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ATTITUDES AND RELATED FACTORS OF WOMEN IN TURKEY TOWARDS CANCER SCREENING: ANALYTICAL CROSS-SECTIONAL STUDY

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Abstract

Objective: This study aimed to examine women's attitudes and related factors towards cancer screening in Turkey.

Methods: This analytical-cross-sectional study was conducted between June and September 2022. The universe of the study consisted of all women between the ages of 30-70 in Turkey, and the sample included 335 women. The data of the study were collected online with the "Personal Information Form'' and "Attitude Scale for Cancer Screening".

Results: The average Attitude Scale for Cancer Screening total score of the women participating in the study was 84.36±14.55. Of the women who participated in the study, 33.1% did not perform breast self-examination, 63.1% did not perform clinical breast examination, 49.5% did not perform Pap smear and HPV-DNA testing, 60.9% did not perform mammography, 76.1% did not perform fecal occult blood testing and 93.8% did not perform colonoscopy. It was determined that education status, breast self-examination, clinical breast examination, Pap Smear and HPV-DNA test frequencies, and knowing the places where cancer screening was performed affected the Attitude Scale for Cancer Screening score averages ($F = 8.729$, $p = 0.000$).

Conclusion: It was determined that the attitudes of the women participating in the study towards cancer screening were moderate. Several factors are done affect attitudes towards cancer screening.

Keywords*: Attitudes towards cancer screening, breast self-examination, clinical breast examination, fecal occult blood, mammography, pap smear test.*

Introduction

Cancer is one of the greatest challenges of modern medicine and is the sixth leading cause of death globally. In addition to its lethality, cancer causes heavy losses in the workforce and the country's economy due to disabilities and the high costs of its treatment and adversely affects the world in many ways.[1] The World Health Organization (WHO) states that about one in five people develop cancer in their lifetime, approximately one in nine men and one in twelve women die from the disease.[2]

An important part of the cancer burden in the world is female cancers, namely breast, ovarian, uterus, and cervical cancers.[3,4] Early diagnosis plays a crucial role in the fight against cancer and can significantly reduce cancer-related mortality. The WHO states that cancer screening programs should continue regularly and recommends community-based screening programs for breast, cervix, and colorectal cancers to reduce cancer-related deaths.[5] In line with these recommendations, cancer screening studies in Turkey began in 2006 with the "Cancer Early Diagnosis, Screening, and Training Centers (KETEM)". National Cancer Screening Programme' has been carried out in Turkey since 2008 for breast, cervix and colorectal cancers for which there are valid and acceptable screening methods and early diagnosis has a great effect on prolonging life.[6,7] This cancer screening program for women is run as follows:[6]

- Under the breast cancer screening program, monthly breast self-examination (BSE), annual clinical breast examination (CBE), mammography every two years for women aged 40-69,
- As part of the cervical cancer screening program, (Pap) smear and Human Papilloma Virus (HPV-DNA) test every five years from women between the ages of 30-65,
- Within the scope of the colorectal cancer program, it is recommended to perform a Fecal Occult Blood (FOC) test every two years in men and women aged 50-70 years, and a colonoscopy every ten years between the ages of 50-70.[6] Women's cancer not only affect individual health but also have profound implications for family and community health. Cancer, which reduces the quality of life of individuals all over the world, shortens their lives, and has profound effects in many ways such as economic, psychological, etc., can be understood how greatly affects women's health especially when considering the important place of women in the family and society.[8,9] The development of women's health means the development of family health first and then community health. For this reason, cancer screening is extremely important for women's health, which is a great opportunity to take the necessary precautions and reduce cancer-related deaths before the symptoms of the disease appear.[4] The participation of women in cancer screenings is affected by different characteristics, and it is of great importance to inform women about the importance of cancer prevention and cancer screening, to organize effective screening programs, and to direct women to these programs in the success of cancer screening programs.[3,8,10] In addition, it is important to determine the factors affecting women's participation in cancer screenings, to examine women's attitudes towards cancer screening and related factors, to solve the reasons that prevent screening, and to understand the obstacles to the spread of cancer screening. Based on this idea, this study aimed to examine women's attitudes and related factors towards cancer screening in Turkey.

Research questions

- What are women's attitudes towards cancer screening in Turkey?
- What are the factors associated with women's attitudes towards cancer screening in Turkey?

Methods

Research Design

This analytical cross-sectional study was conducted online between June and September 2022 in Turkey.

Sampling and Participants

The study population consisted of women aged 30-70 living in Turkey in 2022. According to the Turkish Statistical Institute, the female population was 20,599,842. Based on the Turkish Health Statistics Yearbook[11] data indicating that 22.1% of women perform regular breast self-examinations (BSE), the minimum sample size was calculated as 263 using the known population sampling method with N=20,599,842, p=0.22, q=0.78, t=1.96, and α=0.05. Taking into account possible data loss, 346 women were reached. However, 11 women were excluded because they did not meet the inclusion criteria. The final sample consisted of 335 women.

Inclusion and Exclusion Criteria

Inclusion criteria were women aged 30-70 years old, at least primary school graduates, and those owning a smartphone with internet access. Women with cognitive, visual, or orthopedic disabilities were excluded.

Dependent and Independent Variables of the Research

Dependent variables: Mean scores of Attitude Scale for Cancer Screening and factors related to women's attitudes towards cancer screening.

***Independent variables*:** Socio-demographic characteristics of women, information related to general health status, cancer screening status, knowledge, and behaviors towards cancer screening.

Data Collection

Research data were collected through the snowball method by using a survey link from an online platform. Data collection forms were distributed as links via social media platforms (Instagram, Facebook, Telegram, WhatsApp) to women in the researchers' network. The inclusion criteria were outlined in the link, and women meeting these criteria who consented to participate by ticking a box were able to proceed to the survey. The informed consent form provided information about the study's purpose, and only those who consented could access the questionnaire. All responses were anonymous and only accessible to the researchers. The researchers' bias was prevented by using the snowball sampling method during the data collection process to select the sample group impartially and collect the data independently.

Data Collection Forms

The data were collected using the "Personal Information Form" and the "Attitude Scale for Cancer Screening (ASCS)".

Personal Information Form: The form, consisting of 33 questions, covers sociodemographic and obstetric characteristics, as well as behavior based on the literatüre.[4,8,12-14]

Attitude Scale for Cancer Screening: This scale was created to assess attitudes towards cancer screening. It consists of 24 items and measures a single dimension. Respondents answer the items on a five-point Likert-type scale, ranging from "5: I agree" to "1: I strongly disagree." The lowest possible score on the scale is 24, and the highestis 120. There is no specific cutoff point for the scale. As scores approach 24, it is interpreted as indicating a negative attitude towards cancer screenings, while scores approaching 120 suggest positive attitudes.[15] The overall Cronbach's alpha value of the scale was 0.957, and it was 0.881 in this specific study.

Statistical Analysis

Statistical analysis was performed using SPSS version 22.0. Descriptive statistics included means, standard deviations, medians, minimum, and maximum values for continuous variables, and frequencies and percentages for categorical variables. The Kolmogorov-Smirnov test was used to assess normality. Depending on the distribution's normality, either the Student's t-test and One-Way ANOVA or the Mann-Whitney U and Kruskal-Wallis tests were utilized. Linear regression analyses identified factors influencing attitudes toward cancer screening, with beta coefficients (β), odds ratios (ORs), and 95% confidence intervals (CIs) reported. A *p*-value of <0.05 was considered statistically significant.

Results

The average ASCS total score for women in the study was 84.36±14.55, and their average age was 42.47±9.87 years. University graduates had a significantly higher average ASCS total score (92.12±14.82) compared to those with other education levels. Additionally, employed individuals had a higher average score (87.45±15.51) compared to those who were not employed (81.50±13.46). Those with a nuclear family type (85.23±14.83) also scored higher than those with an extended family type (80.56±12.63), as did those living in the city center (86.25±15.85) compared to those living in villages (80.26±11.33) and districts (81.61±12.33) (p<0.05) (Table 1).

In addition, the study found that 31.3% of the women used cigarettes, 6.6% used alcohol, 35.2% had health problems, and 11.9% were diagnosed with cancer. The study did not find a significant correlation between women's general health characteristics and the total ASCS score (p>0.005) (Table 2). Regarding cancer screening, the following percentages of women had never undergone specific examinations: 33.1% had never performed breast self-examinations; 63.1% had never had clinical breast examinations; 60.9% had never had mammograms; 49.5% had never had Pap smears and HPV-DNA tests; 75.7% had never undergone fecal occult blood tests; 93.8% had never had a colonoscopy (Table 3).

Additionally, 40.4% of the women were unaware of places where cancer screenings were conducted, while 43.4% did not receive information about cancer screenings. The mean ASCS score was statistically lower in those who were uninformed about screening locations (78.80±11.99) compared to those who were informed (88.61±14.92) and those who did not receive information about cancer screening (80.08±11.34) compared to those who did (88.14±15.82) (p = 0.000) (Table 4).

Table 1. Women's ASCS total score and its relationship with socio-demographic characteristics (n=335).

ASCS Total Score		**Mean ± SD***	**Median (Min-max)**	**Cronbach alfa**
		84.36±14.55	83.00 (52.00-120.00)	0.881
Parameters	**n (%)**	**Mean ± SD***	**Median (Min-max)**	**Test Value and Significance**
Age, years				
30-39	154 (46.0)	83.76±14.46	81.00 (52.00-119.00)	KW=0.911
40-49	103 (30.7)	84.39±14.85	84.00 (54.00-115.00)	p=0.634
50 and above	78 (23.3)	85.51±14.43	84.00 (53.00-120.00)	
Age, years, Mean ± SD*			42.47±9.87 (Min-max: 30-68)	
Marital Status				
Married	236 (70.4)	84.59±14,64	83.00 (52.00-120.00)	U=11.654
Single	99 (29.6)	83.82±14.38	85.00 (53.00-116.00)	p=0.972
Educational status				
Primary school [a]	66 (19.7)	81.09±11.05	82.50 (57.00-114.00)	
Secondary school [b]	61 (18.2)	76.72±11.70	76.00 (52.00-116.00)	KW=61.604
High school [c]	87 (26.0)	81.42±13.59	79.00 (58.00-119.00)	***p*=0.000**[1]
College/University [d]	121 (36.1)	92.12±14.82	91.00 (53.00-120.00)	
Work Status				
Working	161 (48.1)	87.45±15.51	86.00 (54.00-120.00)	U=10.821
Not Working	174 (51.9)	81.50±13.46	81.00 (52.00-120.00)	***p*=0.000**
Perception of income level				
Bad	104 (31.0)	83.25±13.72	83.00 (52.00-120.00)	KW=1.879
Moderate	191 (57.0)	84.34±14.55	83.00 (53.00-120.09)	p=0.391
Good	40 (11.9)	87.37±16.49	87.50 (60.00-118.00)	
Family type				
Nuclear family	273 (81.5)	85.23±14.83	85.00 (52.00-120.00)	U=6.918
Extended family	62 (18.5)	80.56±12.63	80.00 (57.00-116.00)	***p*=0.025**
Living place				
Village	30 (9.0)	80.26±11.33	79.50 (61.00-114.00)	KW=8.876
District	118 (35.2)	81.61±12.33	83.00 (52.00-116.00)	***p*=0.012**[2]
City center	187 (55.8)	86.25±15.85	85.00 (53.00-120.00)	

*Standard Deviation; KW= Kruskal Wallis; U=Mann Whitney U; [1]d>a=b=c; [2]c>a=b.

Table 2. The relationship between women's ASCS total score and some characteristics of their general health (n=335).

Parameters	n (%)	Mean ± SD*	Median (Min-max)	Test Value and Significance
Smoking status				
Yes	105 (31.3)	84.31±14.13	84.00 (58.00-119.00)	U=12.046
No	230 (68.7)	84.39±14.76	83.00 (52.00-120.00)	*p*=0.972
Alcohol use status				
Yes	22 (6.6)	83.50±14.88	85.00 (58.00-116.00)	U=3.488
No	313 (93.4)	84.42±14.55	83,00 (52,00-120,00)	*p*=0.917
Health problem status				
Yes	118 (35.2)	83.11±12.85	83.00 (52.00-116.00)	U=13.526
No	217 (64.8)	85.04±15.38	84.00 (53.00-120.00)	*p*=0.393
Family history of cancer				
No cancer	136 (40.7)	86.09±14.90	85.00 (52.00-120.00)	
Cancer in 1st degree relative	58 (17.3)	87.06±15.19	87.00 (63.00-119.00)	F=0.933
Cancer in 2nd degree relative	104 (31.0)	81.25±13.97	81.00 (53.00-115.00)	*p*=0.622
Cancer in 3rd degree relative	37 (11.0)	82.51±12.38	81.00 (61.00-116.00)	
The status of being diagnosed with cancer				
Yes	40 (11.9)	84.87±14.79	84,00 (57.00-118.00)	U=5.796
No	295 (88.1)	484.29±14.54	83.00 (52.00-120.00)	*p*=0.856
Cancer diagnosed (n=40)	**n**		**%**	
Breast	15		37.5	
Thyroid	8		20.0	
Cervix	5		12.5	
Uterus	4		10.0	
Stomach	4		10.0	
Other (Colon, bladder, skin)	4		10.0	

*Standard Deviation; U=Mann Whitney U; F=One-Way ANOVA

Table 3. The relationship between women's ASCS total score and their cancer screening status

Parameters	n (%)	Mean ± SD*	Median (Min-max)	Test Value and Significance
BSE (≥30 years old) (n=335)				
Not doing [a]	118 (33.1)	79.21 ± 11.86	76.00 (58.00-112.00)	
Just once [b]	39 (11.4)	82.64 ±13.15	80.00 (61.00-116.00)	KW=38.484
At irregular intervals [c]	162 (49.9)	87.06 ±14.98	87.00 (52.0-119.0)	***p*=0.000**[1]
Once a month [d]	16 (5.6)	99.25 ±15.34	99.25 (72.0-120.0)	
CBE (≥30 years old) (n=335)				
Not doing	217 (63.1)	82.17±14.37	81.0 (52.0-120.0)	
Just once	60 (18.1)	85.20±13.17	83.0 (57.0-117.0)	KW=25.314
At irregular intervals	49 (15.6)	89.83±14.42	86.0 (63.0-119.0)	***p*=0.000**[2]
Once a year	9 (3.2)	101.88±8.40	103.0 (89.00-116.00)	
Mammography (≥ 40 years old) (n=181)				
Not doing	111 (60.9)	84.27±15.52	84.0 (53.00-120.00)	F=0.901
Just once	42 (23.1)	84.42±14.84	82.0 (59.0-116.0)	*p*=0.665
At irregular intervals	25 (14.1)	86.80±9.30	86.0 (71.0-113.0)	
Once in two years	3 (1.9)	97.66±13.42	92.0 (88.0-113.0)	
Pap Smear and HPV-DNA test ** **(≥30 years old) (n=335)**				
Not doing	173 (49.5)	80.83±13.66	79.00 (52.0-116.0)	KW=23.555
Just once	63 (19.4)	87.23±14.23	85.00 (60.00-120.00)	***p*=0.000**[3]
At irregular intervals	81 (25.0)	87.27±13.81	86.00 (58.00-120.00)	
Every five years	18 (6.1)	95.16±17.68	97.50 (63.00-118.00)	
FOBT (≥50 years old) (n=78)				
Not doing	59 (75.7)	86.00±15.38	85.00 (53.00-120.00)	KW=0.314
Just once	12 (15.4)	82.41±9.51	81.00 (69.00-98.00)	*p* = 0.855
At irregular intervals	7 (8.9)	86.61±14.02	88.00 (69.00-114.00)	
Colonoscopy (≥50 years old) (n=78)				
Not doing	73 (93.8)	83.00±5.65	86.00 (74.00-88.00)	t=3.91
Just once	5 (6.2)	85.68±14.84	86.00 (53.00-120.00)	*p*=0.051
The negative impact of the COVID-19 pandemic on participation in cancer screenings (≥30 years) (n=335)				
Yes	142 (42.2)	84.08±13.54	83.00 (52.00-120.00)	U=13.962
No	193 (57.8)	84.58±15.28	84.00 (53.00-120.00)	*p*=0.661

*Standard Deviation; **As women did not know the difference between Pap Smear and HPV DNA tests, these two tests were questioned together. KW=Kruskal Wallis; U=Mann Whitney U; F=One-Way ANOVA; t=student t test; [1]a<c=d, b<d; [2]a <c=d, b<d; [3]a<b=c=d.

Table 4. The relationship between women's ASCS total score and their knowledge and behaviors towards cancer screening

Parameters	n (%)	Mean ± SD*	Median (Min-max)	Test Value and Significance
Knowing where cancer screenings are done (n=335)				
Yes	190 (59.6)	88.61±14.92	88.50 (57.00-120.00)	U=8.564
No	145 (40.4)	78.80±11.99	78.00 (52.00-116.00)	***p*=0.000**
Being Informed about Cancer Screenings (n = 335)				
Yes	181 (56.6)	88.14±15.82	86.00 (53.00-120.00)	U=9.651
No	153 (43.4)	80.08±11.34	80,00 (52.00-116.00)	***p*=0.000**
Source of information ** **(n=256)**				
Healthcare professional	104 40.6)			
Social media	88 (34.8)			
Relative/Friend	58 (22.6)			
Other (Magazine, newspaper, school etc.)	6 (2.0)			
Reasons for having cancer screenings ** **(n=332)**				
For control	113 (34.0)			
For early diagnosis	88 (26.5)			
Health professional's recommendation	81 (24.3)			
Existing family history of cancer	50 (15.2)			
Reasons for not having cancer screenings ** **(n=491)**				
No complaints	156 (31.8)			
Lack of time	72 (14.8)			
Lack of knowledge	55 (11.2)			
Be ashamed, shy, or afraid	56 (21.6)			
Privacy	50 (10,1)			
Not knowing where to apply	49 (9.9)			
Other (not believing the accuracy of the tests, etc.)	3 (0.6)			

*Standard deviation; **More than one answer was given.

Depending on the normality of the distribution, either the Student's t-test and One-Way ANOVA or the Mann-Whitney U and Kruskal-Wallis tests were applied. Mann Whitney U, Kruskal Wallis, t-test and One-Way were used to determine the factors affecting women's ASCS score averages, which were conducted between women's socio-demographic and general health characteristics, their status of having cancer screenings, their knowledge and behaviors towards cancer screening, and scale mean scores. In the ANOVA analysis, it was determined that women's education level, employment status, family type, place of residence, knowing the place where cancer screening was performed, getting information about cancer screenings and performing breast self-exams, clinical breast examination and Pap smear and HPV-DNA test affect ACSC score averages. (p<0.05). Linear regression analysis was performed for these factors affecting the ACSC score averages. When these factors were analyzed with the enter method in linear regression analysis, it was determined that education status, BSE, CBE, Pap Smear and HPV-DNA test frequencies, and knowing the places where cancer screening was performed affected the ACSC score averages (F=8.729 and p=0.000). The ACSC point averages of women are lower than those of primary school (11.83 points), secondary school (14.97 points) and high school (9.21 points) graduates compared to university graduates, those who do BSE at irregular intervals (6.86 points) compared to those who have never had CBE. (10.40 points) and only once (11.52 points) compared to those who have it done once a year, those who have never had the Pap Smear and HPV-DNA test (8.48 points) compared to those who have it done every five years, and those who do not know where to be screened for cancer (5.69 points) are lower than those who know. This difference was found to be statistically significant (p<0.005) (Table 5).

Discussion

This study aimed to investigate women's attitudes towards cancer screening and related factors in Turkey. The findings revealed that the average ASCS total score among women was 84.36±14.55. This study examined women's attitudes towards cancer screening and related factors in Turkey. The mean ASCS total score of women was found to be 84.36±14.55. Another study focusing on the knowledge, attitudes, and behaviors of municipal employees in a Turkish district reported a mean ASCS score of 92.0 (range: 52.0-120.0) in relation to community-based cancer screening within cancer control programs.[16] Similarly, a study in Turkey involving individuals aged 30-70 years revealed a mean ASCS score of 101.6±12.85 (range: 48-120) regarding attitudes and behaviors towards cancer screening tests.[17] In line with these findings, the mean ASCS score in our study was found to be lower than the mean ASCS scores obtained by Bağcı et al, 2024 and Yeğenler et al, 2023.[16,17] This difference may be due to the inclusion of municipal employees in the Bağcı et al, and the inclusion of all individuals, not just women, in the Yeğenler et al, resulting in a higher level of education.[16,17] In general, the ASCS scores obtained in our study indicate a moderately positive attitude compared to other studies. However, it should be taken into account that various demographic and socioeconomic factors may influence participants' attitudes towards cancer screening. Developing a positive attitude towards cancer screening plays a key role in early diagnosis. To increase participation and attitudes in cancer screening programs, which play an important role in the development of women's health, researching the factors affecting women's attitudes towards these programs and conducting studies to prevent negative attitudes will affect attitudes positively. Analyzing

such differences in more detail in future studies may help us to better understand women's attitudes towards cancer screening in Turkey.

It has been established that female university graduates tend to have more positive attitudes towards cancer screening. Our study's findings align with existing literature, which suggests that women with higher education and economic status, better income, and proximity to health institutions are more likely to hold favorable attitudes towards cancer screening.[3,8] Considering that the level of awareness and consciousness of women increases with the increase in education level, welfare level, and living standards, it is also possible that women's participation and attitudes towards cancer screening will increase.

Table 5. Linear regression analysis of the factors affecting the mean scores ASCS

Parameters	B (%95 Cl)	Beta	t	*p*	Zero-order	Partial
(Constant)	109.47 (96.62-122.31)	-	16.766	**.000**	-	-
Educational status (College/University)						
Primary school	-11.83 (-17.10- -6.56)	-.32	-4.41	**.000**	-.112	-.24
Secondary school	-14.97 (-19.80- -10.14)	-.39	-6.10	**.000**	-.248	-.32
High school	-9.21 (-13.03- -5.39)	-.27	-4.74	**.000**	-.120	-.25
Work Status (Working)						
Not Working	-.98 (-4.47-2.51)	-.03	-.55	.582	.205	-.03
Family type (Nuclear family						
Extended family	1.77 (-1.87-5.42)	.04	.95	.339	.125	.05
Living place (City center)						
Village	1.09 (-4.27-6.46)	.02	.40	.688	-.089	.02
District	.10 (-3.12-3.33)	.00	.06	.950	-.139	.00
BSE (Once a month)						
Not doing	-5.91 (-13.19-1.37)	-.19	-1.59	.111	-.262	-.08
Just once	-7.51 (-15.03- .01)	-.16	-1.96	.051	-.043	-.11
At irregular intervals	-6.86 (-13.32- -.40)	-.23	-2.09	**.037**	.180	-.11
CBE (Once a year)						
Not doing	-10.40 (-19.13- -1.66)	-.34	-2.34	**.020**	-.205	-.13
Just once	-11.52 (-20.36- -2.68)	-.30	-2.56	**.011**	.027	-.14
At irregular intervals	-8.13 (-17.05- .79)	-.19	-1.79	.074	.156	-.10
Pap Smear and HPV-DNA test (Every five years)						
Not doing	-8.48 (-15.24- -1.71)	-.29	-2.46	**.014**	-.251	-.13
Just once	-4.10 (-10.83- 2.63)	-.11	-1.19	.232	.095	-.06
At irregular intervals	-3.33 (-9.87-3.19)	-.09	-1.00	.315	.113	-.05
Knowing where cancer screenings are done (Yes)						
No	5.69 (2.30-9.09)	.19	3.30	**.001**	.334	.18
Being Informed about Cancer Screenings (Yes)						
No	.42 (-2.78-3.64)	.01	.26	.94	.282	.01

B: Non-standardized coefficient, CI: Confidence interval, Beta: Standardized coefficient. F=8.729, *p*=0.000, Adj. R^2=0.294 Standart Error= 1

It was determined that approximately two-thirds of the women participating in the study had a family history of cancer, one out of ten women was diagnosed with cancer, and breast, thyroid, and cervical cancers were the leading cancer types diagnosed. In our study, it was seen that the incidence of cancer is high in women, gynecological cancers are more common in women, and it is similar to some studies in the literature.[13,14] In terms of increasing cancer rates, the importance of screening programs for early diagnosis of cancer is increasing day by day. It is necessary to deal with cancer from a multidimensional perspective, especially in the economies of countries, with its physiological, biological, and psychological effects on women. Because, in addition to the problems experienced during the diagnosis and treatment processes of cancers, important concerns and developments arise about body image, sexual identity and reproductive ability, depression, isolation from society, and personality changes. Therefore, it is of great importance to raise awareness in the society, to increase awareness about cancer screenings, and to increase participation rates in these screening programs.

Breast cancer is the most common type of cancer in women in the world and the second leading cause of death after lung cancer. Breast cancer ranks first among the most common types of cancer in women in Turkey.[18] When breast cancer is diagnosed at an early stage, life expectancy can be extended, and a complete cure can be achieved.[13] In the early diagnosis of breast cancer, BSE, CBE, and mammography are the diagnostic methods studied. Screening has reduced the death rate from breast cancer by up to 25% in the USA, Sweden, the Netherlands, and Denmark.[19] Although these data are lacking in Turkey, the rate of participation in breast cancer screening in women is between 20-30% and more than half of the diagnosed cases are in advanced stages.[20] It was determined that 33.1% of the women participating in this study had never done BSE, 63.1% had never had CBE, and 60.9% had never had a mammogram. In Turkey, the Ministry of Health recommends monthly BSE, annual clinical breast examination, and biennial mammography for women aged 40-69 to detect breast cancer early.[7] Considering these rates, it is seen that the participation rate of women in cancer screenings is low and that these recommendations are not followed adequately. The fact that breast cancer, which is the most common type of cancer among women, can be treated in the early stages and is easy to recognize, increases the importance of breast cancer screening, and health professionals who care for and train women have important duties in raising awareness about the issue.

Cervical cancer is the second most common cancer among women in the world, after breast cancer. After the implementation of cervical cancer screening programs in many developed countries, a decrease in the incidence and

mortality of cervical cancer has been observed in the past fifty years.[12] HPV-DNA testing is largely responsible for reducing the incidence and mortality of invasive cervical cancer in many developed regions of the world. However, it was determined that half of the women participating in this study had never had the Pap smear and HPV-DNA test. The rate of Pap smear and HPV-DNA tests was reported as 2012, 30.7% in 2016, and 38.8% in 2019.[20] According to these results, it is seen that the rates of having Pap smear and HPV-DNA testing within the framework of the national screening program are below the desired level and the rates of women having Pap smear and HPV-DNA testing are low.

Colon cancer is one of the cancers in which early diagnosis and screening is important in women. In our study, it was determined that most women over the age of 50 had never had FOBT screening and almost all of them had never had colonoscopy screening. Unfortunately, the rate of participation in cancer screenings is not at the desired level in today's world where access to information becomes easier. In similar studies in the literature, it has been reported that women's participation in colorectal cancer screenings is low.[21-23] Cancer is one of the most important health problems of our time, and it causes heavy losses in the workforce and the country's economy due to the injuries it causes and the high costs of its treatment. Therefore, women must be informed about colorectal cancer screening and encouraged to participate.

While there are many important factors affecting women's health, we can also add the coronavirus pandemic we are experiencing today.[24] The negative effects of the pandemic on women's life and health have caused women to be more at risk in many ways, and many women have not been able to access the support they need.[25] A study conducted in the United States during the COVID-19 pandemic compared the number of screenings for breast, colon, lung, and prostate cancer. It was found that the number of cancer screenings decreased in all months during the pandemic, with the greatest decrease occurring in April, when the outbreak peaked.[26] Another study conducted in the United Kingdom indicated that delays in diagnosis and treatment during the pandemic could result in increased breast and colorectal cancer deaths five years later. Similarly, a study conducted in Turkey found a significant decrease in all screening programs during the COVID-19 pandemic.[27] The majority of women participating in the study reported that the pandemic negatively impacted their participation in cancer screening, citing problems with access to routine health checks, screening programs, and other health services. Many women avoided seeking health services due to concerns about infection and opted for social isolation during the pandemic. This avoidance led to health issues, progression of existing diseases, and disruption of essential medical services. The study concludes that women's health has been adversely affected by the pandemic and emphasizes the need for good coordination to restart cancer screening activities, reach the community more actively, alleviate concerns of apparently healthy individuals returning to routine healthcare, and minimize backlogs by reorganizing clinical services.

The most common reasons for women participating in the study to be screened for cancer are control, early diagnosis, and the recommendation of a health professional. The most common reasons for not having a screening were stated that they did not have any complaints, could not spare time, and because they were embarrassed, hesitant, and afraid. This finding of our study is comparable to the literature. In studies on the subject, it has been determined that women may not believe they need screening programs, may avoid participation due to fear, and may not have any symptoms. Other factors affecting participation in these screening programs include lack of knowledge about cancer screenings, not feeling the need to screen without symptoms, feeling embarrassed about the screening procedure, or fear of screening.[28-30]

Determining the factors affecting women's participation in cancer screening is important in terms of resolving the reasons that prevent screening. Women's attitudes towards cancer screenings can be influenced by various psychological and social factors. For instance, a study of women over 40 revealed that shame and fear were the main reasons for not getting pap smear tests.[31] Another study by Çam and Babacan Gümüş found that beliefs about cancer were influenced by differences in lifestyles, social stigma, and attitudes about reproductive habits and sexual practices in society.[32] Fatalism was reported as a factor preventing positive attitudes towards health and cancer screening behaviors.[33] Additionally, negative perceptions about their bodies caused women to avoid screenings such as mammography and clinical breast examination.[34] Studies from various countries have highlighted the influence of knowledge, beliefs, and attitudes within the social and cultural structure on individuals' participation in cancer screening programs.[33,34] It is recommended to increase participation rates in cancer screening programs and investigate the impact of cultural and regional differences. Furthermore, raising awareness among health professionals, providing relevant training, and developing strategies to increase women's participation in cancer screening programs are important.

Limitations

Some potential limitations of the research are as follows:

1. Firstly, cross-sectional research faces difficulties in establishing cause-effect relationships because it examines the current situation at the time of data collection. Therefore, a definite causal relationship cannot be established between women's attitudes toward cancer screening and the factors affecting these attitudes.
2. Secondly, self-reported attitudes of women towards cancer screening may lead to social desirability bias, as participants may tend to give answers that align with societal expectations.
3. Thirdly, the limited sample size of the study may make it difficult to detect significant differences between certain subgroups.
4. Additionally, Turkey is home to various ethnic and cultural groups. Different cultural norms and beliefs may influence women's attitudes toward health services, particularly cancer screening.
5. Furthermore, the level of access to health services may vary greatly in different regions of Turkey. If these differences are not adequately taken into account, the study's results cannot be generalized to the entire country. Also, as the study was single-centered, the findings cannot be generalized to all of Turkey. Therefore, it is recommended to plan multi-center studies with larger sample groups to enhance the generalizability of the results. It is important to consider these limitations when interpreting the research results.

Conclusion

As a result, it was determined that the attitudes of the women participating in the study towards cancer screening were moderate. Educational status, BSE, CBE, Pap Smear and

HPV-DNA testing frequency and knowing the cancer screenings centers affect attitudes towards cancer screening. It was concluded that a significant part of the women did not have BSE, CBE, Pap smear, and HPV-DNA test, did not have mammography, did not have FOB screening or colonoscopy. Although it has been clearly shown that detecting cancer at an early stage through screening is an effective strategy, participation rates in cancer screening in Turkey are not at the desired level. When the results of similar studies in the literature are examined, the expected results were achieved in our study and it was observed that the attitudes of women toward cancer screening in Turkey are not at the desired level. These results suggest that the importance of the issue is not understood, and the importance of women's participation in cancer screening programmes should be emphasized and sensitivity should be increased in terms of women's and public health. Healthcare professionals have a significant responsibility in educating women on cancer screening tests and their importance, taking into account women's health beliefs and thoughts, and in raising women's awareness. It is recommended to conduct studies with large sample groups from different cultures and regions to better understand the women participation in cancer screening and the barrier to prevent it. Additionally, increasing public awareness through campaigns, implementing educational programs and the adopting relevant policies can help women's participation in cancer screening.

Conflict of Interest

The authors have no conflicts of interest to disclose.

Compliance with Ethical Statement

Ethical permission was obtained from Scientific Research Ethics Committee of Çanakkale Onsekiz Mart University Rectorate Graduate Education Institute Ethics Committee to (Number: E-84026528-050.01.04-2200137177 Date: 24.06.2022) and necessary permissions were obtained from the institution where the study was conducted. The personal information of the participants was not included in the online data collection form. Access to the data is restricted to researchers only.

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Author's Contributions

R.K.O., R.D.: Study idea/Hypothesis; R.K.O., R.D.: Design; R.K.O., R.D.: Data Collection; R.K.O: Analysis; R.K.O., R.D.: Literature review; R.K.O., R.D.: Writing; R.K.O.: Critical review

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