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ORIGINAL ARTICLE

Factors Associated with Awareness of Gynecological Cancer Among Turkish Women: A Descriptive and Cross-sectional Study

Türk Kadınların Jinekolojik Kanser Farkındalığını Etkileyen Faktörler: Tanımlayıcı ve Kesitsel Bir Çalışma

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Abstract

Objective: This study aimed to determine factors associated with awareness of gynecological cancer among Turkish women.

Method: The online descriptive and cross-sectional study was conducted between November 2020 and April 2021 in Turkey via the snowball sampling technique by sharing an online link among all women between the ages of 20 and 65 years who had no history of gynecologic cancer, at least primary school graduates, who live in Turkey and use smartphones or the internet. The sample size for the study was calculated using G*Power software version 3.1.9.7. The input parameters were a t-test, a small effect size of 0.2, a 5% alpha error probability, and 80% power. The total sample size calculated was 788. The sample of the study consisted of 804 women. The women's descriptive characteristics form and gynecological cancers awareness scale were used for the study. The descriptive characteristics form was prepared by the researchers based on the literature. This questionnaire consisted of 25 questions that included information about women's age, education level, family type, number of children, applying regular gynecological examinations, and having knowledge about Pap smear test and cervical cancer. The gynecological cancers awareness scale consisted of 41 items and was a five-point Likert-type scale with four subdimensions. The total score to be obtained from the scale is between 41 and 205 points, and a high score indicates that women's awareness of gynecological cancer is high. After the relationship between the total and subscale scores and independent variables was evaluated using t-test and ANOVA, the variables were found to be significant, and the total score was tested using multiple regression analysis.

Results: In the study, the mean age of the women was found 41.5±10.7, 64.3% had a university education, and 70.0% were employed. The rate of having a Pap smear test was found 66.8% and 34.3% of women had regular annual visits to a gynecologist. The total score on the gynecological cancers awareness scale was high in women aged over 42 years, those with postgraduate education, and those employed. The mean of the total score of the scale was found to be high in women who had an active sexual life, had regular gynecologic examinations, and had a history of pregnancy. All sub-dimension scores and the total score of the scale were determined to be higher in postgraduate education women than in middle school and lower education women. Women who had health insurance, had modern birth control methods, had the Pap smear test and had vulvar self-examination, and had information about Pap smear test and cervical cancer were found to have a high score from all subscales and total scores of the scale. According to the multiple regression analysis, the following were found to be statistically significant factors influencing awareness of gynecological cancer: Education status, using birth control methods, having vulvar self-examination and regular gynecologic examination, having Pap smear test, and having information about cervical cancer.

Conclusion: It was determined that women with higher socio-economic status had a high awareness of gynecological cancer.

Keywords: Gynecological cancer, cancer awareness, women

Öz

Amaç: Bu çalışmanın amacı Türk kadınların jinekolojik kanser farkındalığını etkileyen faktörlerin belirlenmesidir.

Yöntem: Bu çalışma online tanımlayıcı ve kesitsel bir araştırma olup Kasım 2020 ile Nisan 2021 tarihleri arasında çevrimiçi bağlantı paylaşılarak 20-65 yaş arasında olan, jinekolojik kanser öyküsü olmayan, en az ilkokul mezunu olan, akıllı telefon veya internet kullanan ve Türkiye'de yaşayan kadınlar arasında kartopu örnekleme tekniği ile gerçekleştirilmiştir. Araştırmanın örneklem sayısı G*Power 3.1.9.7 programı kullanılarak hesaplanmıştır. Giriş parametreleri t-testi, 0,2 küçük etki büyüklüğü, %5 hata payı ve %80 güç olup toplam örneklem büyüklüğü 788 hesaplanmıştır. Araştırmanın örneklemini 804 kadın oluşturmuştur. Araştırmada kadınların tanıtıcı özellikler soru formu ve jinekolojik kanserler farkındalık ölçeği kullanılmıştır. Araştırmacılar tarafından literatüre dayalı olarak hazırlanan tanımlayıcı özellikler formu; kadınların yaşı, eğitim düzeyi, aile tipi, çocuk sayısı, düzenli jinekolojik muayene yaptırma durumu, Pap smear testi

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ve serviks kanseri hakkında bilgi sahibi olma gibi bilgileri içeren 25 sorudan oluşmaktadır. Jinekolojik kanserler farkındalık ölçeği 41 maddeden oluşmakta olup, ölçek beşli Likert tipte ve dört alt boyutu bulunmaktadır. Ölçekten alınacak toplam puan 41 ile 205 puan arasında ve alınan puanın yüksek olması kadınların jinekolojik kanser konusundaki farkındalığının yüksek olduğunu göstermektedir. Ölçek toplam puanı ve alt boyut puanları ile bağımsız değişkenler arasındaki ilişki t-testi ve ANOVA ile değerlendirildikten sonra anlamlı bulunan değişkenler ile ölçek toplam puanı çoklu regresyon analizi ile test edilmiştir.

Bulgular: Araştırmada kadınların yaş ortalamasının 41,5±10,7 ve %64,3'ünün üniversite eğitimi aldığı ve %70,0'ının çalıştığı bulunmuştur. Kadınların Pap smear testi yaptırma oranı %66,8 olup %34,3'ü yıllık düzenli olarak jinekoloğa başvurduğu saptanmıştır. Jinekolojik kanserler farkındalık ölçeği toplam puanı 42 yaş üstü, lisansüstü eğitim alan ve çalışan kadınlarda yüksek bulunmuştur. Aktif cinsel yaşamı olan, düzenli jinekolojik muayene yaptıran ve gebelik öyküsü olan kadınlarda ölçek toplam puan ortalamasının yüksek olduğu belirlenmiştir. Ölçeğin tüm alt boyut puanları ve toplam puanının lisansüstü eğitimli kadınlarda, ortaokul ve altı eğitimli kadınlara göre daha yüksek olduğu saptanmıştır. Sağlık sigortası olan, modern doğum kontrol yöntemleri kullanan, Pap smear testi ve kendi kendine vulva muayenesi yapan, serviks kanseri ve Pap smear testi hakkında bilgisi olan kadınların tüm ölçek alt boyut ve ölçek toplam puanının yüksek olduğu saptanmıştır. Çoklu regresyon analizine göre jinekolojik kanser farkındalığını etkileyen istatistiksel olarak anlamlı faktörler: Eğitim durumu, doğum kontrol yöntemini kullanma, kendi kendine vulva muayenesi yapma ve düzenli jinekolojik muayene gitme, Pap smear testi yaptırma ve serviks kanseri hakkında bilgi sahibi olma olarak belirlenmiştir.

Sonuç: Sosyo-ekonomik durumu yüksek olan kadınların jinekolojik kanser konusunda farkındalıklarının yüksek olduğu belirlenmiştir.

Anahtar Kelimeler: Jinekolojik kanser, kanser farkındalığı, kadın

Introduction

Gynecological cancers are an important problem in many women in terms of morbidity and mortality (1-4). According to the World Cancer Research Fund International (2020) data, the gynecological cancer rates were 6.9% for the cervix uteri, 4.8% for the corpus uteri, 3.6% for the ovary, 0.5% for the vulva, and 0.2% for the vagina (5). In the Global Cancer Incidence, Mortality and Prevalence (2020) data, it was stated that the incidence of gynecological cancers was high in the cervix uteri (6.5%), corpus uteri (4.5%) and ovary (3.4%), respectively, in the world (6), and the death rates increased due to these cancers (2).

According to the results of Turkey Cancer Statistics (2018), gynecological cancers were reported to be the most common cancer after breast and gastrointestinal system cancers (4,7). The incidence of gynecological cancers in Turkey was determined to be 9.8, 6.1, and 4.0 per hundred thousand for uterine corpus, ovarian, and cervical cancers, respectively (1,3,4).

When the risk factors in gynecological cancers were examined in the light of the literature, it has been shown that factors such as age (2,8-12), smoking (2,8-18), HIV infection (2,8-12), obesity (13,14), human papillomavirus (HPV) (2,8-18), number of sex partners (8,15-17), and exposure to some chemicals were effective in the development of these cancers (13).

Protection and early detection are important for lowering cancer mortality rates (8,11). Regular screening and self-examination are required for the early detection of gynecologic malignancies (19). Furthermore, in the prevention of gynecological malignancies, interventions such as maintaining a healthy lifestyle (exercise, balanced diet, avoiding alcohol and smoking) and avoiding risky behaviors and environmental risk factors are recommended (2,8-12). For cervical cancer, other protective strategies have been used, including the HPV vaccine and the use of a barrier method during sexual intercourse, as well as the use of controlled oral contraceptives for endometrial and ovarian cancer (8,11,20).

As is known all over the world, the life expectancy of women is increasing (3,4) and the incidence and mortality of gynecologic cancers are increasing day by day (2,4,7,12). Therefore, determination of the prevalence, risk factors, and causes of gynecologic cancers is becoming increasingly important for early diagnosis and treatment of gynecologic cancers (3,4). One of the important factors in the prevention of gynecologic cancers is to raise women's awareness about the symptoms, prevalence, early diagnosis, and treatment of gynecologic cancers and to raise women's awareness in this regard (2,11).

Studies have shown that women's level of knowledge and awareness about gynecologic cancers is not sufficient (12,22,23), ignoring the health problems they experience (12,21), neglect (12,22), embarrassment (11,12,24), and financial problems (11,12), and they are not sufficiently aware of existing screening programs to facilitate early diagnosis and treatment (2,11,25). The importance of this study is to evaluate the awareness of women about screening and risk factors for gynecologic cancers, which have limited information resources in Turkey, and to shed light on the preparation of educational programs for future studies by identifying knowledge gaps. In previous studies, descriptive data analysis (frequency analyses, mean, standard deviation, minimum-maximum) and basic mean comparison tests (ANOVA, t-test, Mann-Whitney U test, Kruskal-Wallis test) were used to determine gynecological awareness (1-3,10,26,27). Regression analysis, an advanced statistical analysis method, was used only in the study by Uslu-Sahan et al. (28). Another important objective of this study was to evaluate the factors affecting gynecologic cancers with both basic and advanced statistical analyses in a large

Main Points

- It was observed that the higher socio-economic status of women had a high awareness of gynecological cancer.
- It was found that women aged over 42 years, women with two children, employed, had higher income status, had health insurance, women who had postgraduate education, and had high gynecological cancer awareness.
- There was a high level of awareness among women who underwent a regular gynecologic examination, who had information about cervical cancer, who underwent the Pap smear test, and who underwent vulvar self-examination.

Turkey population. Therefore, this study determined factors associated with awareness of gynecological cancer among Turkish women.

Material and Method

Study Design

This study was descriptive and cross-sectional.

Sample of the study

The sample size for the study was calculated using G*Power software version 3.1.9.7. The input parameters were t-test, a small effect size of 0.2, a 5% alpha error probability (α=0.05) and 80% power (1-β=0.80) and the total sample size calculated was 788. A small estimated effect size was chosen to ensure that a large sample was collected to detect meaningful differences between variables (29).

A snowball sampling technique was used to collect online responses from the Turkish population between November 2020 and April 2021. Eight hundred forty-six women were reached, 42 women were excluded from the study for not completing the questionnaires, and the sample of the study consisted of 804 women. The study included women between the ages of 20 and 65 who had no history of gynecologic cancer, who volunteered to participate in the study, who were at least primary school graduates, and who could communicate both verbally and in writing. Women diagnosed with gynecological cancer were excluded from the study. Because snowball sampling was used, region/province selection was not made, and the study was conducted with all women who agreed to participate and met the inclusion criteria.

Data collection

The online questionnaire was prepared by the researchers using Google forms. Data collection depended on the authors' social relations with the local citizens living in Turkey. A single-page draft placard was dispatched to the WhatsApp, Facebook, Instagram, and Twitter groups to reach women. The placard included a brief introduction regarding the background, objective, methods, inclusion criteria, statement of secrecy, and steps for filling out the questionnaire along with the link and fast response. To avoid any psychological or moral pressure, all participants were addressed generally and without any specificity. Additionally, when filling out the form, the respondents had the option of "I prefer not to answer" any question that they found uncomfortable. The questionnaire form was arranged in such a way as to allow the woman to participate only once in the survey. The respondent could proceed with the questionnaire only after confirmation. All information was collected through the Google system's automatic

Data collection tools

The data collection tools consisted of two parts. The first part consisted of the women's descriptive characteristics form, which was prepared by the researchers based on the literature (1-4,8,10,11). This questionnaire consisted of 25 questions. The form included information about women's age, education level, family type, pregnancy history, number of children, status of employment, health insurance, smoking, and perceived income. In addition, having a sexual life, using birth control methods, applying regular gynecological examinations, and having knowledge about Pap smear test and cervical cancer were examined in this section.

The second part of the questionnaire included the "gynecological cancers awareness scale" (GCAS). This scale was developed by Dal and Ertem (8) in 2017. The Cronbach alpha value of the scale was found to be 0.944. GCAS consists of 41 items and is a five-point Likert-type scale, scored between one and five (1=strongly disagree, 2=disagree, 3=neither agree not to disagree, 4=agree, and 5=strongly agree). This scale has four subdimensions as follows: "Awareness of early diagnosis and knowledge in gynecological cancers" (1, 2, 12, 13 items), "Awareness of gynecological cancer risks" (3, 4, 5, 6, 7, 8, 9, 10, and 11 items), "Awareness of gynecological cancer prevention" (14, 15, 16, 17, 18, and 19 items), and "Awareness of routine control and serious disease perception in gynecological cancer" (20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, and 41 items). The total score to be obtained from the scale is between 41 and 205 points, and a high score indicates that women's awareness of gynecological cancer is high (8).

Statistical Analysis

Statistical analysis was performed using the SPSS 18.0 program. Frequency distributions were used to assess descriptive characteristics. The groups were found to be homogeneous after skewness and kurtosis tests were conducted to verify the normality condition of the data distribution. The relationship between the independent variables of the study and GCAS total and subscale scores was evaluated using t-test and ANOVA). The Bonferroni test was used to examine the variables that made a difference. The variables were found to be significant, and the total scale scores were tested using multiple regression analysis. A p-level of <0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Ethical Committee of Manisa Celal Bayar University (11/11/2020, 20.478.486). Written permission was obtained from the researchers who developed the GCAS for the use of the study. To protect data privacy, the surveys were delivered to women via the URL doc.google.com. Before beginning the questionnaire form, participants were asked to read and sign an informed consent form that contained no personal information and explained the purpose of the study. The questionnaire excludes any questions regarding the participants' contact or personal information.

Results

Descriptive Characteristics of the Women

In the study, the mean age of the women was found 41.5±10.7 (min=20-max=65), and about half of the women (50.6%) were 41 years old or younger. Overall, 64.3% had a university education, 70.0% were employed, 83.2% had a nuclear family, 95.3% had health insurance, and 55.5% stated that family income was equal to outgoings. most women (80.3%) had a history of pregnancy, 71.3% had sexual activity, and 34.3% stated that they had regular annual visits to a gynecologist (Table 1).

Sub-dimension and Total Scores of the GCAS

In this study, the mean scores for "awareness of routine control and serious disease perception in gynecological cancer" and "awareness of gynecological cancer risks" was 90.8±12.2 (24-110) and 27.9±5.0 (11-45), respectively. "Awareness of gynecological cancer prevention", "Awareness of early diagnosis and knowledge in gynecological cancers" and GCAS total mean scores were 23.1±3.7 (min=7 max=30), 17.5±2.4 (min=4, max=20) and 159.4±18.3 (min=63, max=205), respectively (data not shown).

Factors Associated with Awareness of Gynecological Cancer

Women aged over 42 years had higher scores for "awareness of routine control and serious disease perception in gynecological cancer" (p=0.042), "awareness of gynecological cancer risks" (p=0.003) "awareness of gynecological cancer prevention" sub-dimensions (p=0.019) and the total of GCAS (p=0.006) than women aged 41 years or younger. All sub-dimension scores and the total score of GCAS were determined to be higher in postgraduate education women than in middle school and lower education women. Employed women had a higher score from the sub-dimensions "awareness of gynecological cancer risks" (p=0.000), "awareness of early diagnosis and knowledge in gynecological cancers" (p=0.002), and the total score of GCAS (p=0.009) than unemployed women. Women who had health insurance had a higher score in all sub-dimensions. The score of sub-dimensions in "awareness of gynecological cancer risks" (p=0.015), "awareness of gynecological cancer prevention" (p=0.001), and the GCAS total score (p=0.009) were higher in women whose family income was higher than outgoings than in women whose family income was lower than outgoings. The sub-dimensions in "awareness of routine control and serious disease perception in gynecological cancer" (p=0.034) were determined to be high in women who had smoking and "awareness of gynecological cancer prevention" scores were higher in non-smoker women (Table 1).

Women who had a history of pregnancy had higher scores for the sub-dimensions "awareness of routine control and serious disease perception in gynecological cancer" (p=0.001), "awareness of gynecological cancer risks" (p=0.000), "awareness of gynecological cancer prevention" (p=0.002), and the GCAS total (p=0.002) than women who had no history of pregnancy. Women with two children had higher scores "awareness of routine control and serious disease perception in gynecological cancer" (p=0.008), "awareness of gynecological cancer risks" (p=0.007), "awareness of gynecological cancer prevention" (p=0.047), and the GCAS total (p=0.002) than women without children (Table 1).

The mean scores of "awareness of routine control and serious disease perception in gynecological cancer" (91.5±12.5), "awareness of gynecological cancer risks" (28.3±5.2), "awareness of gynecological cancer prevention" (23.4±3.6), and "GCAS total scores" (160.7±18.7) was found to be high in women who had an active sexual life. The mean points of the GCAS total and subscale scores were defined as higher in women who used the modern birth control method. Women who had a regular gynecological examination had higher scores on the GCAS total (163.6±15.9), "awareness of routine control and serious disease perception in gynecological cancer" (93.6±10.6), "awareness of gynecological cancer prevention" (24.2±3.3), and "awareness of early diagnosis and knowledge in gynecological cancers" (17.8±2.1) subscales (Table 1).

Overall, 66.8% and 36.8% of the women stated that they had undergone a Pap smear test and self-examination of the vulva, respectively. In the study, 28.1% of women declared that they had knowledge about cervical cancer and 23.9% of them had information about Pap smear test. Women who had information about cervical cancer and Pap smear test and women who had the Pap smear test and vulvar self-examination had a high score from GCAS total and subscale scores (p=0.000) (Table 2).

Multiple Regression Analysis of GCAS Total Score

When the independent variables were examined in explaining the dependent variable GCAS total score, education status, using birth control method, having vulvar self-examination and regular gynecologic examination, having Pap smear test, and having information about cervical cancer were found to be important factors (F=12,565, p<0.0001). The regression coefficient values were statistically significant (t=26,789, p<0.0001). In the multiple regression analysis model, 16.2% (adjusted R^2=0.162) of the independent variables were statistically significant (Table 3).

Discussion

This study determined factors associated with awareness of gynecological cancer among Turkish women. In the study, the mean total score of GCAS was 159.4±18.3, and considering that the minimum score to be taken from the scale was 41 and the maximum score 205, it could be said that women's awareness of gynecological cancer was high. When the Turkish studies were reviewed, the mean GCAS score of women was determined 161.2±19.3 (26), 157.5±17.4 (1), 156.6±32.9 (30) and 154.5±16.7 (31). Other studies in Turkey found that the total GCAS score varied between 147

and 151 (4,11,12,25). The mean score of GCAS was determined 154.8±17.9 in Poland (32). It could be said that the total score of GCAS in this research was in line with the results of previous studies.

In this study, the relationship between the descriptive characteristics of women and sub-dimensions and the total GCAS scores was examined. Consistent with our study findings, it was found that GCAS total scores were high in women who had two children (2), were employed (2,11,28), had higher income status (25-28), had health insurance (26), had regular gynecologic examination (12,25,26,28), had information about cervical cancer (4,11,12,28), had the Pap smear test (4,12,26), and had vulvar self-examination (12,26). In the current study, the GCAS total score was defined as high in women aged over 42 years. It was determined in some studies in Turkey that there was a significant difference in women aged between 36 and 50 (2), 50 and 59 (25), 50 and 54 (26), 50 and 65 (4). Furthermore, similar to the findings of other studies, as the education level of women increased, the GCAS total scores increased statistically significantly (11,25,26,28). As seen in previous research findings, it is an expected result that women with higher socio-economic status had a higher score on the GCAS and higher awareness.

In our study, although the awareness of gynecological cancer was determined to be high in women, it was indicated that approximately one-third of the women had knowledge about cervical cancer and Pap smear, about thirty percent of women performed vulvar self-examination, and 66.8% of women had a Pap smear test. Healthcare professionals who provide preventive and supportive healthcare services may positively affect gynecological cancer awareness through special education programs (18,33,34). Interventions such as invitation letters (35), telephone calls (36), and educational pamphlets (36) may be useful to increase participation in cervical cancer screening programs.

In this study, the "awareness of gynecological cancer risks" subscale score was found as 27.9±5.0. In some previous studies, the mean score was found to vary between 26.6 and 29.8 (1,4,11,12,25,26,30-32). In the study, the mean scores of "awareness of gynecological cancer risks" were high in women who had a university degree and above, and this finding was consistent with previous studies (1,25,26). Consistent with our study findings, it was found that the sub-dimension score was high in women who underwent vulvar self-examination (26). In the study, the subscale score was found to be low (27.9±5.0), indicating that women had insufficient knowledge about cancer risk factors. Similarly, Novinson et al. (34) stated that education about gynecologic cancer symptoms and risk factors can be effective in increasing awareness, having knowledge, and transforming knowledge into behavior.

In the current study, the mean score of "awareness of routine control and serious disease perception in gynecological cancer" was 90.8±12.2 and the average subscale score was high. Parallel to our study findings, it was found in some studies in Turkey that the mean score varied between 82.2 and 91.3 (1,4,11,12,25,26,30-32). Consistent with the findings in previous studies, our study determined that the subscale of the "awareness of routine control and serious disease perception in gynecological cancer" score was high in women who had postgraduate education (25,26), had health insurance (26), had two children (11), had regular gynecologic examination (25,26), had information about cervical cancer (11) and Pap smear test (25), and had the Pap smear test and vulvar self-examination (26). Contrary to a study conducted in Turkey that women aged between 30 and 39 years had high scores in this subscale (27), our study found the score high for women aged over 42 years. Two studies reported that women aged between 40 and 49 years (25) and women aged between 50 and 54 years (26) had a high score in the subscale. As can be seen from the findings of this study, women who had a high level of education, had a regular gynecological examination, had Pap smear test and vulvar self-examination, and had knowledge about this subject increased awareness of routine control and preventive measures. Therefore, raising the awareness of women in other groups becomes extremely important.

Previous studies have indicated that women do not apply for routine gynecological examination and Pap smear test because they ignore the health problems they experience (12,21), not having enough information (12,23), neglect (12,22), embarrassment (11,12,24), and financial problems (11,12). Therefore, it is useful that information about gynecological cancer and Pap smear tests be disseminated and regularly provided via an interdisciplinary approach (health care professionals, schools, and mass media) to raise social awareness.

In this study, the "awareness of gynecological cancer prevention" score was determined 23.1±3.7. Some studies stated that the subscale score changed between 21.2 and 23.4 (1,4,11,12,25,26,30-32). Similar to the findings of other studies, in our study, the mean "awareness of gynecological cancer prevention" subscale points were determined to be high in women who had higher income status (26,27), health insurance (26), had not smoking (26,31), had information about cervical cancer (11), had regular gynecologic examination (25,26), had the Pap smear test (26) and had vulvar self-examination (26). When the literature was reviewed, as the education level of women increased, it was noted that there was a significant difference between the subscale scores (11,26). Consistent with the present study, Toptaş Acar et al. (25) and Alp Dal et al. (26) noted that women aged between 50 and 59 years and women aged between 55 and 60 years had a high score in the subdimension. It has been stated in the literature that education level, income status, and health insurance could impact gynecological cancer awareness. It was emphasized that increasing the education level of women and creating job opportunities for them were important in terms of ensuring their access to health services (28).

Table 1.
Relationsip between descriptive characteristics of women and sub-dimension of Gynecological Cancers Awareness Scale

Descriptive characteristics of women		**Awareness of routine control and serious disease perception in patients with gynecological cancer**		**Awareness of gynecological cancer risks**	
	n (%)	**Mean ± SD***	**Test**	**Mean ± SD***	**Test**
Age of the women ≤41 years >42 age	 407 (50.6) 397 (49.4)	 90.0±12.5 91.7±11.9	t=-2.034 df=802 **p=0.042**	 27.4±5.4 28.5±4.6	t=-2.966 df=789.506 **p=0.003**
Education status Middle school and lower (a) High school (b) University (c) Postgraduate (d)	 42 (5.2) 92 (11.5) 517 (64.3) 153 (19.0)	 85.0±14.9 90.8±11.2 90.6±12.4 93.2±10.9	X^2=5.243 **p=0.001** **d>a**	 27.0±3.7 26.8±4.7 27.6±4.7 30.0±6.1	X^2=12.287 **p=0.000** **d>a** **d>b** **d>c**
Employment status Employed (a) Unemployed (b) Retired (c)	 563 (70.0) 150 (18.7) 91 (11.3)	 91.1±12.1 89.4±13.7 91.5±10.1	X^2=1.387 p=0.250	 28.4±5.1 26.6±5.0 27.4±4.1	X^2=8.337 **p=0.000** **a>b**
The type of family Extended Nuclear	 135 (16.8) 669 (83.2)	 90.3±12.4 90.9±12.2	t=-0.514 df=802 p=0.607	 27.5±4.9 28.0±5.1	t=-0.996 df=802 p=0.319
Health insurance Yes No	 766 (95.3) 38 (4.7)	 91.2±11.9 84.4±15.7	t=2.623 df=39.141 **p=0.012**	 28.0±5.0 26.2±5.1	t=2.174 df=802 **p=0.030**
Perceived income status Income is lower than outgoings (a) Income is equal to outgoings (b) Income is higher than outgoings (c)	 139 (17.3) 446 (55.5) 219 (27.2)	 89.0±11.3 91.2±12.3 91.3±12.6	X^2=1.868 p=0.155	 26.9±4.6 28.0±5.2 28.5±5.0	X^2=4.235 **p=0.015** **c>a**
Smoking Yes No	 259 (32.2) 545 (67.8)	 92.2±10.9 90.2±12.7	t=2.128 df=802 **p=0.034**	 28.0±4.8 27.9±5.2	t=0.162 df=802 p=0.872
History of pregnancy Yes No	 646 (80.3) 158 (19.7)	 91.6±12.2 87.8±11.9	t=3.473 df=802 p=0.001	 28.3±5.0 26.5±5.1	t=4.013 df=802 p=0.000
Number of children No children (a) 1 child (b) 2 children (c) 3 or more children (d)	 202 (25.1) 279 (34.7) 274 (34.1) 49 (6.1)	 89.0±11.8 91.1±12.6 92.4±11.6 88.0±14.2	X^2=3.980 **p=0.008** **c>a**	 26.9±5.3 28.4±5.5 28.3±4.4 28.2±4.4	X^2=4.087 **p=0.007** **c>a**
Having an active sexual life Yes No	 573 (71.3) 231 (28.7)	 91.5±12.5 89.2±11.5	t=2.408 df=802 **p=0.016**	 28.3±5.2 27.1±4.7	t=3.072 df=802 **p=0.002**
U**sing a birth control method** Modern methods (a) Non-modern methods (b) Not used (c) Menopause (d)	 300 (37.3 113 (14.1) 247 (30.7) 144 (17.9)	 92.6±11.5 92.4±13.1 88.7±12.7 89.8±11.6	X^2=5.631 **p=0.001** **a>c**	 28.5±5.2 27.7±5.0 27.1±5.3 28.3±4.1	X^2=4.079 **p=0.007** **a>c**
Regular gynecologic examination Yes No	 276 (34.3) 528 (65.7)	 93.6±10.6 89.4±12.7	t=4.733 df=802 **p=0.000**	 28.0±5.0 27.9±5.1	t=0.277 df=802 p=0.782

**SD=standard deviation*

Descriptive characteristics of women	Awareness of gynecological cancer prevention		Awareness of early diagnosis and knowledge of gynecological cancers		Gynecological cancers awareness scale total score	
	Mean ± SD*	Test	Mean ± SD*	Test	Mean ± SD*	Test
Age of the women ≤41 years >42 age	 22.8±3.8 23.4±3.6	t=-2.344 df=802 **p=0.019**	 17.5±2.4 17.6±2.5	t=-0.848 df=802 p=0.397	 157.6±18.6 161.2±17.8	t=-2.766 df=802 **p=0.006**
Education status Middle school and lower (a) High school (b) University (c) Postgraduate (d)	 21.0±3.9 22.8±3.8 23.1±3.6 23.8±3.5	X^2=6.683 **p=0.000** **d>a**	 16.3±3.1 16.5±3.2 17.5±2.3 18.7±1.6	X^2=21.443 **p=0.000** **d>a** d>b **d>c**	 149.4±21.4 156.8±18.1 158.8±17.7 165.7±17.5	X^2=11.530 **p=0.000** **d>a** **d>b** **d>c**
Employment status Employed (a) Unemployed (b) Retired (c)	 23.2±3.7 22.4±3.8 23.1±3.3	X^2=2.792 p=0.062	 17.7±2.3 16.9±2.9 17.9±2.1	X^2=6.479 **p=0.002** **a>b, c>b**	 160.4±18.2 155.3±20.1 159.9±14.5	X^2=4.716 **p=0.009** a>b
The type of family Extended Nuclear	 22.7±3.5 23.1±3.7	t=-1.109 df=802 p=0.268	 17.4±2.6 17.6±2.4	t=-0.855 df=802 p=0.393	 158.0±18.4 159.7±18.3	t=-0.957 df=802 p=0.339
Health insurance Yes No	 23.2±3.6 21.3±4.5	t=2.566 df=39.464 **p=0.014**	 17.6±2.4 16.1±3.0	t=3.021 df=39.370 **p=0.004**	 160.0±17.8 148.0±23.6	t=3.982 df=802 **p=0.000**
Perceived income status Income is lower than outgoings (a) Income is equal to outgoings (b) Income is higher than outgoings (c)	 22.1±3.5 23.1±3.9 23.6±3.3	X^2=6.902 **p=0.001** **c>a**	 17.2±2.5 17.5±2.5 17.8±2.2	X^2=2.449 p=0.087	 155.2±15.9 159.8±19.0 161.2±8.0	X^2=4.789 **p=0.009** c>a
Smoking Yes No	 22.4±3.5 23.4±3.8	t=-3.544 df=802 **p=0.000**	 17.6±2.4 17.5±2.5	t=0.339 df=802 p=0.735	 160.1±16.0 159.0±19.3	t=0.799 df=802 p=0.425
History of pregnancy Yes No	23.3±3.6 22.1±3.8	t=3.654 df=802 **p=0.000**	17.6±2.5 17.3±2.2	t=1.521 df=802 p=0.129	160.8±18.2 153.7±17.4	t=4.387 df=802 p=0.000
Number of children No children (a) 1 child (b) 2 children (c) 3 or more children (d)	 22.5±3.8 23.2±3.6 23.4±3.5 22.8±4.6	X^2=2.670 **p=0.047** **c>a**	 17.5±2.1 17.6±2.5 17.7±2.4 16.9±3.2	X^2=1.597 p=0.189	 155.8±17.6 160.3±18.9 161.7±16.9 156.0±22.2	X^2=4.964 **p=0.002** c>a
Having an active sexual life Yes No	 23.4±3.6 22.3±3.7	t=3.646 df=802 **p=0.000**	 17.6±2.5 17.4±2.3	t=0.759 df=802 p=0.448	 160.7±18.7 156.1±16.7	t=3.470 df=475.118 **p=0.001**
Using a birth control method Modern methods (a) Non-modern methods (b) Not used (c) Menopause (d)	 23.7±3.4 23.1±3.9 22.3±4.0 23.0±3.3	X^2=6.132 **p=0.000** **a>c**	 18.0±2.0 17.6±2.2 17.1±2.9 17.3±2.4	X^2=6.407 **p=0.000** **a>c**	 162.8±16.8 160.8±18.9 155.2±19.6 158.4±16.9	X^2=8.260 **p=0.000** **a>c**
Regular gynecologic examination Yes No	24.2±3.3 22.5±3.7	t=6.193 df=802 **p=0.000**	17.8±2.1 17.4±2.6	t=2.228 df=657.525 **p=0.026**	163.6±15.9 157.2±19.0	t=4.763 df=802 **p=0.000**

Table 2.
Relationship Between Having Information About Cervical Cancer, Pap Smear Test, and Having Pap Smear Test and Vulvar Self-examination and Sub-dimension of Gynecological Cancers Awareness Scale

Characteristics		Awareness of routine control and serious disease perception in patients with gynecological cancer		Awareness of gynecological cancer risks	Awareness of gynecological cancer	Awareness of gynecological cancer prevention		Awareness of early diagnosis and knowledge of gynecological cancers		Gynecological cancers awareness scale total score	
	n (%)	Mean ± SD*	Test	Mean ± SD*	Test	Mean ± SD*	Test	Mean ± SD*	Test	Mean ± SD*	Test
Had information about cervical cancer			t=3.995		t=7.723		t=6.036		t=5.947		t=7.052
Yes	226 (28.1)	93.6±11.9	df=802	30.3±5.8	df=332.149	24.3±3.7	df=802	18.3±2.1	df=491.908	166.5±18.2	df=802
No	578 (71.9)	89.8±12.2	**p=0.000**	27.0±4.4	**p=0.000**	22.6±3.6	**p=0.000**	17.3±2.5	**p=0.000**	156.6±17.6	**p=0.000**
Had information about the Pap smear test			t=4.368		t=8.440		t=6.601		t=4.495		t=7.514
Yes	192 (23.9)	94.2±12.1	df=802	30.8±5.6	df=270.743	24.6±3.5	df=802	18.2±2.3	df=802	167.8±18.6	df=802
No	612 (76.1)	89.8±12.1	**p=0.000**	27.0±4.5	**p=0.000**	22.6±3.6	**p=0.000**	17.3±2.4	**p=0.000**	156.8±17.4	**p=0.000**
Having the Pap smear test			t=6.185		t=6.160		t=6.430		t=5.804		t=8.184
Yes	537 (66.8)	92.7±11.6	df=802	28.7±5.1	df=802	23.7±3.4	df=465.648	17.9±2.1	df=413.910	163.0±17.2	df=802
No	267 (33.2)	87.1±12.6	**p=0.000**	26.4±4.6	**p=0.000**	21.8±4.0	**p=0.000**	16.8±2.9	**p=0.000**	152.2±18.3	**p=0.000**
Vulvar self-examination			t=4.608		t=3.084		t=7.486		t=6.295		t=6.375
Yes	296 (36.8)	93.4±11.7	df=802	28.7±5.7	df=508.677	24.3±3.5	df=802	18.2±2.2	df=802	164.7±17.5	df=802
No	508 (63.2)	89.3±12.3	**p=0.000**	27.5±4.5	**p=0.002**	22.3±3.6	**p=0.000**	17.1±2.4	**p=0.000**	156.3±18.1	**p=0.000**

**SD=standard deviation*

In this study, the mean "awareness of early diagnosis and knowledge in gynecological cancers" subscale score found as 17.5±2.4. It was found in some studies that the score varied between 15.4 and 17.8 (1,4,11,12,25,26,30-32). Similarly, most of the other published studies explained that the mean score of the subscale was found to be high in women with health insurance (26), who had vulvar self-examination (26), had information about cervical cancer (11) and had Pap smear test (25). The finding was parallel to the studies conducted in Turkey, which showed that as the education level of women increased, there was a significant difference in the subscale scores (1,11,26).

In the present study, although the "awareness of early diagnosis and knowledge in gynecological cancers" subscale score was found to be high, the rate of women having a Pap smear test, vulvar self-examination, and regular gynecological examination was not at the desired level. It was emphasized in the studies that people who were informed about awareness and the importance of screening were more likely to undergo routine cancer screening (18,33,34).

According to multiple regression analysis in this study, the following were found to be statistically significant factors influencing awareness of gynecological cancer: Education status, use of birth control methods, vulvar self-examination and regular gynecologic examinations, Pap smear test, and information about cervical cancer. It is a pleasing finding that women with high education levels have high awareness about gynecological cancer, as they undergo regular gynecologic examinations and Pap smear tests, and women who use birth control methods receive counseling in the hospital and have the necessary check-ups. Only one study [Uslu-Sahan et al. (28)] performed regression analysis to determine the variables that predict gynecological cancer awareness and found that having knowledge about gynecological cancers was an important predictor of gynecological cancer awareness.

Table 3.
Effect of Independent Variables on Gynecological Cancer Awareness Scale Total Score: Multiple Regression Analysis

Model	Unstandardized coefficients		Standardized coefficients	t	p	95.0% confidence interval for B	
	B	Std. error	Beta			Lower bound	Upper bound
(Constant)	191.952	7.165		26.789	**0.000**	177.886	206.017
Age of the women	0.560	1.449	0.015	0.386	0.699	-2.284	3.405
Education status	3.322	0.925	0.130	3.592	0.000	1.507	5.138
Employment status	0.919	0.986	0.034	0.932	0.352	-1.016	2.855
Health insurance	-4.932	2.916	-0.057	-1.691	0.091	-10.656	0.792
Having an active sexual life	0.442	1.558	0.011	0.284	0.777	-2.617	3.502
Perceived income status	0.452	0.938	0.016	0.481	0.630	-1.390	2.294
History of pregnancy	-2.695	2.173	-0.059	-1.240	0.215	-6.960	1.570
Number of children	-0.423	0.956	-0.021	-0.442	0.659	-2.299	1.454
Using a birth control method	-0.322	0.140	-0.086	-2.297	**0.022**	-0.598	-0.047
Vulvar self-examination	-4.406	1.288	-0.116	-3.420	**0.001**	-6.935	-1.877
Regular gynecologic examination	-3.046	1.303	-0.079	-2.338	**0.020**	-5.603	-0.489
Had information about the Pap smear test	-3.557	1.976	-0.083	-1.800	0.072	-7.435	0.321
Having the Pap smear test	-6.269	1.518	-0.162	-4.129	**0.000**	-9.249	-3.289
Had information about cervical cancer	-4.270	1.857	-0.105	-2.300	**0.022**	-7.915	-0.626
R=0.427, R^2=0.182, Adjusted R^2=0.162, F=12.565, df=14, p=0.000, Durbin Watson=1.792							

Study Limitations

This study had several limitations. First, the study was conducted on women who used social media for a specific amount of time. Therefore, the findings of this study cannot be generalized to all women in Turkey. Second, the data were collected via Google forms because of the pandemic. Another limitation was that women who did not use social media tools and who had low socio-economic status could not be reached adequately because the research was conducted on the web.

Conclusion

In the present study, women who had higher education, women who used birth control methods, women who had vulvar self-examination and regular gynecologic examination, had Pap smear test, and had information about cervical cancer had higher awareness of gynecological cancer. To increase social awareness, it is recommended to determine the unmet educational needs related to the early diagnosis of gynecological cancers and to plan the services to be provided by health professionals in line with these needs. Invitation letters, phone calls, and educational brochures can help transform knowledge into action to increase women's participation in cancer screening.

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