The Mammography Screening Ratios and and Factors Affecting to Get It Among Primary Care Health Providers

Birinci basamak sağlık çalışanlarının mamografi tarama oranları ve etkileyen faktörler

Oya Dirican[1], Ünal Hülür[2]*

ABSTRACT

Purpose: This study was conducted to assess the factors associated with the status of primary care providers (PCPs) in their participation in the Breast Cancer Screening Program (BCSP) in Antalya. Methods: A total of 572 women participants who were over 40 years old and were working in PCPs, Community Health Center, and Provincial Health Directorate participated in this study. All of the participants were administered a questionnaire investigating their mammography screen status and factors affecting to get a screen. The study was conducted between 1 June 2018 – 31 October 2018. A binary logistic regression model (to get a mammography screening or not, as a dependent variable) was used to ascertain if the demographic and lifestyle variables predicted the screening behaviors for breast cancer. Results: Among our participants 56,8% of the had a least one mamography screening. The independent factors to get a mammography were observed as aging (OR=1.27 95% CI: 1.02-1.17) (p<0,001); work place (community health center) (OR=2.67 95% CI: 1.19-5.94) (p<0,001); experience (20-29 years) (OR=13.50 95% CI: 4.35-41.85) (p<0,001) and (>29 years) (OR=5.84 95% CI: 1.26-26.9) (p<0,001); chronic diseases (having more than one) (OR=4.97 95% CI: 2.03-12.18) (p<0,001); family history (first-degree) (OR=2.45 95% CI: 1.48-4.03) (p<0,001) and BMI (OR=1.08 95% CI: 1.02-1.15) (p<0,01). Furthermore, the most reported obstacle to the PCPs was difficulty getting time off from work. Conclusion: This study showed that unfortunately, almost half of the healthcare professionals have not had a mammography. It is think that, it is necessary to motivate PCPs to increase their awareness of practice on cancer screening.

Key words: Early detection, cancer screening, breast cancer, primary care providers, population-based cancer screening

ÖZET

Amaç: Bu çalışmada, Antalya'da birinci basamak çalışanlarının yürüttükleri meme kanseri tarama programına, kendilerinin katılma durumları ile, ilişkili faktörlerin incelenmesi amaçlanmıştır. Yöntem: Aile hekimliği birimlerinde, ilçe toplum sağlığı merkezlerinde ve il sağlık müdürlüğünde görevli birinci basamak çalışanı 40 yaş ve üzerindeki 572 kadın, 1 Haziran-31 Ekim 2018 arasında yürütülen çalışmaya katıldı. Ki-kare analizi, çeşitli bağımsız ve sonuç değişkenleri arasındaki oranları ve test ilişkilerini göstermek için yapıldı. Demografik ve yaşam tarzı değişkenlerinin meme kanseri tarama davranışlarını öngörüp öngörmediğini belirlemek için ikili bir lojistik regresyon modeli kullanıldı. Bulgular: Katılımcılar arasında meme kanseri tarama programına en az bir kez katılım oranı %56.8 olarak bulundu. Mamografi yaptırmayı belirleyen faktörlerin yaş (OR=1.27 %95 CI: 1.02-1.17) (p<0,001); çalışma yeri (ilçe sağlık müdürlüğü) (OR=2.67 %95 CI: 1.19-5.94) (p<0,001); çalışma süresi (20-29 yıl) (OR=13.50 %95 CI: 4.35-41.85) (p<0,001) and (>29 yıl) (OR=5.84 %95 CI: 1.26-26.9) (p<0,001); kronik hastalık varlığı (en az bir tane) (OR=4.97 %95 CI: 2.03-12.18) (p<0,001); aile öyküsü (birinci derece) (OR=2.45 %95 CI: 1.48-4.03) (p<0,001) and BMI (OR=1.08 %95 CI: 1.02-1.15) (p<0,01) olduğu gözlendi. Taramasını yaptırmayanlar arasında en fazla belirtilen bahanenin işten izin alma zorluğu olduğu görüldü. Sonuç: Bu çalışma, sağlık çalışanlarının neredeyse yarısının meme kanseri taramasını yaptırmadıklarını göstermiştir. Birinci basamak sağlık çalışanlarının, kendi kanser taramaları konusundaki uygulama bilincini artırmak için motive edilmelerinin gerekli olduğu düşünülmüştür.

Anahtar kelimeler: Erken teşhis, kanser taraması, meme kanseri, birinci basamak çalışanları, toplum tabanlı kanser taraması

INTRODUCTION

Breast cancer is the most commonly diagnosed cancer in women, accounting for approximately one in four of all new cancer cases diagnosed in women around the world. Additionally, it is the most common cancer type in 154 of the 185 countries included in GLOBOCAN 2018. It is also the leading cause of cancer-related deaths in women (15.0%), followed by lung (13.8%) and colorectal cancers (CRC) (9.5%), which are the third and second most common cancer types, respectively.[1]According to the 2014 data of the Cancer Department of the Ministry of Health, breast cancer is the most common cancer type in women in Turkey.[2]

Screening for breast cancer aims to reduce mortality from this cancer, as well as the morbidity associated with advanced stages of the disease, through early detection in asymptomatic women. The most common means of screening women for breast cancer is standard mammography (film or digital), offered either by organized programs or through opportunistic screening. Mammographic screening has been implemented to a great extent in high-income countries and regions and less so in countries in Central and Eastern Europe, through either opportunistic or organized screening.[3] Breast cancer screening in Europe varies widely and mammography is the commonest screening test. The programmes that exist are managed at national or regional level or are only pilot efforts. Analysis by key organizations, including the American Cancer Society and the United States Preventive Services Task Force, have shown that the maximum mortality reduction and life-years gained (LYG) benefit occurs when screening begins at age 40 years.[4] On the other hand, women 50 to 69 years of age who were invited to attend mammographic screening had, on average, a 23% reduction in the risk of death from breast cancer; women who attended mammographic screening had a higher reduction in risk, estimated at about 40%. Cancer screening is a key component of primary care, and access to regular screening mammography is highly dependent on recommendation and referral by primary care provider.[3]

The population-based Breast Cancer Screening Program (BCSP) complies with the management programs prepared by other departments of the Ministry of Health of the Republic of Turkey. This aims to provide counteracting plans for the treatment and prevention of various chronic diseases, including cancer. In Turkey, primary care providers (PCPs) execute the population-based BCSP to screen for breast (every woman between ages 40 and 69 years will be screened with mammography once in 2 years).[5] This screening programme is provided free of charge to every Turkish citizen who is age-appropriate in primary healthcare facilities without insurance requirement.[5-7]

The PCPs are a critical source for the communication of the significance of the cancer prevention services and main drivers of the population-oriented health education programs.[8-11] They have to be equipped with accurate and adequate information to serve as trainers and consultants in the preventive healthcare services against all cancer types.[10] Recently, an increasing number of researchers have identified that trust has a significant role in health behavior outcomes such as the utilization of services, preventive screening, and adherence to medical advice.[8,12,13] However, some health workers may not be aware of or understand the cancer disparities in this population.[9]

In Turkey, from 2004 on the gradually family practice model has been adopted into primary health care delivery, and since 2010 the system covered the whole country.[8] The PCPs' main target is to provide health services for the protection, diagnosis, treatment, and rehabilitation of individuals in the closest area to their residences by family practitioners (physicians, nurses, and midwives) and community health workers CHWs in the provinces and districts. Thus, the PCPs must definitely be involved in the screening programs and supported on this subject. The aim of this study is to investigate the ratio of getting mammography and factors affecting it among health care providers in Antalya.

METHODS

This study was planned as a descriptive-analytic study and involved the medical staff in the primary healthcare units in the province of Antalya-Turkey. All 586 female employees in the 40-69 age group were asked to be included in the research, but 14 female employees did not participate in the study because they were on leave for non-health reasons. Inclusion criteria were working actively in primary healthcare units at time of the study and being female healthcare professionals. Survey forms were filled out by using face-to-face interviews with 572 (97.6%) women employees between ages of 40-69 between 1 June 2018 – 31 October 2018. The participants were all employees in the PCPs from the Family Health Center (FHC), Community Health Center (CHC), and Provincial Health Directorate (PHD). The nonparticipants had the same distribution with participants according to job and workplace.

After informing the participants regarding the aim of the study, we provide them with a given 21-item questionnaire which is prepared based on the literature.[8-11,14,15] The primary outcome of interest was having been screened for breast cancers with mammography. Also, for confidentiality, they were asked not to write their

names. The average time for the individuals to answer the questions was approximately 10 minutes.

In the analysis, marital status (single vs. married), gender (female vs. male), smoking (no vs. yes), exercise (no vs. yes), and paying attention to their nutrition (no vs. yes) were specified as the binary variables.

Moreover, age (30–39, 40–49, and >49), workplace (FHC, CHC, and PHD), job (physicians, nurses–midwives, and others), and having chronic diseases (absent, one disease, and more than one disease) were categorized into three groups. The other group consisted of medical secretaries, environmental health technicians, laboratory and X-ray technicians, data managers, and medical secretaries. Furthermore, the experience period (<10, 20–29, 30–39, and >39) and family history of any cancer (absent, first- or second-degree relatives, and both) were categorized into four groups. Also, the weight status was categorized using the body mass index (BMI) calculated as weight in kilograms divided by the square of height in meters. Consequently, the four standard BMI categories included underweight, normal weight, pre-obese, and obese.

Table 1. Some demographic properties of the women PCPs according to the participating to breast cancer screening program

Factors	Screened n (%)	Not screened n (%)	p^*
Age			
40 - 49	252 (53.2)	222 (46.8)	**0.001**
≥ 50	73 (74.5)	25 (25.5)	
Marital status			
Married	262(57.2)	196 (42.8)	0.39
Single	63 (55.3)	51 (44.7)	
Work place			
Family health center	211 (61.7)	131 (38.3)	
Community health center	95 (51.6)	89 (48.4)	**0.007**
Provincial health center	19 (41.3)	27 (58.7)	
Job			
Others**	15 (59.5)	13 (40.5)	
Nurse/midwive	179 (55.2)	145 (44.8)	0.57
Physician	131 (53.6)	89 (46.4)	
Experience			
< 10 years	5 (17.9)	23 (82.1)	
10 - 19 years	29 (23.6)	94 (76.4)	**0.001**
20 - 29 years	256 (67.7)	122 (32.3)	
> 29 years	35 (81.4)	8 (18.6)	
Chronic disease			
Absent	186 (53.0)	165 (47.0)	
One disease	76 (51.0)	73 (49.0)	**0.001**
More than one	63 (87.5)	9 (12.5)	
Family history			
Absent	190 (49.1)	197 (50.9)	
First-degree	113 (74.8)	38 (25.2)	**0.001**
Second-degree	13 (56.5)	10 (43.5)	
Both	9 (81.8)	2 (18.2)	
BMI			
Underweight	8 (72.7)	3 (27.3)	
Normal	138 (48.9)	144 (51.1)	**0.002**
Pre-obesity	148 (63.0)	87 (37.0)	
Obese	31 (70.5)	13 (29.5)	
Smoking			
No	241 (59.8)	81 (40.2)	**0.02**
Yes	84 (65.8)	162 (34.2)	
Exercise			
No	124 (56.8)	94 (43.2)	0.53
Yes	201 (56.9)	153 (43.1)	

Diet				**0.01**
No	85 (49.4)	87 (50.6)		
Yes	240 (60.0)	160 (40.0)		
Screened by HPV-DNA				
Not	(34.0)	(66.0)		
Screened	(74.9)	25.1)		**0.001**

*p value for chi-square test, ** The others group consisted of medical secretaries, environmental health technicians, laboratory and X-ray technicians, data managers, and medical secretaries.

Table 2. Associations between some properties and the participating to breast cancer screening program

Factors	β	Wald	*p*	Odds ratios (95% CI)
Age*	0.19	7.07	0.008	**1.27 (1.02, 1.17)**
Marital status				
Single				1.00
Married	0.17	0.41	0.52	1.19 (0.70, 2.01)
Work place				
Provincial health center				1.00
Community health center	**0.98**	**5.73**	**0.02**	**2.67 (1.19, 5.94)**
Family health center	0.22	0.29	0.59	1.24 (0.56, 2.73)
Job				
Others**				1.00
Nurse/midwive	-0.82	1.96	0.16	0.44 (0.14, 1.39)
Physician	-0.35	0.43	0.51	0.71 (0.25, 1.99)
Experience				
< 10 years				1.00
10 - 19 years	0.97	2.60	0.11	2.64 (0.81, 8.62)
20 - 29 years	**2.60**	**20.32**	**0.000**	**13.50 (4.35, 41.85)**
> 29 years	**2.47**	**11.05**	**0.001**	**5.84 (1.26, 26.99)**
Chronic disease				
Absent				1.00
One disease	**-0.59**	**5.80**	**0.02**	**0.56 (0.34, 0.89)**
More than one	**1.61**	**12.36**	**0.000**	**4.97 (2.03, 12.18)**
Family history				
Absent				1.00
First-degree	**0.89**	**12.29**	**0.000**	**2.45 (1.48, 4.03)**
Second-degree	0.74	1.71	0.19	2.10 (0.69, 6.42)
Both	0.79	0.28	0.59	2.19 (0.12, 40.41)
BMI*	**0.08**	**6.47**	**0.01**	**1.08 (1.02, 1.15)**
Smoking				
No				1.00
Yes	-0.17	0.43	0.51	0.84 (0.51, 1.39)
Exercise				
No				1.00
Yes	-0.34	2.28	0.13	0.71 (0.46, 1.11)
Diet				
No				1.00
Yes	0.35	2.38	0.12	1.42 (0.91, 2.21)

*Age and BMI variables involved the regression analysis as non-categoric variables.

The data were described with frequencies and percentages to determine the PCPs' preferences in using the BCSP. After the questionnaire was collected completely, the statistic analysis was performed with SPSS version 23. The chi-square analysis was performed to show proportions and test associations between various independent and outcome variable as "participating in the BCSP". P values < 0.05 were considered statistically significant. In addition, the binary logistic

regression model was used to ascertain if the demographic and lifestyle variables predicted the screening behaviors for breast cancer.

For the regression analysis, screening for each cancer type within the past 2 years (yes, 1; no, 0) was the dependent variable. Furthermore, in the regression models, the first categories were the comparison ones. All factors were included in the binary logistic regression analysis. The odds ratios

(ORs) and 95% confidence intervals for each association are reported in Table 1.

This study was conducted with the permission of the Provincial Health Directorate and approval of the ethics board of the Antalya Education and Research Hospital (approval code 7/14).

Table 3. Obstacles to breast cancer screening by jobs					
Obstacles	Difficulty getting time-off work	Postponed, I will	Fear of getting a positive cancer diagnosis	Trouble remembering to schedule screenings	Not having relatives with cancer
	n (%)	n (%)	n (%)	n (%)	n (%)
Jobs For Breast Cancer					
Physicians	99 (74.4)	27 (20.3)	2 (1.5)	4 (3.0)	1 (0.8)
Nurse-midwives	72 (51.8)	45 (32.4)	14 (10.1)	5 (3.6)	3 (2.2)
Others	10 (50.0)	1 (5.0)	8 (40.0)	0 (0.0)	1 (5.0)
Total*	**181 (62.0)**	**73 (25.0)**	**24 (8.2)**	**9 (3.1)**	**5 (1.7)**
p value (χ2)	0.0001				

DISCUSSION

Our survey showed that about half of the eligible PCPs were not being screened for BCSP. This rate (56.8%) was assessed as lower value than expected because the health workers have significant roles as health promoters and educators.[8,10,11,14-19] This study supports that PCPs do not turn the information into behavior.[15,17,20] Similarly, another study in Ankara showed that when health workers were questioned whether they had done their cancer screening tests, only 14.87% had run regular screening among the 390 people who entered the target age group of screening.[21]

A family history among first-degree relatives was a predictor of the use of all screening tests among women primary health workers. In this study, the study participants who had a family history in first-degree relatives were more likely to have been screened for cancers compared with those did not have. For example, a population-based study in İzmir stated that the cancer risk perception of the women with a cancer case in their families was statistically higher than that of those without.[17] However, this finding is in contrast to some other studies.[18] This study showed that older age and longer work experience period were the predictors of the breast screening use in the PCPs, which is consistent with other studies.[18,22]

Having at least one chronic disease produced statistically significant findings for breast cancer type of BCSP in the current study. This could be because the people with chronic illnesses visit the health centers more frequently and therefore feel closer to the idea of undergoing screening. For example, a population-based study involving Korean adults stated that the people who attended regular health checkups were more likely to have mamography screening.[23] A similar result was provided in another study.[24] In this study, the participants' workplace was a health center; however, health workers have same obstacles as non-health workers.

The findings of the current study indicating the associations between lifestyle characteristics and screening behavior reflect evidence in the extant literature. For example, the participants who were exercising and smoking were more likely to have undergone mammography. Research indicates that dietary compliance and taking part in regular exercise programs are related to the individual's perception of susceptibility to the related health problem and their perception that the benefits of preventive actions outweigh the costs.[24-26]

No significant difference was found among the study participants in terms of performing a mammography scanning in terms of their job. This result was consistent with a few studies,[10,29] but

220

some reported that the physicians' health motivation and breast self-examination self-efficacy perceptions were higher than those of the nurses and midwives.[16] Furthermore, the health beliefs of health workers concerning the perceived susceptibility of cancer and perceived benefits of early diagnosis significantly impact their screening practices.[28]

In another study that detected the behaviors of nurses and physicians with regard to patients' cancer screening, significant differences between nurses' and physicians' rating of patient-related barriers was identified, such as fear of cancer diagnosis, belief that screening is not effective, and embarrassment or anxiety about screening tests and culture.[29]According to our study, it was found that female healthcare professionals working in the community health center had a higher rate of screening compared to those working in other workplaces. This can be explained by the fact that efforts to ensure public participation in the BCSP is included in performance criteria for community health center employees rather than family health centers, and therefore these employees are more familiar with this screening.

The present study found that the PCPs reported several obstacles to the mammography use including the following issues: difficulty getting time off from work, postponed/I will, fear of a cancer diagnosis, trouble remembering to schedule screenings, and not having relatives with cancer. Furthermore, various studies have shown that the most frequent barriers to mammography screening were being busy and lack of perceived susceptibility.[14]

The data we presented in this study were obtained from women healthcare professionals in primary health care system in the same province. The limitations of this study are that the mammography device is accessible in secondary and tertiary health institutions rather than primary care and not knowing the participation of women working in the secondary and tertiary care levels.

As a result, almost half of the female employees have not had cancer screening, although they should have it. These findings indicate that motivating healthcare professionals to increase their level of practice on cancer screening and display higher sensitivity regarding the protection against and early diagnosis breast cancers are necessary. Additionally, the most significant means of achieving this is to ensure that in-service trainings,

cancer screenings, and risks to be taken in case of non-screening are mentioned seriously.

REFERENCES

1. Terrasse V. Latest global cancer data: Cancer burden rises to 18.1 million new cases and 9.6 million cancer deaths in 2018. International Agency for Research on Cancer (IARC). 2018; https://www.iarc.fr/wp-content/uploads/2018/09/pr263_E.pdf. Accessed 26 June 2019

2. Sencan İ, Keskinkilic B. Cancer Statistics of Turkey. Republic of Turkey Ministry of General Directorate of Public Health. 2017; https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/istatistik/2014-RAPOR._uzuuun.pdf. Accessed 26 June 2019

3. Lauby-Secretan B., Scoccianti C., Loomis D., Benbrahim-Tallaa L., Bouvard V., Bianchini F., Straif K. Special Report. Breast-Cancer Screening — Viewpoint of the IARC Working Group. 2015 Massachusetts Medical Society. The New England Journal of Medicine 372;24. nejm.org June 11, 2015

4. Helvie M.A., Bevers T.B. Screening Mammography for Average-Risk Women: The Controversy and NCCN's Position. JNCCN 2018; 16(11). DOI: https://doi.org/10.6004/jnccn.2018.7081

5. Gultekin M. Turkey cancer control programme. Republic of Turkey Ministry of General Directorate of Public Health. 2016; https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/yayinlar/raporlar/Ulusal_Kanser_Kontrol_Plani_2013_2018.pdf. Accessed 26 June 2019

6. Goksel F. Health care services that require specific planning in Turkey 2011-2023. Republic of Turkey Ministry of Health General Directorate of Health Services. 2011; https://dosyamerkez.saglik.gov.tr/Eklenti/4198,turkiyede-ozellikli-planlama-gerektiren-saglik-hizmetleri-2011-2023pdf.pdf?0&_tag1=fb79d6c223c03cbede5145deae5230adb0be2a16. Accessed 26 June 2019

7. Gultekin M., Dundar S., Kucukyildiz I., Karaca M.Z., Boztas G., Turan S.H., et. al. Survival of gynecological cancers in Turkey: where are we at? Journal of Gynecologic Oncology 2017; 28(6):e85. doi.org/10.3802/jgo.2017.28.e85

8. Yalcintas A., Arslantaş A.B., Ecevit P.C., Ozdemirkan T., Ustu Y., Ugurlu M. Female healthcare workers and breast cancer screening.

Turkish Journal of Family Medicine and Primary Care 2018;12(2), 92-101. DOI: 10.21763/tjfmpc.432462

9. Kwon HT, Ma GX, Gold RS, Atkinson NL, Wang MQ. Primary Care Physicians' Cancer Screening Recommendation Practices and Perceptions of Cancer Risk of Asian Americans. Asian Pacific Journal of Cancer Prevention 2013;14(3): 1999–2004, DOI: 10.7314/apjcp.2013.14.3.1999

10. Coskun S, Can H, Turan S. Knowledge about Cervical Cancer Risk Factors and PapSmear Testing Behavior among Female Primary Health CareWorkers: A Study from South Turkey. Asian Pacific Journal of Cancer Prevention 2013;14(11): 6389-6392 DOI: 10.7314/apjcp.2013.14.11.6389

11. Akpinar YY, Baykan Z, Naçar M, Gun I, Çetinkaya F. Knowledge, attitude about breast cancer and practice of breast cancer screening among female health care professionals: a study from Turkey. Asian Pacific Journal of Cancer Prevention 2011;12(11):3063-3068

12. Hong HC, Lee H, Collins EG, Park C, Quinn L, Ferrans CE. Factors affecting trust in healthcare among middle-aged to older Korean American women. BMC Women's Health 2018;18:109 doi: 10.1186/s12905-018-0609-x.

13. Bhutta ZA, Lassi ZS, Pariyo G, Huicho L. Global experience of community health workers for delivery of health related millennium development goals: a systematic review, country case studies, and recommendations for ıntegration into national health systems. World Health Organization 2010; https://www.who.int/workforcealliance/knowledge/publications/alliance/Global_CHW_web.pdf. Accessed 26 June 2019

14. Nazzal Z, Sholi H, Sholi SB, Sholi MB, Lahaseh R. Motivators and barriers to mammography screening uptake by female health-care workers in primary health-care centres: a cross-sectional study. Lancet 2018 Feb 21;391 Suppl 2:S51. doi: 10.1016/S0140-6736(18)30417-3

15. Yaren A, Ozkilinc G, Guler A, Oztop I. Awareness of breast and cervical cancer risk factors and screening behaviours among nurses in rural region of Turkey. European Journal of Cancer Care 2008;17(3):278-284. doi: 10.1111/j.1365-2354.2007.00856.x

16. Canbulat N, Uzun O. Health beliefs and breast cancer screening behaviors among female health workers in Turkey. European Journal of Oncology Nursing 2008 Apr;12(2):148-156. doi: 10.1016/j.ejon.2007.12.002

17. Demireloz M, Çeber E, Ozenturk G. Midwives roles in women's improvement of protective behaviour against breast cancer whether they have a family history of cancer or not. Asian Pacific Journal of Cancer Prevention, 2010;11(4):1037-1043

18. Aflakseir A, Abbasi P. Health Beliefs as Predictors of Breast Cancer Screening Behaviour in a Group of Female Employees in Shiraz. Iran J Cancer Prevention 2012;5(3):124-129

19. Gebreegziabher M, Asefa GN, Berhe S. Factors Affecting the Practices of Cervical Cancer Screening among Female Nurses at Public Health Institutions in Mekelle Town, Northern Ethiopia, 2014: A Cross-Sectional Study. Journal of Cancer Research 2016;doi:10.1155/2016/4743075, https://www.hindawi.com/journals/jcr/2016/4743075/ Accessed 26 June 2019

20. Korkut Y. Assessment of knowledge, attitudes, and behaviors regarding breast and cervical cancer among women in western Turkey. J Internal Medicine Research 2019;47(4):1660-1666. doi: 10.1177/0300060519830252

21. Kaya C., Ustu Y., Ozyoruk E., Aydemir O., Simsek Ç., Sahin A.D. Knowledge, Attitudes and Behaviors of Health Workers About Cancer Screenings. Ankara Med J 2017; 17(1):73-83.

22. Kan, Y, Son H. Gender Differences in Factors Associated With Colorectal Cancer Screening: A National Cross-Sectional Study in Korea. Asia Pacific J Public Health 2017;29 (6): 495-505, doi: 10.1177/1010539517718336

23. Patel K, Hargreaves M, Liu J, Bond B, Brown E, Williams E et. al. Factors influencing colorectal screening in low-income African Americans in Tennessee. Journal of Community Health 2012;37:673–679, DOI: 10.1007/s10900-011-9498-8

24. Sozmen K, Unal B, Sakarya S, Dinc G, Yardım N, Keskinkilic B, et. al. Determinants of Breast and Cervical Cancer Screening Uptake Among Women in Turkey. Asia Pacific J Public Health 2016;28(6): 528-538, DOI: 10.1177/1010539516654541

25. Choi KH, Heo J, Kim S, Jeon YJ, Oh M. Factors Associated With Breast and Cervical Cancer Screening in Korea: Data From a National Community Health Survey. Asia Pac J Public Health 2013;25(6): 476-486, DOI: 10.1177/1010539513506601

26. Nicholls R, Perry L, Gallagher R, Duffield C, Sibbritt D, Xu X. The personal cancer screening behaviours of nurses and midwives. J Adv Nursing 2017;73(6):1403-1420. doi: 10.1111/jan.13221

27. Shiryazdi SM, Kholasehzadeh G, Neamatzadeh H, Kargar S. Health beliefs and breast cancer screening behaviors among Iranian female health workers. Asian Pac J Cancer Prevention

2014;15(22):9817-9822,   DOI:
10.7314/apjcp.2014.15.22.9817

28. Muliira JK, D'Souza MS, Ahmed SM. Contrasts in Practices and Perceived Barriers to Colorectal Cancer Screening by Nurses and Physicians Working in Primary Care Settings in Oman. J Cancer Education 2016;31(1):15-25. doi: 10.1007/s13187-015-0806-3

29. Garc´ıa AZG. Factors Influencing Colorectal Cancer Screening Participation. Gastroenterology Research and Practice 2012;483417. doi:10.1155/2012/483417