the women had benign breast diseases and 5.7% of the women had menarche at or before the age of 11 years. These findings suggest that the women were at a low risk of breast cancer. Hou et al. reported that of all the women having breast cancer in pregnancy or postpartum two years, 5.9% had a familial history of breast cancer, 7.2% had benign breast diseases and 29.7% had menarche at the ages of 11-14 years (16).

In the current study, the women were also evaluated in terms of lifestyle-related risk factors (age at the first pregnancy, number of deliveries, duration of breastfeeding and alcohol intake) (4). In women giving birth after the age of 30 years or not giving birth at all, the risk of breast cancer rises to some extent (4). Accumulated evidence shows that prolonged breastfeeding reduces the risk of breast cancer. In a review of 47 epidemiological studies from 30 countries, breastfeeding was reported to cause a considerable decrease in the risk of breast cancer (18). In a meta-analysis, the breast cancer risk was found to decrease in breastfeeding women compared to those not breastfeeding at all and in women with prolonged breastfeeding compared to those breastfeeding for a short period. It has been emphasized that prolonged breastfeeding is necessary to reduce the breast cancer risk (17). The risk has been reported to increase slightly in women taking one glass of alcohol every day as compared with those not taking alcohol at all. Additionally, it increases by 20% in women taking 2-3 glasses of alcohol daily in comparison to those not taking alcohol (4).

In the present study, 4.5% of the women were aged 30 years or older, 13.6% of the women did not give birth before, 3.3% of the women did not breastfeed and 51.3% of the women breastfed until their children were two years old or older and did not have the habit of alcohol intake. These findings may suggest that the women had a low lifestyle-related risk. Başaran et al. found in their study on 20 women with pregnancy-associated breast cancer that the mean age of the women was 36 years and ranged between 28 and 43 years (19). In the current study, the women were aged between 18 and 42 years and 4.5% of the women had their first pregnancy at or over the age of 30 years, which are consistent with the literature. In a study by Hou et al., 6% of the women with breast cancer appearing in pregnancy or postpartum two years had the habit of alcohol intake (16). The fact that the women included in the present study did not take alcohol before their pregnancy can be considered as a factor reducing their breast cancer risk.

In the current study, in addition to unchangeable and lifestyle-related risk factors, uncertain risk factors (smoking and working at night) were evaluated. It has been stated in a meta-analysis that the breast cancer risk rises in smoking women and is much higher in women starting to smoke before their first pregnancy (20). Several studies have shown that women working in night shifts including nurses have an increased risk of breast cancer. In a review of 21 studies and five meta-analyses, the breast cancer risk could not be clearly shown in women working in night shifts for less than 20 years. In a meta-analysis of 15 studies, a weak relation was found between the risk of breast cancer and working in night shifts (4,21,22). In the current study, 10.8% of the women said that they smoked before and during pregnancy and only 17.5% of the employed women had night shifts. It can be suggested that the women had a low risk of uncertain factors.

4.2. Knowledge and Behavior Regarding Early Diagnosis Methods of Breast Cancer

Even though ACS does not recommend performing BSE every month, it suggests that all women should get to know how their breasts look and feel and refer to a doctor when they recognize a change (23). There have been studies showing that most of the breast cancer cases are detected by women themselves and that breast cancer is diagnosed in its early stages in women performing BSE (24-26). In the present study, 32.5% of the women heard about BSE and 38.7% of the women performed BSE before their pregnancies and 26.7% of the women performing BSE before pregnancy did it regularly. These findings demonstrated that the women had insufficient knowledge about BSE and did not have very positive attitudes towards it, which is congruent with the literature (27-29). Bellgam and Buowari found that 16.06% of the women heard about BSE and that 28.94% of the women performed it. It is stated in the literature that BSE is effective in early diagnosis of breast cancer (30). However, when socio-economic conditions in developing countries with low-moderate incomes including Turkey are taken into account, it becomes clear that BSE is a mandatory and inevitable practice (31). In view of the results of the present study, it can be recommended that health professionals should offer education about BSE individually or in groups in the antenatal period. In addition, people should be provided information about and made aware of it through traditional media and social media.

Even if BSE does not help to make a differential diagnosis, it is important for women to recognize changes in their breasts earlier and to see a doctor (10,11). Women should be informed about performing BSE in pregnancy and lactation (32). The present study revealed that 74.7% of the women did not perform BSE in pregnancy and that 95.9% of the women did not have a CBE by a health professional. Pregnancy-associated breast cancer is usually diagnosed as a painless mass while pregnant women perform a BSE or while health professionals perform a CBE (12). Therefore, it is recommended to perform breast examinations in the first step to detect breast cancer (14). It has been stated in case studies that pregnancy-associated breast cancer is diagnosed when patients detect a mass and refer to a doctor (11,15). For this reason, it is important to carry out BSE in pregnancy and lactation.

It is suggested that every pregnant woman should have a CBE and breast ultrasonography to decrease the frequency of pregnancy-associated breast cancer. In addition, it is necessary to increase women's awareness about performing BSE in pregnancy and lactation (15). In the current study, 4.1% of the women had a CBE in the first trimester. This low percentage suggested that health professionals and pregnant women should be informed about the issue. There may be considerable delays in the diagnosis of breast lumps in pregnant women just like in nonpregnant women. Pregnant women may consider changes in their breasts as benign changes likely to appear in pregnancy (12). Labidi et al. in

their study with pregnant and nonpregnant women found a 7-month delay in the diagnosis of pregnancy-associated breast cancer (33). Raising awareness of pregnancy-associated breast cancer can facilitate the diagnosis of this disease and contribute to improvement of breast health outcomes (12).

5. CONCLUSION

Although breast cancer rarely appears in pregnancy, the number of pregnancy-associated breast cancer cases is expected to rise in the future since women prefer to become pregnant in later years of their lives due to their personal and occupational choices. When this is taken into consideration, women's knowledge and awareness about performing BSE in pregnancy and lactation should be raised. They should know how their breasts look and feel and see a doctor if they observe a change, and they should be recommended to perform BSE. It can also be suggested that all pregnant women should have a CBE and breast ultrasound in their first prenatal follow-up. This can help diagnose breast cancer earlier and prevent delays in its treatment.

Nurses should offer education about BSE in the first prenatal follow-up so that pregnant women can be informed and so that their awareness about breast cancer can be increased. Inservice training programs should be provided for obstetricians so that they can become more sensitive to encourage pregnant women to have a CBE and breast ultrasound in the first trimester.

Limitations of the Study

As the study was conducted in a state hospital in a city in Middle Anatolia in Turkey, its results cannot be generalized to the whole population. The study is also restricted with the dates when it was performed, the data collection tool developed in accordance with the aim of the study and the responses given by the participants to the questions in the data collection tool.

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REFERENCES

- [1] Duranni S, Akbar S, Heena H. Breast cancer during pregnancy. *Cureus* 2018; 10(7):2-12.
- [2] Vinatier E, Merlot B, Poncellet E, Collinet P, Vinatier D. Breast cancer during pregnancy. *Eur J Obstet Gynecol Reprod Biol* 2009; 147:9-14.
- [3] Canadian Cancer Society (2019). Available from <http://www.cancer.ca/en/cancer-information/diagnosis-and-treatment/cancer-during-pregnancy/?region=ab>. Access date: 5 September 2019.

- [4] American Cancer Society (ACS) (2019). Available from <https://www.cancer.org/cancer/breast-cancer/risk-and-prevention.html>. Access date: 5 September 2019.
- [5] Eedarapalli P, Jain S. Breast cancer in pregnancy. *Journal of Obstetrics and Gynaecology* 2009; 26:1-4.
- [6] Lyons TR, Schedin PJ, Borges VF. Pregnancy and breast cancer: when they collide. *J Mammary Gland Biol Neoplasia* 2009; 14:87-98.
- [7] Reed W, Hannisdal E, Skovlund E, Thoresen S, Lilleng P, Nesland JM. Pregnancy and breast cancer: a population- based study. *Virchows Arch* 2003; 443:44-50.
- [8] Atalay C. Rare cases of breast cancer. Aydın S, Akça T, editors. *Breast cancer at all points*. Adana, Nobel Kitabevi; 2011. (In Turkish).
- [9] Erol F, Bilik Ö. The other side of the coin: facing breast cancer while hoping to be a mother. *J Breast Health* 2014; 10: 15-22. (In Turkish).
- [10] Ayyappan AP, Sulkarni S, Crystal P. Pregnancy-associated breast cancer: spectrum of imaging appearances. *Br J Radiol* 2010; 83:529-534.
- [11] Keyser EA, Staat BC, Fausett MB, Shield AD. Pregnancy-associated breast cancer. *Rev Obstet Gynecol* 2012; 5(2):94-99.
- [12] Ulery M, Carter L, McFarlin BL, Giurgescu C. Pregnancy-associated breast cancer: significance of early detection. *J Midwifery Women's Health* 2009; 54:357-363.
- [13] Rovera F, Frattini F, Coglitore A, Marelli M, Rausei S, Dionigi G, Boni L, Dionigi R. Breast cancer in pregnancy. *Breast J* 2010; 16:22-25.
- [14] Kulshrestha M. Pregnancy-associated breast cancer. *J S Asian Fed of Obstet Gynecol* 2011; 3: 1-5.
- [15] Akgün FS, Sezgin G, Kaya FÖ, Deveci U, Yener AN, Çelik A, Manukyan MN, Türken O. Pregnancy and breast cancer: case report. *Maltepe Medical Journal* 2014; 6(2):1-3 (In Turkish).
- [16] Hou N, Ogundiran T, Ojengbede O, Morhason-Bello I, Zheng Y, Fackenthal J, Adebamowo C, Anetor I, Akinleye S, Olopade OI, Huo D. Risk factors pregnancy-associated breast cancer: a report from the Nigerian breast cancer study. *Ann Epidemiol* 2013; 23(9):551-557.
- [17] Zhou Y, Chen J, Li Q, Huang W, Lan H, Jiang H. Association between breastfeeding and breast cancer risk: evidence from a meta-analysis. *Breastfeed Med* 2015; 10(3):175-182.
- [18] 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):187-195.
- [19] Basaran D, Turgal M, Beksac K, Ozyuncu O, Aran O, Beksac MS. Pregnancy-associated breast cancer: clinicopathological characteristics of 20 cases with a focus on identifiable causes of diagnostic delay. *Breast Care* 2014; 9:335-359.
- [20] Gaudet MM, Gapstur SM, Sun J, Diver WR, Hannan LM, Thun MJ. Active smoking and breast cancer risk: Original cohort data and meta-analysis. *J Natl Cancer Inst* 2013; 105(8): 515-525.
- [21] Lee HE, Lee J, Jang TW, Kim IA, Park J, Song J. The relationship between night work breast cancer. *Ann Occup Environ Med* 2018; 30(11):2-7.
- [22] Kamdar BB, Tergas AI, Mateen FJ, Bhayani NH, Oh J. Night-shift work and risk of breast cancer: a systematic review and meta-analysis. *Breast Cancer Res Treat* 2013; 138: 291-301.
- [23] Breast cancer facts & figures. (2017-2018). Available from <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/breast-cancer-facts-and-figures-2017-2018.pdf>.
- [24] Epstein SS, Bertell R, Seaman B. Dangers and unreliability of mammography: breast examination is a safe, effective, and practical alternative. *Int J Health Serv* 2001; 31(3): 605-615.
- [25] Epstein RJ. Breast self-examination. breast self-examination provides entry strategy. *BMJ* 2003; 326 (7391): 710-711.
- [26] Lechner L, De Nooijer J, De Vries H. Breast self-examination: longitudinal predictors of intention and subsequent behavior. *Eur J Cancer Prev* 2004; 13(5):369-376.
- [27] Doshi D, Reddy BS, Kulkarni S, Karunakar P. Breast Self-examination: Knowledge, Attitude, and Practice among Female Dental Students in Hyderabad City, India. *Indian J Palliat Care* 2012; 18(1):68-73.
- [28] Sideeq K, Ayoub T, Khan SMS. Breast self-examination: assessing its knowledge attitude and practice among ethnic Kashmiri females. *Int J Community Med Public Health* 2017; 4(9): 3288-3292.
- [29] Yerpude PN, Jogdand KS. Knowledge and practice of breast self-examination (BSE) among females in a rural area of South India. *Natl J Community Med* 2013; 4(2):329-332.
- [30] Bellgam HI, Buowari YD. Knowledge, attitude and practice of breast self-examination among women in rivers state, Nigeria. *The Nigerian Health Journal* 2012; 12(1):16-18.
- [31] Akyolcu N, Uğraş GA. Breast self-examination: how important is it in early diagnosis? *J Breast Health* 2011; 7(1): 10-14. (In Turkish).
- [32] Helewa M, Levesque P, Provencher D, Lea RH, Rosolowich V, Shapiro HM. Breast cancer, pregnancy and breastfeeding. *J Obstet Gynaecol Can* 2002; 24: 164-180.
- [33] Labidi SI, Mrad K, Mezlini A, Ouarda MA, Combes JD, Ben Abdallah M, Ben Romdhane K, Viens P, Ben Ayed F. Inflammatory breast cancer in Tunisia in the era of multimodality therapy. *Ann Oncol* 2008; 19:473-480.

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