

# Prevention of gynecological cancers: the affecting factors and knowledge levels of Turkish women

Prevention of  
gynecological  
cancer

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## Abstract

**Purpose** – Gynecological cancers are preventable and treatable diseases in case of early diagnosis. However, lack of knowledge is one of the factors preventing women from benefiting from early diagnosis. Increasing women's knowledge of gynecological cancers contributes to improving the health of both women and the community. The purpose of this research study was to determine the affecting factors and knowledge level of Turkish women-related gynecological cancer prevention.

**Design/methodology/approach** – This was a cross-sectional descriptive study and was carried out at a state hospital's outpatient clinic between May and June 2019. The sampling included 496 women who are not diagnosed with gynecological cancer in the individual or in the family. Data were collected using the personal information form and Gynecological Cancer Prevention Information Scale (GCPIS). Data were evaluated using the SPSS 22.0 software program. Frequencies, mean and standard deviation were used for the descriptive variables. For the data that met the parametric conditions, those with two groups were analyzed using independent samples *t*-tests and those with more than two groups were analyzed using *F*-test.

**Findings** – In this study, the GCPIS total mean score of women was found  $16.22 \pm 8.21$  (min: 0, max: 35). A statistically significant difference was found between the women's level of knowledge according to the age group of the participants, education level, economic status perception, regular pap-smear test, regular vulva examination and getting information about prevention from gynecologic cancers ( $p < 0.05$ ).

**Research limitations/implications** – This study was conducted on a group of Turkish women and cannot be generalized to other cultures.

**Practical implications** – This study can be beneficial for determining the Turkish women's knowledge levels about gynecological cancers of women and for providing data for health education programs planning to be created.

**Social implications** – The data of this study can be used to improve women's knowledge and examination skills of gynecological cancers. Thus, the quality of life of women can be improved.

**Originality/value** – Healthcare professionals can play vital roles in presenting needed knowledge about gynecological cancers and raising awareness in women. It is extremely important for women to be informed about gynecological cancers for prevention of gynecological cancers and health improvement.

**Keywords** Gynecological cancers, Prevention, Knowledge, Turkish women

**Paper type** Research paper

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## Introduction

Cancer is the second-leading cause of death worldwide and was estimated to be responsible for approximately 9.6m deaths in 2018. According to a World Health Organization report, approximately one out of six people in the world die due to cancer and 70% of these losses occur in low- and middle-income countries [1]. Turkish Statistical Institute data show that one out of every five deaths in Turkey is due to cancer. Each year in Turkey, around 148,000 new cancer cases are diagnosed with a reported case of 91,800 cancer-related deaths. It is predicted that 80% of cancer deaths will be seen in low- and middle-income countries by 2025 [2]. Gynecological cancers are a significant global public health problem [3, 4]. In Turkey, the top 10 cancer-driven deaths among women are gynecological cancer deaths (ovarian cancer is ranked sixth; endometrial cancer is ranked fourth; cervical cancer is ranked ninth) [5–9].

The negative effects of gynecological cancers on women's health are multi-dimensional. Diagnosis and treatment procedures applied in gynecological cancers, fear of a cancer diagnosis as well as problems in other organ cancers, complex, long, invasive and combined treatments, stress and complication risk due to treatment process, problems related to body image, sexual identity and reproductive ability negatively affect the quality of life of the woman, her partner and her family. Gynecological cancers also reduce female fertility and the quality of any sex life. They affect family and social life and cause psychosocial health problems [9–12]. As with many cancer types, gynecological cancers are preventable and treatable diseases when an early diagnosis is made. However, when looking at the available research conducted on gynecological cancers, it shows women do not always benefit from an early diagnosis due to a number of factors (economic problems, insufficient access to health services, fear of suffering from pain, shame and beliefs that will invade privacy) [13–16].

Another very important factor is the lack of any or much knowledge about this type of cancer. Health professionals have a vital role to play in increasing the knowledge levels of women regarding gynecological cancers. On this point, the first thing to be done should be to determine the current knowledge level of any women with possible cancer symptoms [17–20]. Determining the current level of knowledge of women about cancer will contribute to the realization of any educational plans in a realistic and useful way and will help with the structure of educational content according to the actual needs of the women involved with cancer issues. Raising the level of knowledge contributes to raising awareness and eliminates risk factors. In this way, the health of both women and society, in general, can be improved [5, 7, 21, 22]. The aim of this research study was to determine the affecting factors and knowledge level of women in relation to gynecological cancer prevention. The data obtained in the study may be used in the assessment of intercultural differences and the enrichment of the literature on the topic.

## Methodology

### *Study design and sample*

A cross-sectional study was carried out at a state hospital's outpatient clinic between May and June 2019. The sample included 496 women who met the following criteria: women who had no diagnose of gynecological cancer in the family, women who were not suffering from any psychiatric illnesses and women who participated voluntarily. Women who had a history of gynecological cancer in the family were excluded.

### *Research instrument*

Data were collected using the personal information form and Gynecological Cancer Prevention Information Scale (GCPIS). The personal information form was created by the researchers and comprised 19 questions about sociodemographic characteristics, obstetric characteristics (age of marriage, number of children) and genital hygiene practices of women. The GCPIS was developed by Bekar *et al.* [23]. The scale consisted of 35 items and had five

factors [ranging from (0) to (1)]. Factor 1 is “prevention from cancer”, Factor 2 is “cancer symptoms”, Factor 3 is “observations on related diagnosis”, Factor 4 is “early diagnosis and physiological factors” and Factor 5 is “birth-related risks”. The reliability coefficient of the scale was 0.95.

#### *Interpretation of the scale*

The respondents were asked to carefully read each item. The scores were calculated as follows: each correct response was given 1 point. Items not responded to or responded incorrectly were given 0 point. The lowest and highest possible scores to be obtained from the scale were 0 and 35, respectively. The higher the score, the higher the possibility of the participants already having gynecological cancer prevention knowledge [23]. The reliability coefficient of the scale was 0.90.

#### *Statistical analysis*

Statistical Package for the Social Sciences software was used to find out frequencies, mean and standard deviation for the descriptive variables. The normalization of the data was examined by using the Kolmogorov–Smirnov Test. For the data that met the parametric conditions, those with two groups were analyzed using independent samples *t*-tests and those with more than two groups were analyzed using *F*-tests (ANOVAs). The error level was taken as 0.05.

#### *Ethical consideration*

This study was approved by the author’s institution (No:30182376-200-E.364006). In order to protect the rights of the women involved in the research study, the ethical principles were met before collecting the research data including informed consent, privacy and protection of privacy and respect for autonomy.

## **Results**

#### *Sociodemographic characteristics of the women*

About 56.9% of the women in the study were aged between 18 and 34 and 8.1% were aged over 50 years. The mean age of the women was  $33.9 \pm 4.3$ ; the mean age of marriage was  $21.1 \pm 4.22$  and the mean number of children was  $2.25 \pm 0.39$ . In total, 96.6% of women were married; 35.7% of women had a high school and above the standard of education; 81.9% of women did not work; 8.5% of women defined their socioeconomic status as “bad” and 11.3% of women smoked. It was recorded that 46.2% of the women were in the habit of washing their vaginas and 72.9% of those who washed, followed this practice for personal hygiene reasons and 25.3% of them practiced it in order not to get pregnant. Of all the women, 5% of them had a history of sexually transmitted infections (STIs) from the past; 23.6% had regular pap-smear tests; 39.7% had regular breast self-examinations, and 25% of the patients stated that they performed a self-vulva examination. It was determined that only 15.3% of women had information regarding prevention from gynecological cancers and that health professionals (doctors, midwives) came first among their information sources.

#### *Scale total scores of the women*

The GCPIS total and sub-dimension mean score of women is given in [Table 1](#). The scale total mean score of women was found to be  $16.22 \pm 8.21$  (min: 0, max: 35).

#### *Knowledge-related gynecological cancers of the women*

The distribution of GCPIS scale items according to the responses of the women is given in [Table 2](#). Of the women respondents, 87.9% of women stated that early diagnosis is possible in

gynecological cancers; 57.3% know that obesity is a risk; 57.7% of the women who participated in the study did not know that non-menstrual bleeding or bleeding between two menstrual periods is a sign of gynecological cancer; 68.3% of the women knew that the pap-smear test for the early diagnosis of cervical cancer is important to prevent gynecological cancers (Table 2).

*Scale total score according to certain characteristics of the women*

In the study, a statistically significant difference was found between the GCPIS total mean score according to the age group of the participants, education level, economic status perception, regular pap-smear test, regular vulva examination and obtaining information regarding prevention from the gynecologic cancers in the study. Information point mean scores of women aged between 35 and 49 years when compared to women aged between 18 and 34 years were observed as follows; those with a high school or higher education level when compared to those with a secondary school and below level of education; those taking regular pap-smear tests when compared to ones who did not; those taking regular vulva examinations when compared to ones who did not; those receiving information from various sources associated with prevention from gynecological cancers when compared to ones who did not, were found to be higher ( $p < 0.05$ ; Table 3).

It has been seen that the difference in having the pap-smear test is statistically significant according to the age groups of the women. 50% of the women in the  $\geq 50$  age group had the pap-smear test as opposed to the women in the 18–34 age group ( $p < 0.05$ ; Table 4).

**Discussion**

Health education plays an important role in the primary prevention of gynecological cancers. Before starting any form of health education, it is essential to determine the current knowledge level of the target group. The aim of this study was to determine the knowledge level of Turkish women related to prevention from gynecological cancers and their attitudes toward prevention.

We determined in this study that the GCPIS total mean score of women was below the mean value ( $m = 16.22 \pm 8.21$ ; min: 0, max: 35). Many researchers have shown that women’s knowledge levels are not sufficient to protect them against gynecological cancers [24–27]. According to one study, most women have heard of cervical, ovarian and uterine cancer, but they do not know much about vaginal and vulva cancers [28]. Another study demonstrated that the level of knowledge of the participants about gynecologic cancers was insufficient (34%) [24]. Lockwood-Rayermann demonstrated that 15% of women did not know the symptoms of ovarian cancer and their awareness of risk factors was poor [25]. Results of the study by Lyimo and Beran indicated that less than one-fourth (22.6%) of participants had cervical cancer screening; more than half of the participants ( $n = 211$ , 59.6%) had a low level

**Table 1.**  
Scale total and sub-dimension mean scores of women

Gynecological cancer prevention information (GCPIS)	Scale min-max	M(SD)
<i>Total and sub-dimension</i>		
Prevention from cancer	0–12	7.42 ± 4.16
Cancer symptoms	0–10	3.78 ± 3.40
Observations on diagnosis	0–6	2.33 ± 1.72
Early diagnosis and physiological factors	0–4	2.80 ± 1.19
Birth-related risks	0–3	0.87 ± 0.98
<i>Total scale</i>	<i>0–35</i>	<i>16.22 ± 8.21</i>

Scale items	True <i>n</i> (%)	False / unanswered <i>n</i> (%)
1 Early diagnosis is possible in gynecologic cancers	436 (87.9)	60 (12.1)
2 Treatment is possible when gynecologic cancers are diagnosed early	430 (86.7)	66 (13.3)
3 Obesity is a risk factor for gynecologic cancers	284 (57.3)	212 (42.7)
4 Diabetes is a risk factor for gynecologic cancers	239 (48.2)	257 (51.8)
5 Bleeding between periods or other than periods is one of the symptoms of gynecologic cancers	210 (42.3)	286 (57.7)
6 Pain during sexual intercourse is one of the symptoms of gynecologic cancers	163 (32.9)	333 (67.1)
7 Bloating is one of the symptoms of gynecologic cancers	118 (23.8)	378 (76.2)
8 More frequent or urgent need to urinate is one of the symptoms of gynecologic cancers	111 (22.4)	385 (77.6)
9 Abdominal pain is one of the symptoms of gynecologic cancers	124 (25.0)	372 (75.0)
10 Conception at an early age (20 years or before) is not a risk factor for gynecologic cancers	346 (69.8)	150 (30.2)
11 Birth control pills are risk factors for gynecologic cancers	353 (71.2)	143 (28.8)
12 Birth at an early age (20 years or before) is not a risk factor for gynecologic cancers	354 (71.4)	142 (28.6)
13 Bleeding in the form of spotting after sexual intercourse is one of the symptoms of gynecologic cancers	182 (36.7)	314 (63.3)
14 Yellow, smelly, painless discharge from vagina is one of the symptoms of gynecologic cancers	218 (44.0)	278 (56.0)
15 For the early diagnosis of cervical cancer, pap-smear test is done	339 (68.3)	157 (31.7)
16 To have a pap-smear test, it is necessary to expect a problem in reproductive organs	272 (54.8)	224 (45.2)
17 Human Papilloma virus (HPV) infection is not a risk factor for gynecologic cancers	342 (69.0)	154 (31.0)
18 HSV type II virus (herpes virus in the genital area) is not a risk factor for gynecologic cancers	338 (68.1)	158 (31.9)
19 Sores in vulva are one of the symptoms of gynecologic cancers	228 (46.0)	268 (54.0)
20 Mass in vulva is one of the symptoms of gynecologic cancers	270 (54.4)	226 (45.6)
21 Itching in vulva is not a symptom of gynecologic cancer	354 (71.4)	142 (28.6)
22 Exposure to radiation in mother's womb is a risk factor for gynecologic cancers	227 (45.8)	269 (54.2)
23 Painful defecation is one of the symptoms of gynecologic cancers	132 (26.6)	364 (73.4)
24 In order to prevent gynecologic cancers, stress must be reduced	327 (65.9)	169 (34.1)
25 In order to prevent gynecologic cancers, coping with stress styles should be used	316 (63.7)	180 (36.3)
26 Smoking is a risk factor for gynecologic cancers	353 (71.2)	143 (28.8)
27 Alcohol consumption is a risk factor for gynecologic cancers	337 (67.9)	159 (32.1)
28 The presence of more than one sexual partner is not a risk factor for gynecologic cancers	286 (57.7)	210 (42.3)
29 Some gynecologic cancer types are hereditary (genetic)	256 (51.6)	240 (48.4)
30 In order to prevent gynecologic cancers, it is necessary to avoid excessive consumption of animal fat	165 (33.3)	331 (66.7)
31 Changes in vulva color is not a symptom of gynecologic cancers	355 (71.6)	141 (28.4)
32 For the early diagnosis of gynecologic cancers, women should examine their external genital organs	243 (49.0)	253 (51.0)
33 In order to prevent gynecologic cancers, it is necessary to avoid the use of perfume on the female external genital organs	311 (62.7)	185 (37.3)
34 In order to prevent gynecologic cancers, it is necessary to avoid the use of paint on the female external genital organs	317 (63.9)	179 (36.1)
35 In order to prevent gynecologic cancers, it is necessary to avoid the use of powder on the female external genital organs	290 (58.5)	206 (41.5)

**Table 2.**  
Distribution of the  
women according to  
items of gynecological  
cancer prevention  
information  
scale (*n* = 496)

Characteristics	Sub-dimensions						TOTAL SCALE SCORE M (SD)
	Protection from cancer M (SD)	Cancer symptoms M (SD)	Observations on diagnosis M (SD)	Early diagnosis and physiological factors M (SD)	Birth-related risks M (SD)		
<i>Age (yrs)</i>							
18-34 (n = 282)	7.13 ± 4.19	3.41 ± 3.24	2.19 ± 1.72	2.66 ± 1.19	0.86 ± 0.97	16.28 ± 8.00	
35-49 (n = 174)	7.91 ± 4.01	4.24 ± 3.44	2.62 ± 1.64	3.00 ± 1.13	0.93 ± 1.01	18.72 ± 8.02	
≥50 (n = 40)	7.37 ± 4.47	4.35 ± 4.07	2.07 ± 1.88	2.87 ± 1.36	0.67 ± 0.94	17.35 ± 9.64	
<i>F/p</i>	1.92 / 0.147	3.82 / 0.022	3.82 / 0.022	4.58 / 0.011	1.16 / 0.313	4.86 / 0.008	
<i>Education status</i>							
Secondary school and below (n = 319)	6.92 ± 4.30	3.86 ± 3.55	2.18 ± 1.72	2.72 ± 1.27	0.84 ± 0.97	16.54 ± 8.69	
High school and above (n = 177)	8.33 ± 3.72	3.64 ± 3.11	2.59 ± 1.68	2.93 ± 1.02	0.93 ± 1.00	18.45 ± 7.13	
<i>t/p</i>	3.67 / 0.000	0.68 / 0.495	2.55 / 0.011	1.83 / 0.067	1.02 / 0.308	2.488 / 0.013	
<i>Economic status</i>							
Bad/Moderate (n = 460)	7.30 ± 4.18	3.68 ± 3.38	2.33 ± 1.74	2.76 ± 1.20	0.88 ± 0.99	16.97 ± 8.28	
Good (n = 36)	9.08 ± 3.50	5.05 ± 3.45	2.27 ± 1.46	3.25 ± 0.87	0.77 ± 0.92	20.44 ± 6.60	
<i>t/p</i>	2.48 / 0.013	2.33 / 0.020	0.20 / 0.837	2.35 / 0.019	0.62 / 0.532	2.452 / 0.015	
<i>Cigarette use</i>							
Yes (n = 56)	6.83 ± 4.38	4.10 ± 2.83	2.46 ± 1.62	2.98 ± 1.08	1.03 ± 0.97	17.20 ± 8.29	
No (n = 440)	7.50 ± 4.13	3.74 ± 3.47	2.31 ± 1.73	2.77 ± 1.20	0.85 ± 0.98	17.42 ± 7.67	
<i>t/p</i>	1.12 / 0.260	0.75 / 0.452	0.59 / 0.550	1.21 / 0.227	1.27 / 0.202	0.196 / 0.845	
<i>Washing vagen behavior</i>							
Yes (n = 267)	7.64 ± 4.10	3.61 ± 3.40	2.26 ± 1.68	2.90 ± 1.12	0.85 ± 0.99	17.27 ± 8.17	
No (n = 229)	7.17 ± 4.22	3.98 ± 3.40	2.41 ± 1.76	2.68 ± 1.26	0.90 ± 0.98	17.16 ± 8.29	
<i>t/p</i>	1.26 / 0.207	1.22 / 0.220	0.96 / 0.338	2.06 / 0.039	0.65 / 0.514	0.150 / 0.881	
<i>History of STDs</i>							
Yes (n = 25)	6.04 ± 4.26	4.44 ± 3.09	1.92 ± 1.57	3.12 ± 1.16	0.56 ± 0.86	16.08 ± 7.67	
No (n = 471)	7.50 ± 4.14	3.74 ± 3.42	2.35 ± 1.72	2.78 ± 1.19	0.89 ± 0.99	17.28 ± 8.24	
<i>t/p</i>	1.71 / 0.807	0.98 / 0.324	1.23 / 0.217	1.37 / 0.170	0.64 / 0.100	0.715 / 0.474	
<i>Pap-smear test having</i>							
Yes (n = 117)	7.64 ± 4.05	4.06 ± 3.39	2.64 ± 1.72	2.99 ± 1.07	1.01 ± 0.80	18.37 ± 8.05	
No (n = 379)	7.36 ± 4.19	3.69 ± 3.40	2.23 ± 1.71	2.74 ± 1.22	0.80 ± 0.19	16.87 ± 8.24	
<i>t/p</i>	0.65 / 0.513	1.03 / 0.303	2.27 / 0.024	1.98 / 0.048	0.75 / 0.079	1.735 / 0.043	
<i>Self-examination of the vulva</i>							
Yes (n = 124)	8.59 ± 3.76	4.16 ± 3.27	3.00 ± 1.66	2.98 ± 1.03	0.91 ± 0.08	19.66 ± 7.21	
No (n = 372)	7.04 ± 4.21	3.65 ± 3.44	2.11 ± 1.68	2.73 ± 1.23	0.86 ± 0.23	16.41 ± 8.37	
<i>t/p</i>	3.65 / 0.000	1.42 / 0.155	5.09 / 0.000	1.98 / 0.048	0.55 / 0.582	3.864 / 0.000	
<i>Receiving knowledge on the protection of gynecological cancers</i>							
Yes (n = 76)	9.34 ± 3.46	4.30 ± 3.41	3.14 ± 1.76	3.36 ± 0.86	0.94 ± 1.04	21.10 ± 6.98	
No (n = 420)	7.08 ± 4.18	3.69 ± 3.40	2.18 ± 1.67	2.69 ± 1.21	0.86 ± 0.97	16.10 ± 8.23	
<i>t/p</i>	4.43 / 0.000	1.44 / 0.150	4.54 / 0.000	4.59 / 0.000	0.67 / 0.501	4.561 / 0.000	

**Table 3.** Distribution of the GCPIS total and sub-dimension mean scores according to certain characteristics of the women

**Note(s):** Abbreviations: GCPIS, gynecological cancer prevention information

of knowledge about cervical cancers and prevention and less than one-fourth ( $n = 68, 19.2\%$ ) had a high enough level of knowledge [26].

Women's knowledge abilities and levels are closely related to age, education level, marital status, place of residence, distance to health institutions and socioeconomic factors [27, 29, 30]. The results of this study have suggested that women aged between 35 and 49 years have a higher mean knowledge point than those in the 18–34 age group. Several researchers reported that screening rates were lower in young women aged between 20 and 29 years and in older women over 60 years [29, 30]. The results of this study have suggested that those with a high school or above education level had a higher mean knowledge point than those with a secondary or lower education level. There are many studies to confirm that there is a significant relationship between a women's knowledge level, education and age and knowing and applying cancer screening to prevent gynecological cancer [31, 32]. The increase in the education levels of women can be considered as a factor that helps increase the utilization of screening services [29]. However, it is not possible to claim that highly educated women will be screened for certain. In this study, no statistically significant difference was found between regular pap-smear testing and marital status [33]. Narayana *et al.* demonstrated that adequate knowledge and a positive attitude were associated with seven sociodemographic characteristics: age, residence area, marital status, parity, level of education, occupation and monthly income. Women aged between 30 and 39 years mostly had adequate levels of knowledge and a positive attitude in relation to other age groups. Moreover, women residing in rural areas, who had a college or university level of education, were healthcare workers and had a household income in excess of 20,000 INR practiced regular prevention methods with  $p < 0.05$  [27]. Lyimo and Beran indicated that the likelihood of screening was almost four times as high if they resided 2 to 5 km from a facility that provides cervical cancer screening services compared to those who lived further away [26]. Another study demonstrated that single and widowed women were less likely to be screened than married women [29]. However, some researchers have shown that single women are more likely to take pap-smear screening than a married woman [30].

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Age	Have <i>n</i> (%)	Pap-smear test Did not have <i>n</i> (%)	Total <i>n</i> (%)
<i>Years</i>			
18–34 ( $n = 282$ )	42 (14.9)	240 (85.1)	282 (56.9)
35–49 ( $n = 174$ )	55 (31.6)	119 (68.4)	174 (35.1)
$\geq 50$ ( $n = 40$ )	20 (50.0)	20 (50.0)	40 (8.1)

**Note(s):**  $X^2 = 33.519; p = 0.000$

**Table 4.**  
Distribution of the having pap-smear test according to age groups of the women

screening services [29]. However, it is not possible to claim that highly educated women will be screened for certain. In this study, no statistically significant difference was found between regular pap-smear testing and marital status [33]. Narayana *et al.* demonstrated that adequate knowledge and a positive attitude were associated with seven sociodemographic characteristics: age, residence area, marital status, parity, level of education, occupation and monthly income. Women aged between 30 and 39 years mostly had adequate levels of knowledge and a positive attitude in relation to other age groups. Moreover, women residing in rural areas, who had a college or university level of education, were healthcare workers and had a household income in excess of 20,000 INR practiced regular prevention methods with  $p < 0.05$  [27]. Lyimo and Beran indicated that the likelihood of screening was almost four times as high if they resided 2 to 5 km from a facility that provides cervical cancer screening services compared to those who lived further away [26]. Another study demonstrated that single and widowed women were less likely to be screened than married women [29]. However, some researchers have shown that single women are more likely to take pap-smear screening than a married woman [30].

Our study found that approximately 4% of the women interviewed performed regular self-vulva examination; of all the women, 23.6% of them had regular pap-smear tests and that the women who had regular screening had a higher knowledge mean score than those who did not participate in a screening. The increase in the age and education levels of women increases the rate of taking the pap-smear test [13]. Lyimo and Beran indicated that women with the highest level of knowledge on the prevention of cervical cancer are nine times more likely to be screened than women with low levels of knowledge [26]. Moreover, Hawkins demonstrated that approximately two-thirds of women think that the pap-smear test can be used in the screening of vaginal and ovarian cancer and sexually transmitted diseases [34]. Another researcher reported that 87.4% of women stated that they had not heard of cervical cancer; all women stated that they had not heard of the human papilloma virus (HPV) vaccine and 85% stated that they did not know about screening programs [32]. Inadequate information and poor awareness make the effective use of screening programs for gynecological cancers difficult. In our study, the mean knowledge score about gynecological cancers in women who defined their economic status as “good” was found to be high. Another research paper reported that women in the 18–34 age group and whose education and income levels were low had lower knowledge levels of cancers [34]. A good economic situation can be considered as a factor that facilitates access to information resources.

Approximately half of the women (51.6%) thought that some gynecological cancer types are hereditary. Several researchers indicated that in cases of cancer history in the women’s families, women thought it is a risk factor for breast, endometrium, cervix and ovarian cancers. In our study, 28.8% of women thought that the use of oral contraceptives increased the risk of ovarian cancer. Similarly, one study reported that 26.4% of postmenopausal women stated that oral contraceptives are a risk factor for ovarian cancer. In this study, approximately two-thirds of women did not know that HPV is a risk factor for gynecologic cancers. Similarly, several researchers reported that women’s knowledge about the relationship between HPV and cervical cancer was insufficient [33, 35].

## Conclusion

It is extremely important for women to be informed about gynecological cancers for both prevention and for overall health improvement. Health professionals should inform women about gynecological cancers by using their training and counseling roles during screening and routine examinations. Training programs that increase the level of knowledge about gynecological cancers and lead changes in behavior should be expanded within public health services.



## Limitations

This study was conducted on a group of Turkish women and cannot be generalized to other cultures. However, this study gives us an idea of the level of knowledge of Turkish women regarding gynecological cancers.

## References

1. World Health Organization [WHO]. Cancer prevention. [cited 2019 March 20]. Available at: <http://www.who.int/cancer/prevention/en/>.
2. Turkish Statistical Institute [TUIK]. Cause of death statistics. (2017). [cited 2019 March 20]. Available at: [http://tuik.gov.tr/PreTablo.do?alt\\_id=1083](http://tuik.gov.tr/PreTablo.do?alt_id=1083).
3. Acar GB, Pinar G. Perspectives of women during reproductive years for cervical cancer scans and influencing factors. *Asian Pac J Cancer Prev*. 2015; 16(16): 7171-8. doi: [10.7314/apjcp.2015.16.16.7171](https://doi.org/10.7314/apjcp.2015.16.16.7171).
4. Andsoy II, Gul A. Breast, cervix and colorectal cancer knowledge among nurses in Turkey. *Asian Pac J Cancer Prev*. 2014; 15(5): 2267-72. doi: [10.7314/apjcp.2014.15.5.2267](https://doi.org/10.7314/apjcp.2014.15.5.2267).
5. Bekar M, Guler H, Evcili F, Demirel G, Duran O. Determining the knowledge of women and their attitudes regarding gynecological cancer prevention. *Asian Pac J Cancer Prev*. 2013; 14(10): 6055-9. doi: [10.7314/apjcp.2013.14.10.6055](https://doi.org/10.7314/apjcp.2013.14.10.6055).
6. Bektas M, Ilya OS, Kusbeci S, Bektas I. Nursing students' knowledge and practice about breast-testicular self-examination and HPV vaccine. *Yildirim Beyazit University Journal of Nursing*. 2015; 2(2): 1-11.
7. Okumus H, Cicek O, Tokat MA. Current status in gynecologic oncology nursing. *J Women's Health Nursing*. 2015; 2(2): 1-12.
8. Republic of Turkey, Ministry of health, General Directorate of Public Health. Cancer Statistics Turkey 2015. [cited 2019 March 16]. Available at: [https://hsgm.saglik.gov.tr/depo/birimler/kanserdb/istatistik/Turkiye\\_Kanser\\_Istatistikleri\\_2015.pdf](https://hsgm.saglik.gov.tr/depo/birimler/kanserdb/istatistik/Turkiye_Kanser_Istatistikleri_2015.pdf).
9. Funston G, O'Flynn H, Ryan NAJ, Hamilton W, Crosbie EJ. Recognizing gynecological cancer in primary care: risk factors, red flags, and referrals. *Adv Ther*. 2018; 35(4): 577-89. doi: [10.1007/s12325-018-0683-3](https://doi.org/10.1007/s12325-018-0683-3).
10. Bibbins-Domingo K, Grossman DC, Curry SJ, Barry MJ, Davidson KW, Doubeni CA, *et al*. Screening for gynecologic conditions with pelvic examination: US Preventive Services Task Force recommendation statement. *JAMA*. 2017; 317(9): 947-53. doi: [10.1001/jama.2017.0807](https://doi.org/10.1001/jama.2017.0807).
11. Borch KB, Weiderpass E, Braaten T, Jareid M, Gavrilyuk OA, Licaj I. Physical activity and risk of endometrial cancer in the Norwegian Women and Cancer (NOWAC) study. *Int J Cancer*. 2017; 140(8): 1809-18. doi: [10.1002/ijc.30610](https://doi.org/10.1002/ijc.30610).
12. Dille S, Scarinci I, Kimberlin D, Straughn JM Jr. Preventing human papillomavirus-related cancers: we are all in this together. *Am J Obstet Gynecol*. 2017; 216(6): 576.e1-e5. doi: [10.1016/j.ajog.2017.02.026](https://doi.org/10.1016/j.ajog.2017.02.026).
13. Onsuz MF, Hidiroglu S, Sarioz A, Metintas S, Karavus M. Knowledge, attitudes and behaviors of women over 20 years old on cervix cancer in Istanbul, Turkey. *Asian Pac J Cancer Prev*. 2014; 15(20): 8801-7. doi: [10.7314/apjcp.2014.15.20.8801](https://doi.org/10.7314/apjcp.2014.15.20.8801).
14. Kessler TA. Cervical cancer: prevention and early detection. *Semin Oncol Nurs*. 2017; 33(2): 172-83. doi: [10.1016/j.soncn.2017.02.005](https://doi.org/10.1016/j.soncn.2017.02.005).
15. Lopez MS, Baker ES, Maza M, Fontes-Cintra G, Lopez A, Carvajal JM, *et al*. Cervical cancer prevention and treatment in Latin America. *J Surg Oncol*. 2017; 115(5): 615-8. doi: [10.1002/jso.24544](https://doi.org/10.1002/jso.24544).
16. Linkov F, Goughnour SL, Adambekov S, Edwards RP, Donnellan N, Bovbjerg DH. Lifestyle interventions to reduce the risk of obesity-associated gynecologic malignancies: a focus on endometrial cancer. In: Berger, NA, Klopp AH, Lu KH, editors. *Focus on gynecologic malignancies*. Cham: Springer; 2018; 137-65.

17. Ranabhat S, Tiwari M, Dhungana G, Shrestha R. Association of knowledge, attitude and demographic variables with cervical Pap smear practice in Nepal. *Asian Pac J Cancer Prev.* 2014; 15(20): 8905-10. doi: [10.7314/apjcp.2014.15.20.8905](https://doi.org/10.7314/apjcp.2014.15.20.8905).
18. Saridi M, Kapogeorgou E, Rekleiti M, Geitona M, Souliotis K. Knowledge and attitudes of women regarding gynaecological cancer prevention in an urban area of Greece in financial crisis. *Scand J Caring Sci.* 2017; 31(4): 710-7. doi: [10.1111/scs.12385](https://doi.org/10.1111/scs.12385).
19. Silveira, NS, Vasconcelos, CT, Nicolau, AI, Oriá, MO, Pinheiro, PN, Pinheiro, AK. Knowledge, attitude and practice of the smear test and its relation with female age. *Rev Lat Am Enfermagem.* 2016; 24: e2699. doi: [10.1590/1518-8345.0700.2699](https://doi.org/10.1590/1518-8345.0700.2699).
20. Weston C, Page R, Jones-Schubart K, Akinlotan M. Improving cancer screening for underserved women through an FNP student-led clinic, *J Nurse Pract.* 2018; 14(5): e101-e4. doi: [10.1016/j.nurpra.2018.01.013](https://doi.org/10.1016/j.nurpra.2018.01.013).
21. Savas HG, Taskin L. Determining nurse-midwives' knowledge of the Pap-smear test and their rate of being tested in Turkey. *Asian Pac J Cancer Prev.* 2011; 12(5): 1353-60.
22. Eroglu K, Koc G. Gynecological cancer control and nursing, *J Hacettepe Univ Fac Nur.* 2014; 1(2): 77-90.
23. Bekar M, Demirel G, Evcili F, Doganer A. A scale development study: gynecologic cancer prevention information scale. Paper presented at the 6th international and 10th national midwifery students congress. Turkey: Sivas; 2019.
24. Eftekhari Z, Yarandi F. Knowledge and concerns about cancer in patients with primary gynecologic cancers, *Asian Pac J Cancer Prev.* 2004; 5(2): 213-6.
25. Lockwood-Rayermann S, Donovan HS, Rambo D, Kuo CW. Women's awareness of ovarian cancer risks and symptoms, *Am J Nurs.* 2009; 109(9): 36-45; quiz 6. doi: [10.1097/01.NAJ.0000360309.08701.73](https://doi.org/10.1097/01.NAJ.0000360309.08701.73).
26. Lyimo, FS, Beran, TN. Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: three public policy implications, *BMC Public Health.* 2012; 12: 22. doi: [10.1186/1471-2458-12-22](https://doi.org/10.1186/1471-2458-12-22).
27. Narayana G, Suchitra MJ, Sunanda G, Ramaiah JD, Kumar BP, Veerabhadrapa KV. Knowledge, attitude, and practice toward cervical cancer among women attending Obstetrics and Gynecology Department: a cross-sectional, hospital-based survey in South India, *Indian J Cancer.* 2017; 54(2): 481-7. doi: [10.4103/ijc.IJC\\_251\\_17](https://doi.org/10.4103/ijc.IJC_251_17).
28. Cooper CP, Polonec L, Gelb CA. Women's knowledge and awareness of gynecologic cancer: a multisite qualitative study in the United States, *J Womens Health (Larchmt).* 2011; 20(4): 517-24. doi: [10.1089/jwh.2011.2765](https://doi.org/10.1089/jwh.2011.2765).
29. Liao CC, Wang HY, Lin RS, Hsieh CY, Sung FC. Addressing Taiwan's high incidence of cervical cancer: factors associated with the Nation's low compliance with Papanicolaou screening in Taiwan, *Public Health.* 2006; 120(12): 1170-6. doi: [10.1016/j.puhe.2006.07.028](https://doi.org/10.1016/j.puhe.2006.07.028).
30. Dim CC, Ekwe E, Madubuko T, Dim NR, Ezegwui HU. Improved awareness of Pap smear may not affect its use in Nigeria: a case study of female medical practitioners in Enugu, southeastern Nigeria, *Trans R Soc Trop Med Hyg.* 2009; 103(8): 852-4. doi: [10.1016/j.trstmh.2009.03.020](https://doi.org/10.1016/j.trstmh.2009.03.020).
31. Chigbu CO, Aniebue U. Why Southeastern Nigerian women who are aware of cervical cancer screening do not go for cervical cancer screening, *Int J Gynecol Cancer.* 2011; 21(7): 1282-6. doi: [10.1097/IGC.0b013e31822bd139](https://doi.org/10.1097/IGC.0b013e31822bd139).
32. Mbamara SU, Ikpeze OC, Okonkwo JE, Onyiaorah IV, Ukah CO. Knowledge, attitude and practice of cervical cancer screening among women attending gynecology clinics in a tertiary level medical care center in southeastern Nigeria, *J Reprod Med.* 2011; 56(11-12): 491-6.
33. Abotchie PN, Shokar NK. Cervical cancer screening among college students in Ghana: knowledge and health beliefs, *Int J Gynecol Cancer.* 2009; 19(3): 412-6. doi: [10.1111/IGC.0b013e3181a1d6de](https://doi.org/10.1111/IGC.0b013e3181a1d6de).
34. Hawkins NA, Cooper CP, Saraiya M, Gelb CA, Polonec L. Why the Pap test? Awareness and use of the Pap test among women in the US, *J Womens Health (Larchmt).* 2011; 20(4): 511-5. doi: [10.1089/jwh.2011.2730](https://doi.org/10.1089/jwh.2011.2730).

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35. Paolino M, Arrossi S. Women's knowledge about cervical cancer, Pap smear and human papillomavirus and its relation to screening in Argentina. *Women Health*. 2011; 51(1): 72-87. doi: [10.1080/03630242.2010.542547](https://doi.org/10.1080/03630242.2010.542547).

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