



Research Article

AWARENESS AND PARTICIPATION OF UNIVERSITY EMPLOYEES IN CANCER SCREENING PROGRAMS

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Abstract: *This study was planned to determine the awareness and participation of university employees in cancer screening programs. The sample of the descriptive cross-sectional study consisted of 223 university employees. An information form prepared in line with the literature was used for data collection to determine the demographic information of the participants, the perceived cancer risk of individuals, and their knowledge and participation in cancer screening programs. Frequency, percentage and chi-square test were used in the data analysis and evaluation process. The significance level was accepted as $p < 0.05$. 60.5% of the participants were male and 39% of the participants had an average age between 30-39 years. 79.8% of the participants had heard about cancer screening programs, but only 15.2% had participated in screening programs. It was found that 34.7% of the participants had clinical breast examination and pap smear tests, and 19.6% had mammography. There is no statistically significant difference between age, marital status, educational status, cadre type, smoking and alcohol use status of university employees, and participation in cancer screening programs ($p > 0.05$). Participation rates of female university employees in cancer screening programs were significantly higher than male employees ($p < 0.05$). There was a significant positive correlation between having a history of cancer in a first-degree relative and participation in screening ($p < 0.05$). When the participants' perceived risk and participation rates in cancer screening programs were compared, no significant difference was found between perceived risk and participation rates ($p > 0.05$). Although the rate of knowledge of cancer screening programs among university employees participating in the study was high, the rate of participation in screening was low. To implement screening programs effectively, initiatives to support and strengthen the participation of individuals in the programs are recommended.*

Keywords: *Cancer, screening programs, early diagnosis*

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1. Introduction

Cancer is the second leading cause of death in the world after cardiovascular diseases. In 2020, approximately 10 million deaths in the world will be caused by cancer. In addition, one out of every six deaths in the world and one out of every five people in our country lose their lives due to cancer [1]. The physical, psychological, material, and moral discomforts brought by cancer increase the burden of the disease on the individual and society day by day. Therefore, cancer continues to be an important health problem [2].

The most effective method to reduce deaths due to cancer is prevention and early detection. In addition to the primary prevention methods applied within the scope of cancer protection, secondary

prevention methods should also be applied [3]. With screening programs included in secondary prevention methods, cancer is detected at an early stage, reducing mortality rates and increasing the chance of treatment [4]. In our country, the "National Cancer Control Program" has been implemented since 2008; breast, cervical, and colorectal cancers are screened within the scope of this program [2]. For these screenings to be community-based, it is aimed to reach 70% of the population. Community-based cancer screening programs are carried out in all primary healthcare institutions and organizations [3].

Breast cancer is the most common cancer in women in our country and the world [5]. National screening programs recommend breast self-examination (BSE) once a month and clinical breast examination once a year from the age of 20, and mammography every two years after the age of 40. Mammography is thought to reduce mortality due to breast cancer, and BSE and clinical breast examination are thought to be guiding in the early detection of differences that may occur in the breast. As part of the cervical cancer screening program, women aged 30-65 are recommended to have a pap smear and HPV-DNA test every 5 years. It is especially important for sexually active women and women with multiple partners to participate in screening programs [2]. Colorectal cancers are the third most common cancer in both sexes and second only to lung cancer in mortality rates [5]. Therefore, early diagnosis of colorectal cancers is important and within the scope of screening programs, it is recommended that individuals aged 50-70 years should have fecal occult blood every two years and a colonoscopy every 10 years [2].

It is estimated that there will be more than 30 million cancer patients in 2040 and more than 16 million of these cases will be lost [5]. Therefore, the importance of early detection of cancer is increasing day by day. In cancer prevention, it is important to inform society about cancer screening programs, to increase social awareness and to accept screening programs [6]. However, the number of studies conducted on the level of knowledge, awareness, and compliance with screening programs throughout the country regarding cancer, whose incidence is increasing day by day and whose consequences affect the whole society, is limited. In studies conducted in the world and in our country, the number of participation in cancer screening programs is not sufficient [7-10]. Therefore, this study was planned to determine the awareness and participation of university employees in cancer screening programs.

2. Materials and Methods

2.1. Type of Research

It is a descriptive/cross-sectional study.

2.2. Place of Research

The research was conducted between June 2021 and March 2022 at a university in the Marmara region.

2.3. Study Population and Sample Selection

The population of the study consisted of 545 university employees working at a university between July 2021 and April 2022. Power analysis was performed to determine the sample size of the study. While calculating the power analysis, a 90% power ratio, 90% confidence limit, and 0.2 effect size were used. As a result of the calculation, the number of samples was found to be 210. The sample consisted of 223 individuals who agreed to participate in the study and met the inclusion criteria.

2.3.1 Inclusion Criteria

- Acceptance to participate in the research
- To be able to understand and communicate in Turkish

2.4. Data Collection Tools

A structured information form was used by the researchers in line with the literature [11-14]. The structured information form included questions about age, educational status, gender, smoking, alcohol use, presence of a family history of cancer, cancer risks perceived by individuals, and knowledge and participation in cancer screening programs.

2.5. Data Collection Method

Research data were collected online. The questionnaire form created in Google Form was sent to university employees by e-mail.

2.6. Data Evaluation

SPSS (Statistical Package for Social Sciences) for Windows 23 program was used for data analysis. Frequency, percentage, and chi-square tests were used to evaluate the data. The significance level was accepted as $p < 0.05$.

2.7. Ethical Approach

The principle of volunteerism was prioritized in the study, and administrative and academic university staff who voluntarily agreed to participate were included in the study. Ethics committee permission (Ethics Committee Decision No:2021-37; Date: 23.5.2021) was obtained from the Ethics Committee of Bandirma Onyedi Eylül University and institutional permission was obtained from the higher education institution where the research was conducted.

3. Findings

A total of 223 university staff, of whom 60.5% (n=135) were male and 39.5% (n=88) were female, were included in the study. 39% (n=87) of the participants had an average age between 30-39 years, 67.7% (n=151) were married, 71.3% (n=159) were academic staff and 72.6% (n=162) had postgraduate education. Among the participants, 32.7% (n=73) smoked cigarettes and 21.1% (n=47) drank alcohol (Table 1).

Table 1. Sociodemographic Characteristics of University Employees (n=223)

Variables	n	%
Age		
20-29 years	36	16.1
30-39 years	87	39.0
40-49 years	69	30.9
50 years and older	31	13.9
Gender		
Woman	88	39.5
Male	135	60.5
Marital Status		
Married	151	67.7
Single	72	32.3
Education		
High School and Associate Degree	6	2.7
License	55	24.7
Postgraduate	162	72.6

Table 1 Continued.

Variables	n	%
Cadre Type		
Administrative	64	28.7
Academic	159	71.3
Cigarette Use		
Yes	73	32.7
No	150	67.3
Alcohol Use		
Yes	47	21.1
No	176	78.9

It was found that 30.5% (n=68) of the participants had a first-degree relative with cancer and 62.3% (n=139) considered themselves at medium risk of developing cancer. When hearing about and participating in cancer screening programs, 79.8% (n=178) of the participants heard about cancer screening programs, but only 15.2% (n=34) participated in screening programs. Of the participants, 86.1% (n=192) stated that breast cancer, 56.6% (n=124) colon cancer and 47.5% (n=106) cervical cancer were screened. Among university employees, 73.1% (n=163) stated that mammography, 67.2% (n=150) breast self-examination, 56% (n=125) colonoscopy and 49.3% (n=110) pap smear test were included in cancer screening programs. Among those who participated in the screening program, 34.7% (n=16) had clinical breast examination and pap smear test, and 19.6% (n=9) had mammography (Table 2).

Table 2. Opinions of University Employees about the Cancer Screening Program (n=223)

Variables	n	%
The Thought of Getting Cancer		
High Risk	54	24.2
Medium Risk	139	62.3
Low Risk	30	13.5
Presence of Cancer in the First-Degree Proximity		
Yes	68	30.5
No	155	69.5
Hearing about Cancer Screening Programs		
Yes	178	79.8
No	45	20.2
Participation in Cancer Screening Programs		
Yes	34	15.2
No	189	84.8
Knowledge of cancer screening programs*		
Breast cancer	192	86.1
Colorectal cancer	124	55.6
Cervical cancer	106	47.5
Knowledge of cancer screening tests*		
Breast self-examination	150	67.2
Clinical breast examination	145	65
Mammography	163	73.1
Pap smear	110	49.3
HPV-DNA	62	27.8
Colonoscopy	125	56
Occult blood in feces	81	36.3

Table 2. Continued

Variables	n	%
Participation in cancer screening programs (n=34)*		
Clinical Breast Examination	16	34.7
Mammography	9	19.6
Pap smear	16	34.7
HPV-DNA test	1	2.2
Fecal occult blood	2	4.4
Colonoscopy	2	4.4

* More than one answer was given.

When the sociodemographic characteristics of university employees and their participation rates in cancer screening programs were examined, there was no statistically significant difference between the participants' age, marital status, educational status, cadre type, smoking and alcohol use status and compliance with cancer screening programs ($p > 0.05$). Among female university employees, 29.5% ($n=26$) participated in cancer screening programs. Participation rates of female employees in cancer screening programs were significantly higher than male employees ($p < 0.05$). When the presence of cancer in the first-degree relatives of the participants and their participation rates in cancer screening programs were examined, it was determined that 23.5% ($n=16$) of the employees with a family history of cancer participated in screening programs. When the participants' participation in screening programs was compared with the presence of cancer in their first-degree relatives, it was found that those with a family history of cancer were significantly more likely to participate in screening programs ($p < 0.05$).

Table 3. Participation in Screening Programs of University Employees According to Their Sociodemographic Characteristics, Presence of Cancer in the First Degree Relative and Thought of Getting Cancer (n=223)

Variables	Participation in the Screening Program		χ^2	p
	Yes (%)	No (%)		
Age				
20-29 years	2 (5.6%)	34 (94.4%)	5.613	0.091
30-39 years	11 (12.6%)	76 (87.4%)		
40-49 years	16 (23.2%)	53 (76.8%)		
50 years and older	5 (16.1%)	26 (83.9%)		
Gender				
Female	26 (29.5%)	62 (70.5%)	23.000	0.001
Male	8 (5.9%)	127 (94.1%)		
Marital Status				
Married	26 (17.2%)	125 (82.8%)	1.407	0.236
Single	8 (11.1%)	64 (88.9%)		
Education				
High School and Associate Degree	1 (16.7%)	5 (83.3%)	0.035	0.983
License	25 (15.4%)	137 (84.6%)		
Postgraduate	8 (14.5%)	47 (85.5%)		
Cadre Type				
Administrative	10 (15.6%)	54 (84.4%)	0.010	0.921
Academic	24 (15.1%)	135 (84.9%)		
Cigarette Use				
Yes	12 (16.4%)	61 (83.6%)	0.119	0.730
No	22 (14.7%)	128 (85.3%)		

Table 3. Continued

Variables	Participation in the Screening Program			χ^2	p
	Yes (%)	No (%)			
Alcohol Use					
Yes	7 (14.9%)	40 (85.1%)		0.006	0.940
No	27 (15.3%)	149 (84.7%)			
Presence of Cancer in the First-Degree Proximity					
Yes	16 (23.5%)	52 (76.5%)		5.194	0.021
No	18 (11.6%)	137 (88.4%)			
The Thought of Getting Cancer					
Low Risk	2 (6.7%)	28 (93.3%)			
Medium Risk	19 (13.7%)	120 (86.3%)		7.513	0.073
High Risk	13 (24.1%)	41 (75.9%)			

χ^2 : Pearson chi-square test

When the perceived cancer risk of university employees and their participation in cancer screening programs were examined, it was found that 24.1% (n=13) of university employees with a high risk of developing cancer participated in cancer screening programs. When the rates of perceived risk and participation in cancer screening programs were compared, no significant difference was found between the rates of perceived risk and participation in screening ($p>0.05$). However, it was determined that the rates of participation in cancer screening programs increased as the perceived risk increased (Table 3).

4. Discussion

Cancer is an important health problem in our country and in the world with its disease burden, incidence, mortality and morbidity rates. Although the mortality rate is high, cancer incidence rates decrease with the measures to be taken. In addition, participation in cancer screening programs increases survival rates by allowing cancer to be detected at an early stage. Therefore, it is important for the community to know and participate in cancer screening programs [3]. In this study, it was found that 79.8% of university employees heard about cancer screening programs, but only 15.2% participated in cancer screening programs. Although the rate of university employees hearing about cancer screening programs is high, their participation rates are very low. Participation rates can be increased through cancer screening program trainings for university employees. In studies conducted in underdeveloped and developing countries in the literature, the rates of knowing about cancer screening programs vary between 47% and 56%, while the rates of participation in cancer screening programs vary between 5% and 26% [15-17]. In studies conducted in our country, while the rates of hearing about cancer screening programs vary between 86% and 72%; participation rates in screening programs vary between 39% and 13% [9,10,18]. Although the study results are similar to the literature, the low rate of participation in cancer screening programs is thought-provoking. However, the low rate of participation in screening programs can be explained by the fact that the cancer risks perceived by the participants and their average age are lower than the lower age limit for participation in cancer screening programs.

The majority of the university employees who participated in the study think that breast cancer is included in the national cancer screening program. However, about half of the participants stated that colon and cervical cancer are included in the screening programs. In Göl and Erkin's study, 55.6% stated that breast cancer, 39.9% cervical cancer and 25.5% colon cancer were included in national cancer screening programs [3]. In the study by Babaoğlu et al., 86.6% stated that breast cancer, 74.4% cervical cancer and 62.2% colon cancer were screened. However, although it is included in the screening

program for both genders, the number of people who know that colon cancer is included in the screening program is low. One of the most important factors affecting the rate of participation in the colorectal cancer screening program is positive family history. The low rate of participants having a family history of cancer may have reduced the awareness that colorectal cancers are included in the screening program.

While the rates of university employees knowing breast cancer screening tests are high, the rates of cervical and colorectal cancer screening tests are low. In a study conducted among nurses, 49.5% of nurses stated that mammography, 44.6% pap smear test, 16% fecal occult blood test and 11% colonoscopy were among cancer screening tests [18]. In another study, 57.5% mammography, 50.3% pap smear, 54.3% fecal occult blood test and 68.4% colonoscopy were among cancer screening tests. [19]. In studies conducted in underdeveloped and developing countries, 35.5% have heard of breast cancer screening tests [20], 45% colonoscopy, 24.2% fecal occult blood test [15], and 72% pap smear test [21]. The low awareness of colorectal cancer screening tests may be due to the late inclusion of colorectal cancers in national cancer screening programs. In addition, the fact that breast cancer is more common than colorectal cancer [5] is thought to increase the rate of participation in screening.

One of the important factors affecting participation in cancer screening tests is the ease of implementation of screening tests [2]. In the study, 54.3% of the participants participated in breast cancer screening tests, 36.9% in cervical cancer screening tests and only 8.8% in colon cancer screening tests. In a study conducted with patients over 35 years of age who applied to family medicine, 37.5% of the patients participated in breast cancer screening, 26.8% in cervical cancer screening and 25% in colon cancer screening [10]. Similar results were obtained in other studies conducted in our country [22-26]. In studies conducted in Saudi Arabia [27-29], the participation rates of participants in cervical cancer screening tests were found to be 26% [27,28] and 15.24% in colon cancer screening tests [29]. In the literature, participation rates in breast cancer screening tests vary between 30% and 42% [30,31]. Screening participation rates are high in developed countries [32-34]. In a study conducted in the UK, participation rates in breast, cervical and colorectal cancer screening tests were 88%, 74% and 67%, respectively [35]. Another reason for the low rates of participation in screening programs in this study may be that the study was conducted during the pandemic period. During the pandemic period, individuals' applications to health institutions and organizations to protect themselves from COVID-19 infection decreased; these reasons are thought to have reduced participation rates in cancer screening programs.

In our country, women can participate in all cancers included in cancer screening programs, while men can only participate in colorectal cancer screening programs [2]. For this reason, it is expected that the participation rates of women in cancer screening programs are high in studies conducted in our country [36-38]. Similar results were obtained in this study and the participation rates of women in cancer screening programs were significantly higher than men. Although similar results were obtained in cancer screening studies conducted in different countries [39-41], there are studies in which gender does not make a difference [15-29]. The most important reason for this is the differences seen in the cancer screening programs of countries.

Family history serves as a significant risk factor in cancer development, contributing to an estimated 5-10% of cancer cases. Family history is thought to be responsible for approximately 5-10% of cancer cases. Therefore, it is important for individuals with a family history of cancer to participate in cancer screening programs [42]. In this study, approximately a quarter of university employees with a positive family history participated in cancer screening programs and the rate of participation in screening programs was significantly higher compared to individuals without a family history of cancer. In a study conducted in nurses, 9.1% of nurses with a family history of cancer participated in cancer screening programs [18]. In the study conducted by Tekpınar et al., as the rates of cancer presence in the family increased, the rates of participation in cancer screening programs also increased [37]. In a

study examining participation in population-based cancer screening programs in China, 20.9% of individuals with a family history of cancer participated in screening programs [41]. In a study conducted in female university students, 11.1% of students with a family history of cancer were found to perform regular breast self-examination [43]. When the studies conducted were examined, it was observed that the participation rates of individuals with cancer in their first-degree relatives in cancer screening programs were low, and the non-participation of these individuals, especially in the risk group, in screening programs may lead to an increase in cancer incidence rates in the following years. Risky individuals with a positive family history should be identified by health care professionals and their participation in cancer screening programs should be ensured.

4.1. Limitations

The cross-sectional nature of the study and the fact that it was conducted at a university are among the limitations of the study. The fact that data was collected from the university employees through a voluntary online survey may have caused the staff who were interested in this issue to fill out the survey, so the sample may not represent all university employees. Moreover, the average age of the participants in the study was below 40 years and 60% of the sample was male. Therefore, the rate of adaptation to cancer screening programs is low.

5. Conclusion and Recommendations

Although the rate of knowledge of cancer screening programs among the university employees participating in the study was high, the rate of participation in screening was low. However, female and individuals with a family history of cancer were found to have high rates of participation in screening programs. Although the education levels of the participants were high, it was found that the individuals' knowledge of cancers and cancer screening tests in the National Cancer Screening Program was low.

In line with the results of the research; in order to implement screening programs effectively, the knowledge and awareness of individuals should be increased through health education by health care professionals in institutions and organizations where screening programs are carried out. In addition, to increase the awareness and participation of cancer screening programs, it is important to provide the necessary information through platforms such as national television resources and internet pages that the society can access.

Declaration of congress abstract:

This study was presented as an abstract at the 5th International Health Sciences Congress of the Association of Thrace Universities.

Ethical statement

Ethics committee permission was obtained from Bandırma Onyedi Eylül University Ethics Committee (**Ethics Committee No:2021-37; Date: 23.5.2021**) and institutional permission was obtained from the higher education institution where the study was conducted.

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Conflict of Interest

There are no conflicts of interest.

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Author's Contributions

Idea/Concept: GYD.; Design: GYD, BDG.; Supervision/Consulting: GYD, BDG.; Analysis and/or Interpretation: GYD.; Literature Search: GYD, BDG.; Writing the Article: GYD, BDG.; Critical Review: GYD, BDG.

All authors read and approved the final manuscript.

References

- [1] WHO. (2023, Sep. 8). *Cancer*. [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/cancer>
- [2] HSGM. (2023, Sep. 8). *Türkiye Kanser Kontrol Programı*. [Online]. Available: https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/yayinlar/raporlar/2021_Kanser_Kontrol_Programi_17.Agustos_2021_Kanser_Kontrol_Programi_versiyon-1.pdf
- [3] Göl, İ., Erkin, Ö., “What do the adults know about the cancer screening programs?”, *Turkish Journal of Family Medicine and Primary Care*, 13(2), 167-176, 2019. <https://doi.org/10.21763/tjfmpe.569706>
- [4] Kurtgöz, A., Sonkaya, Z.İ., Keskin, S., “COVID-19 pandemisinin kanser erken teşhis tarama ve eğitim merkezleri hizmetlerinin kullanımına etkisi”, *Balıkesir Sağlık Bilimleri Dergisi*, 12(1), 195-200, 2023. <https://doi.org/10.53424/balikesirsbd.1075926>
- [5] Globocan. (2023, Sep. 10). GLOBOCAN 2020: New Global Cancer Data. . [Online]. Available: <https://www.uicc.org/news/globocan-2020-new-global-cancer-data>
- [6] Babaoğlu, A., Büyüközmen, E., Can, F.E., “İzmir’de toplumda kanser tarama testleri farkındalığı ve bireylerin kanser tarama testlerine katılımını etkileyen faktörler”, *Batı Karadeniz Tıp Dergisi*, 5(2), 173-181, 2021. <https://doi.org/10.29058/mjwbs.853692>
- [7] Kim, Y., Jun, J.K., Choi, K.S., Lee, H.Y., Park, E.C., “Overview of the National Cancer screening programme and the cancer screening status in Korea”, *Asian Pacific Journal of Cancer Prevention*, 12, 725-730, 2011.
- [8] Royce, T.J., Hendrix, L.H., Stokes, W.A., Allen, I.M., Chen, R.C., “Cancer screening rates in individuals with different life expectancies”, *JAMA Internal Medicine*, 174(10), 1558-1565, 2014. Doi: 10.1001/jamainternmed.2014.3895
- [9] Karakoyunlu Şen, S., Kılıç Öztürk, Y., “Sağlık algısı ile kanser taraması farkındalığı arasındaki ilişki”, *Türkiye Aile Hekimliği Dergisi*, 24(4), 175-183, 2020. Doi: 10.15511/tahd.20.00475
- [10] Özsöyler, M., Güzelöz Çapar, Z., Keser, M., “Aile hekimliği polikliniğine başvuran 35 yaş ve üzeri hastaların kanser tarama testleri hakkında bilgi ve tutumları”, *Forbes Journal of Medicine*, 4(1), 76-83, 2023. Doi:10.4274/forbes.galenos.2022.44227
- [11] Bayçelebi, G., Aydın, F., Gökosmanoğlu, F., Tat, T.S., Varım, C., “Trabzon’da kanser tarama testleri farkındalığı”, *Journal of Human Rhythm*, 1(3), 90-94, 2015.
- [12] HSGM. (2023, Jan. 15). *Türkiye Kanser Kontrol Programı*. Sağlık Bakanlığı Halk Sağlığı Genel Müdürlüğü. [Online]. Available:https://hsgm.saglik.gov.tr/depo/birimler/kanser-db/yayinlar/Kitaplar/TURKIYE_KANSER_KONTROL_PROGRAMI_2016.pdf

- [13] Sach, T.H., Whynes, D.K., “Men and women: beliefs about cancer and about screening”, *BMC Public Health*, 9, 431, 2009. <https://doi.org/10.1186/1471-2458-9-431>
- [14] Shi, F., Shaver, L.G., Kong, Y., Yi, Y., Aubrey-Bassler, K., Asghari, ... & Wang, P.P., “Sociodemographics and their impacts on risk factor awareness and beliefs about cancer and screening: results from a cross-sectional study in Newfoundland and Labrador”, *BMC Public Health*, 20(1), 1513, 2020. <https://doi.org/10.1186/s12889-020-09616-2>
- [15] Alshammari, S.A., Alenazi, H.A., Alshammari, H.S., “Knowledge, attitude and practice towards early screening of colorectal cancer in Riyadh”, *Journal of Family Medicine and Primary Care*, 9(5), 2273, 2020. https://doi.org/10.4103/jfmpc.jfmpc_290_20
- [16] Ba, D.M., Ssentongo, P., Agbese, E., Yang, Y., Cisse, R., Diakite, B., ... & Maiga, M., “Prevalence and determinants of breast cancer screening in four sub-Saharan African countries: a population-based study”, *BMJ Open*, 10(10), e039464, 2020. <https://doi.org/10.1136/bmjopen-2020-039464>
- [17] Tfaily, M.A., Naamani, D., Kassir, A., Sleiman, S., Ouattara, M., Moacdieh, M.P., Jaffa, M.A., “Awareness of colorectal cancer and attitudes towards its screening guidelines in Lebanon”, *Annals of Global Health*, 85(1), 75, 1-11, 2019. Doi: 10.5334/aogh.2437
- [18] Şeker, N., Yasin, Y.K., Özyayın, E., Çapacı, B., Okyay, P., “Üçüncü basamak sağlık kuruluşundaki hemşirelerin kanser tarama programları bilgileri ile tarama testlerini yaptırma durumları”, *Düzce Medical Journal*, 19(1), 14-18, 2018.
- [19] Soylar, P., Özer, A., Doğan Yüksekol, Ö., Ulucan, M., “Knowledge, attitude, and practice regarding cancer screening tests among health workers in a university hospital in Turkey”, *Journal of Cancer Education*, 35, 718-723, 2020. <https://doi.org/10.1007/s13187-019-01517-2>
- [20] Abeje, S., Seme, A., Tibelt, A., “Factors associated with breast cancer screening awareness and practices of women in Addis Ababa, Ethiopia”, *BMC Women's Health*, 19(1), 1-8, 2019. <https://doi.org/10.1186/s12905-018-0695-9>
- [21] Pryor, R.J., Masroor, N., Stevens, M., Sanogo, K., O'Hagan, P.H., Bearman, G., “Cervical cancer screening in rural mountainous Honduras: knowledge, attitudes and barriers”, *Rural And Remote Health*, 17(2), 1-8, 2017. Doi: [10.22605/RRH3820](https://doi.org/10.22605/RRH3820)
- [22] Büyükkayacı Duman, N., Yüksel Koçak, D., Albayrak, S.A., Topuz, Ş., Yılmazel, G., “Kırk yaş üstü kadınların meme ve serviks kanseri taramalarına yönelik bilgi ve uygulamaları”, *GOP Taksim EAH JAREN*, 1(1), 30-8, 2015. Doi: 10.5222/jaren.2015.030
- [23] Altun, Y., “Factors influencing women's participation in cancer screening”, *Turkish Journal of Family Medicine and Primary Care*, 14(2), 210-215, 2020. Doi: 10.21763/tjfmpc.645578
- [24] Kazankaya, F., Er Güneri, S., Ertem, G., “Kadınların pap smear testi yaptırma durumlarının sağlık inanç modeli yaklaşımı ile değerlendirilmesi”, *İzmir Kâtip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*, 8(1), 137-144, 2023.
- [25] Meydanlıoğlu, A., Arıkan, F., Akcan, A., Tardu, A., “Antalya’da yaşayan 50-70 yaş grubu erkeklerin kanserin risk faktörleri, belirtileri ve erken tanısına yönelik farkındalıklarının belirlenmesi”, *Bozok Tıp Dergisi*, 11(1), 56-62, 2021. doi: 10.16919/bozoktip.774592
- [26] Çakmak, R., Güler, G., “Kadın sağlık çalışanlarında kanser tarama davranışları”, *Türk Jinekolojik Onkoloji Dergisi*, 20(1), 25-32, 2018.

- [27] Aldohaian, A.I., Alshammari, S.A., Arafah, D.M., “Using the health belief model to assess beliefs and behaviors regarding cervical cancer screening among Saudi women: a cross-sectional observational study”, *BMC Women's Health*, 19(1), 1-12, 2019. <https://doi.org/10.1186/s12905-018-0701-2>
- [28] Heena, H., Durrani, S., AlFayyad, I., Riaz, M., Tabasim, R., Parvez, G., Abu-Shaheen, A., “Knowledge, attitudes, and practices towards cervical cancer and screening amongst female healthcare professionals: a cross-sectional study”, *Journal of Oncology*, 2019, 2019. Doi: <https://doi.org/10.1155/2019/5423130>
- [29] Almadi, M.A., Alghamdi, F., “The gap between knowledge and undergoing colorectal cancer screening using the Health Belief Model: A national survey”, *Saudi Journal of Gastroenterology: Official Journal of The Saudi Gastroenterology Association*, 25(1), 27-39, 2019. doi: 10.4103/sjg.SJG_455_18
- [30] Heena, H., Durrani, S., Riaz, M., AlFayyad, I., Tabasim, R., Parvez, G., Abu-Shaheen, A., “Knowledge, attitudes, and practices related to breast cancer screening among female health care professionals: a cross-sectional study”, *BMC Women's Health*, 19, 1-11, 2019. <https://doi.org/10.1186/s12905-019-0819-x>
- [31] Thanh Toan, D.T., Son, D.T., Hung, L.X., Minh, L.N., Mai, D.L., Hoat, L.N., “Knowledge, attitude, and practice regarding breast cancer early detection among women in a mountainous area in Northern Vietnam”, *Cancer Control*, 26(1), 1-5, 2019. <https://doi.org/10.1177/10732748198637>
- [32] Njor, S.H., Søborg, B., Tranberg, M., Rebolj, M., “Concurrent participation in breast, cervical, and colorectal cancer screening programmes in Denmark: A nationwide registry-based study”, *Preventive Medicine*, 167, 107405, 2023. <https://doi.org/10.1016/j.ypmed.2022.107405>
- [33] Richardson, L.C., King, J.B., Thomas, C.C., Richards, T.B., Dowling, N.F., Coleman King, S., “Adults who have never been screened for colorectal cancer, behavioral risk factor surveillance system, 2012 and 2020”, *Preventing Chronic Disease*, 19, E21, 2022. <https://doi.org/10.5888/pcd19.220001>
- [34] Ma, Z.Q., Richardson, L.C., . (2023, Nov. 19). “Peer reviewed: Cancer screening prevalence and associated factors among US adults”, *Preventing Chronic Disease*, . [Online]. Available: https://www.cdc.gov/pcd/issues/2022/22_0063.htm
- [35] Vrinten, C., Gallagher, A., Waller, J., Marlow, L.A., “Cancer stigma and cancer screening attendance: a population based survey in England”, *BMC Cancer*, 19, 1-10, 2019. <https://doi.org/10.1186/s12885-019-5787-x>
- [36] Erdem, S.S., Yılmaz, M., Yıldırım, H., Mayda, S., Bolu, F., Durak, A.A., Şener, Ö., “Düzce’de yaşayanların kanser ve kanser risk faktörleri hakkında bilgi düzeyi”, *Düzce Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi*, 7(1), 1-10, 2017.
- [37] Tekpınar, H., Özen, M., Aşık, Z., “Aile Hekimliği polikliniğine başvuran hastaların kanser taramalarına ilişkin yaklaşımlarının değerlendirilmesi”, *Türkiye Aile Hekimliği Dergisi*, 22(1), 28-36, 2018.
- [38] Öztürk Emiral, G., Işıktekin Atalay, B., Önsüz, M.F., Zeytin, M.A., Küçük, Y.S., Işıklı, B., Metintaş, S., “Yarı kırsal alanda yaşayan kişilerde gaitada gizli kan taraması ve tarama programları hakkında farkındalıkları”, *Türk Dünyası Uygulama ve Araştırma Merkezi Halk Sağlığı Dergisi*, 3(1), 42-55, 2018.

- [39] Nemer, H., Hejase, A., Hejase, H., Othman, M., Chawraba, M., & Trad, M.A., “Colorectal cancer: Exploring awareness in Lebanon”, *Journal of Middle East and North Africa Sciences*, 2: 10–21, 2016. <https://doi.org/10.12816/0032694>
- [40] Hoffman, R.M., Elmore, J.G., Pignone, M.P., Gerstein, B.S., Levin, C.A., & Fairfield, K.M. “Knowledge and values for cancer screening decisions: Results from a national survey”, *Patient Education and Counseling*, 99(4), 624–630, 2016. <http://dx.doi.org/10.1016/j.pec.2015.11.001>
- [41] Chen, H., Li, N.I., Ren, J., Feng, X., Lyu, Z., Wei, L., ... & He, J., “Participation and yield of a population-based colorectal cancer screening programme in China”, *Gut*, 68, 1450–1457, 2019. doi:10.1136/gutjnl-2018-317124
- [42] Kolb, J.M., Ahnen, D.J., Samadder, N.J., “Evidenced-based screening strategies for a positive family history”, *Gastrointestinal Endoscopy Clinics of North America*, 30(3), 597–609, 2020. <https://doi.org/10.1016/j.giec.2020.02.015>
- [43] Abo Al-Shiekh, S.S., Ibrahim, M.A., Alajerami, Y.S., “Breast cancer knowledge and practice of breast self-examination among female university students, Gaza”, *The Scientific World Journal*, 2021(1), 1-7, 2021. Doi: 10.1155/2021/6640324