Northwestern Med J.2021;1(1):20-6
doi: 10.5222/NWMJ.2021.35220

Original Article

Women's Awareness Level on Breast Self-Examination

Kadınların Kendi Kendine Meme Muayenesi Yapması ile İlgili Farkındalık Düzeyi

Nurcan Akbaş Güneş, Cenk Aypak, Çağla Ozdemir, Suleyman Gorpelioglu

Cite as: Güneş NA, Aypak C, Ozdemir Ç, Gorpelioglu S. Women's awareness level on breast self-examination. Northwestern Med J. 2021;1(1):20-6.

ABSTRACT

Objective: The aim of this study was to investigate the level of awareness, regarding the importance of breast self examination (BSE), clinical breast examination (CBE) and mammography, and the effects of education on these issues among patients who applied to family medicine outpatient clinic for follow-up or treatment purposes.
Method: This study was done by establishing a questionnaire form, after review of necessary litetarure, to be applied in patients who applied for follow-up or treatment in a district polyclinic affiliated to the department of family medicine of a tertiary care center in Ankara.
Results: A total of 434 women aged between 18-56 years participated in the study. The mean age of the participants was 36.62±9,21 years. Although 258 (59.4%) of the participants reported that they performed BSE. 176 participants (40.6%) stated that they did not perform a BSE. The 38.2% of the participants have undergone a CBE and the 24 % of women expressed that they underwent a mammography.The frequency of BSE, CBE and undergoing mammography has been shown to increase significantly as education level increases. The rates of having a CBE and a mammography were also found to be statistically significantly higher in patients who had a family member with breast cancer.
Conclusion: Our results demonstrated that the level of education was important for awareness on the early diagnosis of breast cancer. Thanks to efforts to increase educational level, we can get promising achievements regarding the awareness of both BSE, CBE and mammography performances.

Keywords: breast self examination, clinical breast examination, breast cancer

ÖZ

Amaç: Aile Hekimliği polikliniğine takip veya tedavi amaçlı başvuran hastalarda kendi kendine meme muayenesi (KKMM), klinik meme muayenesi (KMM) ve mamografinin önemi ile ilgili farkındalık düzeyinin ve eğitim seviyesinin bu konulardaki etkilerinin araştırılması amaçlanmıştır.
Yöntem: Bu çalışma, Ankara'da bulunan 3. basamak bir hastanenin Aile hekimliği kliniğine bağlı bir semt polikliniğine takip veya tedavi amaçlı başvuran hastalarda, gerekli literatür taraması yapıldıktan sonra bir anket formu oluşturularak yapıldı.
Bulgular: Çalışmamıza 18-56 yaş aralığında toplam 434 kadın katılmıştır. Katılımcıların yaş ortalaması 36,62±9,21 idi. Katılımcıların 258'i (%59,4) KKMM yaptığını belirtmesine rağmen, 176 katılımcı (%40,6) bu muayeneyi hiç yapmadığını belirtmiştir. Katılımcıların %38,2'si KMM yaptırmış olup, mamografi çektirenlerin oranı ise %24 olarak bulunmuştur. Eğitim düzeyi arttıkça KKMM yapma, KMM yaptırma ve mamografi çektirme oranlarının istatistiksel olarak anlamlı derecede arttığı gösterilmiştir. Ailesinde meme kanseri olanlarda da KKMM yapma, KMM yaptırma ve mamografi çektirme oranlarında istatistiksel olarak anlamlı düzeylerde artış tespit edilmiştir.
Sonuç: Biz yaptığımız bu çalışma ile eğitim seviyesinin meme kanserinin erken teşhisi konusundaki farkındalık üzerinde ne kadar önemli olduğunu ortaya koymuş olduk. Eğitim seviyesini artırmaya yönelik yapılacak çalışmalarla hem KKMM, hem KMM, hem de mamografi çektirme oranlarında yüz güldürücü sonuçlar elde edebiliriz.

Anahtar kelimeler: kendi kendine meme muayenesi, klinik meme muayenesi, meme kanseri

Received: 18.02.2021
Accepted: 30.03.2021
Publication date: 20.04.2021

Corresponding Author:
Nurcan Akbaş Güneş
Bolu Abant İzzet Baysal University, Faculty of Medicine, Department of Family Medicine, Turkey
drnurcangunes@yahoo.com
ORCID: 0000-0001-8688-5839

C. Aypak 0000-0002-8381-790X
S. Gorrpelioglu 0000-0003-4579-5970
Ankara Dışkapı Yıldırım Beyazıt Training and Research Hospital, Department of Family Medicine, Turkey

Ç. Ozdemir 0000-0002-9766-1918
Kütahya Public Health Center, Turkey

INTRODUCTION

Although there has not been a serious increase in the incidence of breast cancer in our country within the last five years, it is still the most common type of cancer affecting 20% of female population, and responsible of 19.7% of all cancer-related deaths. Breast cancer ranks first among causes of cancer-related mortality in women (1). Patients with cancer, a difficult process awaits both the individual and the family, both financially and morally. The financial burden of these diseases, which is increasing in frequency, on the economies of the country cannot be underestimated (2). In the light of all these issues, screening programs have been developed for early diagnosis and treatment of breast cancer. Screening programs for early diagnosis of breast cancer increase survival rates, and reduce treatment costs (3).

It is known that treatment options increase, when breast cancer, which has become a fearful dream of women, is detected at an early stage (4). If be detected late, it causes an increase in advanced stage breast cancer cases and breast loss. This situation not only causes mental health disorders in women, but also serious social and family problems (5).

Breast self-examination (BSE), which is performed regularly after the age of 20, is recommended, in low and middle-income countries, because it is applicable, does not require an invasive procedure, and inexpensive. Especially in regions where access to health institutions is difficult, BSE gains importance as there is no need for a healthcare professional. A clinical breast examination (CBE) performed annually is recommended for women aged 40 and over. In addition, early diagnosis can be made with the first mammography after the age of 40 and regular control mammographies performed between the ages of 50-69 (6,7).

Although mammography is more effective in early detection of breast cancer, after 13 and 25 years of follow-up with CBE and mammography, it has been shown that mortality rates due to breast cancer are comparable in both methods. In addition, it has been reported that its sensitivity and specificity are 54%, and 94%, respectively. Mammography, that can detect asymptomatic, early-stage breast cancer easily has 84.4% sensitivity and 90.8% specificity (4).

Awareness of breast cancer is very important for early diagnosis and timely treatment. Increasing public awareness about early detection and screening methods, especially in high-risk individuals, can reduce breast cancer-related mortality rates (5).

Many studies have been conducted regarding screening and early detection methods for breast cancer in many different countries, and even in different regions of our country. (6-9). Different results could be obtained even in the same province and in different districts of the same province because of differences in educational, and socioeconomic levels of the residents. In this study, we aimed to determine the awareness level of women about BSE, CBE and mammography, who applied to a district polyclinic of a tertiary care center in Ankara for follow-up or treatment purposes, and especially to determine the relationship between educational status and level of awareness in the participants.

Materials and Methods

Ethics committee approval was first obtained for the study (10.09.2018 54/12). Our survey was a descriptive, cross-sectional study. Female patients between the ages of 18-56 who applied to the family medicine outpatient clinic for any reason and who agreed to participate in the study were included in our study. Our study was conducted with a total of 434 participants. However, women who did not agree to participate in our study and had a history of breast cancer were excluded from the study.

The data were evaluated with a questionnaire form created after the review of necessary literature (7,8). The data were collected by face-to-face interviews and by filling out questionnaire forms by the study participants. Women who agreed to participate in the study were informed about the

time they would spend and the benefits to be gained by participating in this study, and their consents were obtained.

In our questionnaire form, there are questions about the age and educational level of the participants , their information source for BSE, whether they have performed BSE, and if not, why not? whether they have had CBE , and/or a mammogram before, and the family history of breast cancer. In our study, Cronbach alpha reliability analysis was performed and its value was found to be 0.720. Our survey was concluded to be moderately reliable.

In statistical evaluation; descriptive statistical data were given as mean ± standard deviation. Chi-square test and t- test were used for comparison between groups. In all analyzes, $p<0.05$ was considered significant in terms of statistical significance.

RESULTS

A total of 434 women between the ages of 18-56 participated in our study. The mean age of the participants was found 36.62±9.21 years. The education levels of the participants were as follows; illiterate (n=34: 7.8%), primary school graduates (n=272: 62.7%), high school graduates (n=104: 24%), and university graduates (n=24: 5%).

Most (n=396: 91.2%) of the study participants were housewives, only 8.8% (n=38) of them were employed, 80.6% (n=350) of them heard, but 19.4% (n=84) of them had never heard about BSE.

The information sources of the participants about BSE were media-television-newspapers (56.6%), physicians (29.1%), their friends (9.1%), and brochures (5.2%).

Majority (n=258:59.4%) of the participants stated that they had performed BSE, while 176 participants (40.6%) indicated that they had not performed this examination at all. When we asked the reason of not doing BSE before, 84 (47.7%) women stated that they did not perform this examination because they had not heard about it. Ninety- two (52.3%) participants stated that they had not performed BSE, even though they had heard about it. Twenty-four (13.6%) women did not perform this examination because they did not know how to do it. Ten (5.7%) women did not perform BSE , because they thought it was unnecessary. Thirty (17%) women thought that BSE should be done only by elderly and 28 (16%) women stated that they did not perform BSE because they did not have any complaint about their breasts.

When we asked to 258 participants who performed BSE, how often they did this examination: 52 (20.2%) of the participants stated that they did it only once, 146 (56.6%) occasionally, and 60 (23.2%) every month.

In terms of BSE and mammography rates, 38.2% of the participants stated that they had CBE before, while 61.8 % of the participants indicated that they had not. In addition, 24 % of the participants had and 76% of them had not undergone mammographic examinations before. Most (90.3%) of the participants had not , while 9.7% of them had family history of breast cancer.

In terms of education level, significant results were obtained in comparison between those who had and had not performed BSE at least once (p=0.042). Also, significant results were obtained in comparison between those who had, and had not CBE (p=0.023). We obtained statistically significant differences between those who had, and had not undergo mammographic examinations (p=0,001) (Tables 1,2). University graduates were responsible for these statistically significant differences We determined that university graduates performed BSE, and underwent CBE and mammographic examinations more often than high school and primary school graduates.

Significant differences were found in terms of BSE (p=0.001), CBE (p=0.001) and mammography (p=0.000) rates between those with and without a family history of breast cancer. The rate of using these three screening tests was found to be hig-

Table 1. Relationship between education level and family history, and rates of breast self-examination (BSE)

		BSE		P
		None	At least once	
Educational status	Illiterate	26 (14.8%)	8 (3.1%)	0.042
	Primary school	105 (59.6%)	167 (64. 7%)	
	High school	39 (22.2%)	65 (25.2%)	
	University	6 (3.4%)	18 (7%)	
	Total	176 (100%)	258 (100%)	
Family history of breast cancer	Yes	10 (5.7) %	32 (%12.4)	0.001
	No	166 (94. %3)	226 (87.6%)	
	Total	176 (10%0)	258 (100%)	

Table 2. The relationship between education level and family history, and rates of mammography and clinical breast examination (CBE)

		Mammography		P	CBE		P
		Yes	No		Yes	No	
Educational status	Illiterate	14 (13.5 %)	20 (6.1%)	0.001	18 (10.8%)	16 (6%)	0,023
	Primary school	66 (63.5%)	206 (62.4%)		106 (63.9%)	166 (62%)	
	High school	10 (9.6%)	94 (28.5%)		26 (15.7%)	78 (29%)	
	University	14 (13.4%)	10 (3%)		16 (9.6%)	8 (3%)	
	Total	104(100%)	330(100%)		166 (100%)	268(100%)	
Family history of breast cancer	Yes	30 (28.8%)	12 (3.6%)	0.000	30 (18%)	12 (4.5%)	0,001
	No	74 (71.2%)	318 (96.4%)		136 (82%)	256 (95.5%)	
	Total	104(100%)	330(100%)		166(100%)	268(100%)	

her in those with a positive family history (Tables 1, 2).

DISCUSSION

Breast self examination, CBE and mammography are globally accepted screening methods used in the early diagnosis of breast cancer. These methods have advantages and disadvantages to each other. Breast self examination is a simple and inexpensive method that can be easily applied even in the absence of a healthcare personnel. Since, it increases patient's awareness about her own breast tissue, it facilitates early detection of a new mass. On the other hand, it also contributes to the individual's taking responsibility for her own health (10).

There are many studies evaluating the source of information in BSE. In these studies, the media was shown as the main source of information referred by women (11-13). In our study, it was concluded that the media was used as the main source of information by 56.6% of the participants. Some (29.1%) participants heard about BSE from a healthcare professional. When evaluated together with other studies in this field, it has been shown that television and healthcare professionals have the greatest role in informing women about BSE (14,15). We think that media and television have been indicated as the most frequent sources of information because of their easy accessibility. In addition, in our study, BSE was practiced by 78% of our participants who heard about BSE from doctors, and by 67% of the participants whose sources of information were media and television. These results show us how important healthcare professionals and media-television are in informing women about BSE, in learning correct application method, in educating people

and in raising awareness about this issue. In our study, the higher rate of practising BSE among those who heard it from doctors shows the necessity of being more careful about providing right information to patients by healthcare professionals. Although, patients can easily access information through media, advices and information given by healthcare professionals are more effective. In the current family medicine system, this is much easier to apply. The physicians have the chance of getting entire knowledge about health status of patients and find the opportunity to evaluate risk factors or family history together. We think that to remind the women to perform BSE, during each clinical examination and follow-up visits or contact them by phone will increase this awareness rate even more.

High school and university graduates had higher rates of performing BSE than primary school graduates (16). In a study conducted in our country, it was that rates of BSE and mammography screening were lower in those with a low education level (17). In another study, in which 81% of participants were primary school graduates, BSE rate was found only 23.5% (7). In a study, in which the number of illiterate participants constituted 20% of the study population, the rate of BSE was only 29.2% (14).

In our study, significantly higher number of university graduates regularly performed BSE every month. In addition, 76.5% of illiterate individuals never practiced BSE, and importance of education for breast cancer awareness and early diagnosis has been emphasized once again. In studies conducted in Kütahya and Sivas the rates of performing BSE at least once were found 56%, and 51%, respectively (8,9). In our study, this rate was in accordance with the literature data . Depending on the education level of our participants, rate of BSE was 23.5% in the illiterate group, and increased up to 61% among primary and high school graduates. As the education level of women increases, the rates of awareness about breast cancer and BSE increase.

Inadequacies in the diagnosis and treatment of breast cancer affect mortality rates. Breast cancer mortality rate is 43% in developing , and around 30% in developed countries (18). When the data of our country is evaluated, increase in the incidence of breast cancer is serious. It is thought that this serious increase can be controlled by early diagnosis methods (16).

It has been shown in studies that performing BSE by women aged 20 and older at monthly intervals is important in terms of quality of life and prognosis (19,20). When the literature is reviewed, although there are limited publications in the medical literature describing the relationship between breast cancer and life expectancy in women who regularly perform BSE, it is known that rate of early diagnosis increases with application rates of BSE (10,20). The monthly BSE application rate was found only 9% in a study conducted in our country, and this low rate was attributed to the fact that 81% of the participants were primary school graduates (7). In three studies performed, the rates of performing BSE regularly at monthly intervals were determined as 9, 10, and 35%, respectively which were attributed to living in rural areas and low education level (19,21,22). In our study, 23.2%. of our participants performed regular BSE at monthly intervals.

Although the rate of performing CBE varies between 33% and 81%, this rate was reported only as 3.3% in a study conducted in a region with a low education level in our country (14). In our study, the rate of performing CBE was found 38.2%. At the same time, it was found that the rates of CBE among university graduates, and illiterate individuals were 67% and 53% , respectively.

The rates of mammography and CBE vary in the literature (23,24). Mammography rates are known to vary between 10% and 55% (25,26). Studies have shown that the increase in educational level also affects the rates of mammography (27,28). The rates of undergoing mammographic examinations were found to be lower in individuals with low education level (17). In accordance with the literature, we concluded that the higher the education level, the higher the rate of mammographic examinations.

One of the most important factor affecting the awareness of breast cancer is family history. In

some studies, any increase in the rates of mammographic examinations was not found in individuals with a family history of breast cancer (29). Contrary to this, different studies have shown that the family history of breast cancer increases the rates of mammographic examinations and CBEs (17). In our study, it is seen that the rates of performing BSE, CBE and mammography are significantly higher in individuals with positive family history for breast cancer. We think that the presence of breast cancer in a family member increases the awareness of individuals on this issue and they are more sensitive about the importance of screening. During the interviews, it was seen that not only a family member, but a friend, a familiar person or a famous person who caught this disease attract the attention of women.

The limitations of our study are that the socioeconomic status of the patients was not evaluated in detail and only patients who applied to a single district polyclinic were evaluated. The results of the studies to be conducted with larger sample size and detailed socio-economic evaluations can guide us on how to draw a way to raise awareness about this issue. In addition, we think that determining regional differences together with making region-specific evaluations is important for women's health, and early detection of breast cancer.

In conclusion, we can state that education has a crucial importance in raising awareness on early diagnosis of breast cancer. Steps to be taken to increase the level of education will increase this awareness. In regions with low education level, awareness of breast cancer and screening methods can be increased by providing all kinds of information, printed brochures and many other methods.

Ethics Committee Approval: T.R. Ministry of Health Health Sciences University Dışkapı Yıldırım Beyazıt Training and Research Hospital Clinical Research Ethics Committee approval was obtained. (10.09.2018/54-12)
Conflict of Interest: None.
Financial support: None.
Informed Consent: Received.

REFERENCES

1. Türkiye Kanser İstatistikleri 2015. Date of access 07.29.2020, https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/istatistik/TurkiyeKanserIstatistikleri2015.pdf
2. Torun P, Kutlar A. Türkiye'de Kanserin Ekonomik Maliyetleri: Bir Hesaplanabilir Genel Denge Modeli Yaklaşımı. *Hacettepe Sağlık İdaresi Dergisi*, 2018; 21(1): 87-101
3. Nguyen LH, Laohasiriwong W, Stewart JF, Wright P, Nguyen YTB, Coyte PC. Cost-effectiveness analysis of a screening program for breast cancer in Vietnam. *Value Health Reg Issues*. 2013; 2(1): 21-8. doi: 10.1016/j.vhri.2013.02.004
4. Elmore JG. Screening for breast cancer: Evidence for effectiveness and harms. UpToDate, Waltham, MA. 2014.
5. Mirzaii K, Nesari Ashkezari S, Khadivzadeh T. The effect of education based on Systematic comprehensive Health Education and Promotion model to Health volunteers on their female clients' knowledge regarding breast cancer screening. *Midwifery*. 2017; 5(3): 998-1007. doi: 10.22038/JMRH.2016.7979
6. Tuzcu A, Bahar Z, Gözüm S. Effects of interventions based on health behavior models on breast cancer screening behaviors of migrant women in Turkey. *Cancer Nurs*. 2016; 39(2): E40-E50. doi: 10.1097/NCC.0000000000000268.
7. Akgün Şahin Z. Kars' ta yaşayan kadınların kendi kendine meme muayenesi uygulamasına yönelik bilgi, inanç ve tutumlarının değerlendirilmesi. *Tıp Araştırmaları Dergisi*. 2015; 13(2): 54-61. https://doi.org/10.18827/etad.83805
8. Şen S, Başar F. Kütahya bölgesinde yaşayan kadınların kendi kendine meme muayenesi ve meme kanseri ile ilgili bilgi düzeyleri. *Meme Sağlığı Dergisi*. 2012; 8(4): 185-90.
9. Yılmaz M, Durmuş T. Health beliefs and breast cancer screening behavior among a group of female health professionals in Turkey. *J Breast Health*. 2016; 12(1): 18-24. doi: 10.5152/tjbh.2015.2715
10. Yurt S, Saglam Aksut R, Kadioglu H. The effect of peer education on health beliefs about breast cancer screening. *Int Nurs Rev*. 2019; 66(4): 498-505. doi: 10.1111/inr.12517.
11. Ramson LM. Knowledge, attitude and practice of breast self examination for early detection of breast cancer among women in Roan community in Luanshya, Copper Belt Province, Zambia. *Asian Pac J Health Sci*. 2017; 4: 74–82. https://doi.org/10.21276/apjhs.2017.4.3.12
12. Idris SA, Hamza AA, Hafiz MM, Ali ME. Knowledge and practice of breast self examination among final year female medical students in Sudan. *Int J Public Health Res*. 2013; 1: 6–10.

13. Conde P, Kava AF, El Fakir S, Tachfouti N, Nejjari C, Diakite D, et al. Attitude and practice of BSE in women in Morocco. *J Glob Oncol*. 2018; 4(Supplement 2): 201s–201s. DOI: 10.1200/jgo.18.81300

14. Dündar P, Ozmen D. Oztürk B, Haspolat G, Akyıldız F, Coban 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(1): 43. doi: 10.1186/1471-2407-6-43.

15. Pöhls UG, Fasching PA, Beck H, Kaufmann M, Kiechle M, Minckwitz G, et al. Demographic and psychosocial factors associated with risk perception for breast cancer. *Oncol rep.* 2005; 14: 1605-13.

16. Dewi TK, Massar K, Ruiter RAC, Leonardi T. Determinants of breast self-examination practice among women in Surabaya, Indonesia: an application of the health belief model. *BMC public health.* 2019; 19(1): 1-8. doi: 10.1186/s12889-019-7951-2.

17. Bilgi U, Keskin A. Breast cancer screening knowledge in a Turkish population education is necessary. *Procedia-Social and Behavioral Sciences*. 2014; 116: 1861-3. https://doi.org/10.1016/j.sbspro.2014.01.484

18. Yip CH, Smith RA, Anderson BO, Miller AB, Thomas DB, Ang ES, et al. Guideline implementation for breast healthcare in low-and middle-income countries: early detection resource allocation. *Cancer.* 2008; 113: 2244-56. doi: 10.1002/cncr.23842.

19. Marmot MG, Altman D, Cameron D, Dewar J, Thompson S, Wilcox M. The benefits and harms of breast cancer screening: an independent review. *Br J Cancer*. 2013; 108: 2205-9. DOI: 10.1038/bjc.2013.177

20. Cardoso F, Kyriakides S, Ohno S, Penault-Llorca F, Poortmans P, Rubio I, et al. Early breast cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol.* 2019;30(8):1194-220. https://doi.org/10.1093/annonc/mdz173

21. Abay M, Tuke G, Zewdie E, Abraha TH, Grum T, Brhane E. Breast self-examination practice and associated factors among women aged 20-70 years attending public health institutions of Adwa town, North Ethiopia. *BMC Res Notes.* 2018; 11(1): 622. doi: 10.1186/s13104-018-3731-9.

22. Suh MA, Atashili J, Fuh EA, Eta VA. Breast self-examination and breast cancer awareness in women in developing countries: a survey of women in Buea, Cameroon. *BMC Res Notes.* 2012; 5(1) :627. DOI: 10.1186/1756-0500-5-627

23. Juon H-S, Kim M, Shankar S, Han W. Predictors of adherence to screening mammography among Korean American women. *Prev Med*. 2004; 39(3): 474-81. doi: 10.1016/j.ypmed.2004.05.006.

24. Gürsoy AA, Yilmaz F, Nural N, Kahriman I, Yigitbas Ç, Erdöl H, et al. A different approach to breast self-examination education: daughters educating mothers creates positive results in Turkey. *Cancer Nurs*. 2009; 32(2): 127-34. doi: 10.1097/NCC.0b013e3181982d7b.

25. Açıkgöz A, Çehreli R, Ellidokuz H. Kadınların kanser konusunda bilgi ve tutumları ile erken tanı yöntemlerine yönelik davranışları. *DEÜ Tıp Fakültesi Dergisi*. 2011; 25(3): 145-54.

26. Yılmazel G. Çorum İli Kırsalında Yaşayan 20 Yaş Ve Üzerindeki Kadınların Kendi Kendine Meme Muayenesi Yapma Durumları Ve Meme Kanseri Risk Faktörlerinin Belirlenmesi. *J Breast Health*. 2013; 9: 82-7.

27. Özaydın AN, Güllüoğlu BM, Ünalan PC, Gorpe S, Cabioğlu N, Öner BR, et al. Bahçeşehir'de oturan kadinlarin meme kanseri bilgi düzeyleri, bilgi kaynaklari ve meme sağliği ile ilgili uygulamaları. *Meme Sağlığı Dergisi.* 2009; 5(4): 214-24.

28. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA Cancer J Clin*. 2015; 65(1): 5-29. doi: 10.3322/caac.21254.

29. Achat H, Close G, Taylor R. Who has regular mammograms? Effects of knowledge, beliefs, socioeconomic status, and health-related factors. Prev Med. 2005; 41(1): 312-20. doi: 10.1016/j.ypmed.2004.11.016.