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The Silent Threat to Young Women: Assessment of Gynecological Cancer Awareness

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ABSTRACT

Purpose: This research was conducted to determine the level of awareness of gynecological cancers among young female university students and the factors influencing this awareness.

Methods: This study is descriptive and cross-sectional in nature. It was conducted with 724 female students studying at a state university. Data were collected using a Sociodemographic Information Form and the Gynecological Cancer Awareness Scale (GCAS).

Results: The average age of the participants was 20.82±2.34 years. The mean total score on the GCAS was 149.36±21.77. Awareness scores differed significantly according to class level and income status. Furthermore, students who had knowledge about gynecological cancer, prevention methods, early diagnosis, and KETEM (Cancer Early Detection and Screening Center) had higher awareness scores ($p<0.001$). Regression analysis revealed that class level, income status, knowledge of early diagnosis, and knowledge about KETEM were significantly associated with awareness.

Conclusion: The study findings suggest that expanding educational and informational activities on early detection, screening programmes, and KETEM may be beneficial for supporting gynecological cancer awareness among university students.

Keywords: Gynecologic neoplasms, awareness, students, women's health

ÖZET

Amaç: Bu araştırma üniversite genç kız öğrencilerinin jinekolojik kanserler konusundaki farkındalık düzeylerini ve bu farkındalığa etki eden faktörleri belirlemek amacıyla yapıldı.

Yöntem: Bu çalışma tanımlayıcı ve kesitsel niteliktedir. Bir devlet üniversitesinde öğrenim gören 724 kız öğrenci ile gerçekleştirilmiştir. Veriler Sosyodemografik Bilgi Formu ve Jinekolojik Kanser Farkındalık Ölçeği (JKFÖ) kullanılarak toplandı.

Bulgular: Katılımcıların yaş ortalaması 20,82±2,34 yıldı. JKFÖ toplam puan ortalaması 149,36±21,77 idi. Farkındalık puanlarının sınıf düzeyi ve gelir durumuna göre anlamlı düzeyde farklılık gösterdiği belirlendi. Ayrıca jinekolojik kanserler, korunma yöntemleri, erken tanı ve KETEM (Kanser Erken Teşhis ve Tarama Merkezi) konularında bilgi sahibi olan öğrencilerin farkındalık puanlarının daha yüksek olduğu görüldü ($p<0,001$). Regresyon analizinde sınıf düzeyi, gelir durumu, erken teşhis bilgisi ve KETEM bilgisinin farkındalık ile anlamlı düzeyde ilişkili olduğu belirlendi.

Sonuç: Çalışma bulguları üniversite öğrencilerinde jinekolojik kanser farkındalığını desteklemek amacıyla erken tanı, tarama programları ve KETEM hakkında bilgilendirme çalışmalarının yaygınlaştırılmasının yararlı olabileceğini düşündürmektedir.

Anahtar Kelimeler: Jinekolojik kanserler, farkındalık, öğrenciler, kadın sağlığı

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Gynecological cancers are a major cause of morbidity and mortality in women globally (1,2). Cancers of the cervix, ovary, endometrium, vulva, and vagina are the main gynecological cancers and can negatively affect women's lives in physical, psychological, and social dimensions (1,3). Global datas show that gynecological cancers represent a significant disease burden on women's health, approximately 1.47 million new cases and more than 680,000 deaths were reported in 2022 (2,4,5). However, the fact that these cancers often do not show noticeable symptoms in the early stages leads to the diseases being diagnosed at an advanced stage, negatively affecting the success of treatment (2). Furthermore, increasing awareness of preventive measures and available screening services is essential for reducing the burden of gynecological cancers.

Although young female university students are an important group for the prevention and early diagnosis of gynecological cancers due to their fertile period, they are not sufficiently addressed in the literature (6,7). Unprotected sexual intercourse particularly at an early age, and exposure to the human papillomavirus (HPV) make this group at risk for gynecological cancers (1,8). Nevertheless, individuals in this age group often perceive themselves as low-risk, which limits the adoption of preventive health behaviors (8,9). For this reason, assessing gynecological cancer awareness and its associated factors among young women is important for promoting preventive health behaviors and increasing participation in early diagnosis and screening programs.

In Türkiye, the most common gynecological cancers in women include endometrial, ovarian, and cervical cancers (10). As part of the National Cancer Screening Programs, cervical cancer screening based on HPV-DNA testing is performed every 5 years for women aged 30–65 through KETEM (10). However, studies indicate that a significant proportion of women lack sufficient information about screening services and do not undergo regular gynecological examinations (11,12). This suggests that, despite the availability of screening services, important gaps remain in women's awareness and utilization of these services.

Raising awareness about gynecological cancers is important for early diagnosis and the development of preventive health practices (2,13). The literature reports that women with high awareness are more likely to participate in preventive health behaviors such as regular gynecological examinations and Pap smear tests (14–16). However, current studies show that awareness of gynecological cancers in women remains mostly at a moderate level. This indicates that this awareness is not sufficiently reflected in preventive health behaviors and that the level of knowledge regarding gynecological cancers is limited (11,13,16).

Most studies in the literature that assess gynecological cancer awareness have been conducted on married, sexually active women or women who have sought help from healthcare facilities (8,13). However, data on awareness levels and related factors among young female university students in their fertile years are limited. Yet, this period is a crucial time for the development of individuals' knowledge and awareness of gynecological cancers. In particular, few studies have examined the combined association of health service-related factors, such as knowledge of early diagnosis and screening and awareness of KETEM, on gynecological cancer awareness among young female university students (7–9). Addressing this research gap may contribute to the planning of educational interventions aimed at increasing awareness among young women and improving participation in preventive health services. This study was conducted to determine the level of gynecological cancer awareness and the factors associated with gynecological cancer awareness among young female university students.

Based on this purpose, the study addressed the following research questions:

- What is the level of gynecological cancer awareness among young female university students?
- Which factors are associated with gynecological cancer awareness among young female university students?

Materials and Methods

Study Design

The study is descriptive and cross-sectional in design. It was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement (17).

Study Setting

The research was conducted at a state university located in the Central Anatolia Region between May and December 2025. The university has 14 faculties, 4 colleges, 8 vocational schools, and 2 institutes. It offers programs in health sciences, engineering, social sciences, education, and other fields. According to the university's official enrollment records for the 2024–2025 academic year, there were 24.460 students, including 12.203 female students. The study population consisted of female students enrolled at the university.

Sample Size and Participants

The study population consisted of a total of 12.203 female students studying at a state university in the Central Anatolia Region during the 2024-2025 academic year. The sample size was calculated using the formula for a known population. A 95% confidence level (Z = 1.96), a 5% margin of error (d = 0.05), and an expected proportion of 50% (p = 0.50; q = 0.50) were used in the calculation. The minimum required sample size was calculated as 373.

$$n = \frac{N\ x\ Z^2\ x\ p\ x\ q}{d^2(N-1) + Z^2\ x\ p\ x\ q} \qquad (1)$$

In equation 1, N represents the population size, Z the confidence level, p and q the probabilities of occurrence and non-occurrence of the event, respectively, and d the margin of error.

A convenience sampling method, one of the non-probability sampling methods, was used in this study. The sample consisted of female students from different academic units of the university. The inclusion criteria were being 18 years of age or older, voluntarily agreeing to participate in the study, and having sufficient cognitive ability to understand and complete the data collection instruments. Participants who submitted incomplete data collection forms (n = 18) were excluded from the analysis. The study was completed with a total of 724 participants. The participant selection process is shown in Figure 1. The final sample size (n = 724) exceeded the calculated minimum sample size (n = 373).

Data Collection Tools

Research data were collected through face-to-face interviews using a sociodemographic information form and GCAS.

Sociodemographic Information Form

Developed by researchers based on the literature, the form consists of 20 questions covering participants' sociodemographic characteristics, health habits and knowledge about gynecological cancers (11,13,16). The content validity of the form was assessed based on feedback from five faculty members specialising in Obstetrics and Gynaecology Nursing, and the necessary revisions were made.

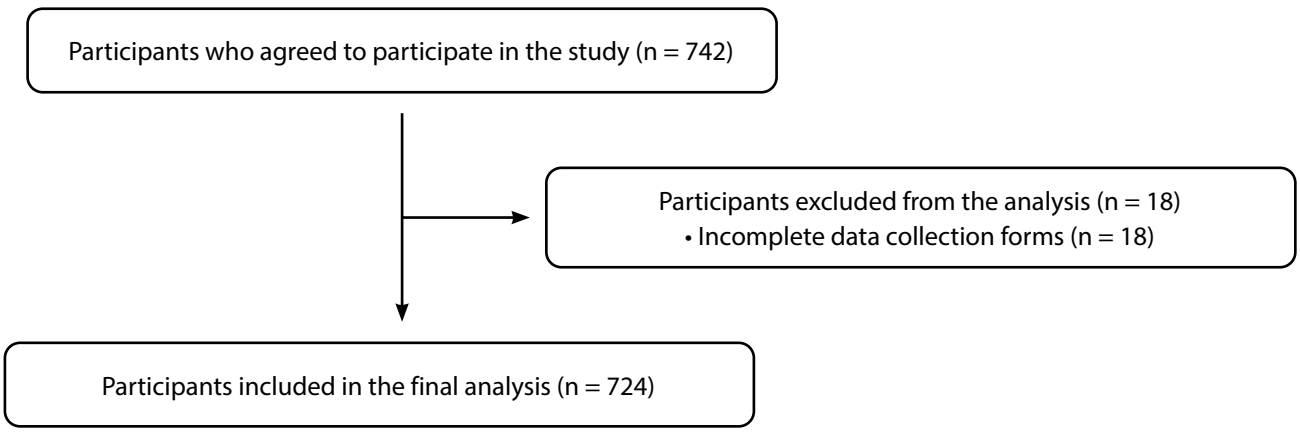


Figure 1. Participant flow diagram of the study

Gynecological Cancer Awareness Scale (GCAS)

This is a 41-item scale developed to assess individuals' awareness levels regarding gynecological cancers. The scale consists of four sub-dimensions: routine check-ups and awareness of serious illnesses in gynecological cancers, gynecological cancer risk awareness, awareness of gynecological cancer prevention, and early diagnosis and awareness of gynecological cancers. The score range for the scale is 41-205, with higher scores indicating a higher level of awareness. The Cronbach's alpha coefficient was reported as 0.944 in the original study (18). In the present study, the Cronbach's alpha coefficient was 0.93 for the total scale, while the coefficients for the four subscales were 0.93, 0.84, 0.67, and 0.78, respectively.

Data Collection

Data collection was conducted between May 2025 and December 2025. Following the required institutional approvals, the researchers conducted the data collection process in suitable common areas on the university campus. Students were informed about the purpose of the study and invited to participate on a voluntary basis. Face-to-face individual interviews were conducted with those who agreed to participate. Data were collected using the Sociodemographic Information Form and the Gynecological Cancer Awareness Scale (GCAS). Completion of the data collection instruments took approximately 15–20 minutes.

Data Analysis

Research data were analyzed using IBM SPSS Statistics 27. Descriptive statistics included mean, standard deviation, number, and percentage values. The normality of the data distribution was assessed using the Kolmogorov–Smirnov test, histograms, normal Q–Q plots, and skewness and kurtosis values. The data were determined to be normally distributed.

Independent samples t-test and one-way analysis of variance (ANOVA) were used for group comparisons, and Tukey post-hoc test was used when necessary. Multiple linear regression analysis was performed to identify factors associated with the total GCAS score and its subdimensions. Age, academic year, income level, knowledge of early diagnosis/screening methods, and awareness of KETEM were entered into the regression model as independent variables. Income level was entered as an ordinal categorical variable (1 = High, 2 = Middle, 3 = Low). In accordance with this coding, a negative regression coefficient indicates that awareness scores decrease as income levels decrease. Knowledge of early diagnosis/screening methods and awareness of KETEM were coded as binary variables (1 = Yes, 2 = No). Multicollinearity was assessed using variance inflation factor (VIF) and tolerance values. Linearity, homoscedasticity, and the normality of the regression residuals were assessed using standardized residual plots, histograms, and normal P–P plots. The statistical significance level was accepted as $p<0.05$.

Ethical Considerations

Ethical approval was obtained from the XXX University Social and Human Sciences Ethics Committee *(Date: 23.10.2024, Decision No: 18/47)* and the necessary permissions were obtained from the relevant institution *(E-88148187-900-324293)* in order to conduct the research. Participants were informed about the purpose and scope of the research, their informed consent was obtained on a voluntary basis, and it was stated that they could withdraw from the study at any time. The research was conducted in accordance with the principles of the Helsinki Declaration.

Results

The average age of the students participating in the study was determined to be 20.82±2.34 years. It was found that 38.3% of the participants were first-year students, 86.5% lived in student dormitories, and 82.7% rated their income as moderate. It was also determined that 14.0% of the participants smoked and 31.1% had a family history of cancer (Table 1).

It was found that 66.0% of the students considered their knowledge of gynecological cancers to be partially adequate, and 69.5% had knowledge about preventing gynecological cancers. 62.7% of the participants were found to have knowledge about early diagnosis/screening methods for gynecological cancers. The most commonly known methods in terms of early diagnosis and screening methods were biopsy (71.8%), Pap smear test (69.2%), and vulvar examination (64.3%). 48.2% of the students were found to have knowledge about KETEM. When examining the sources of information regarding gynecological cancers, it was determined that participants most frequently obtained information from the internet (58.0%) and university courses (46.5%) (Table 1).

Table 1. Sociodemographic and Gynecological Cancer-Related Characteristics of Participants (n=724)		
Variables	**Mean ± SD**	
Age (years)	20.82 ± 2.34	
Class	**n**	**%**
1st Class	277	38.3
2nd Class	185	25.6
3rd Class	161	22.2
4th Class	101	13.9
Place of residence		
Those who live at home with their friends	10	1.4
Those who live at home with their family	64	8.8
Apartment dwellers	24	3.3
Those living in student dormitories	626	86.5
Income level		
High	86	11.9
Middle	599	82.7
Low	39	5.4
Smoking		
Smokers	101	14.0
Non-smokers	623	86.0
Family history of cancer		
Those with a family history of cancer	225	31.1
Those without a family history of cancer	499	68.9
Information on gynecological cancers		
Sufficient	93	12.8
Partially sufficient	478	66.0
Insufficient	153	21.1
Information on preventing gynecological cancers		
Those who have information	503	69.5
Those who lack knowledge	221	30.5
Information on early diagnosis/screening of gynecological cancers		
Those who have information	454	62.7
Those who lack knowledge	270	37.3
Known early diagnosis/screening methods (n=454) *		
Pap smear test	314	69.2
Biopsy	326	71.8
Vulvar examination	292	64.3
KETEM awareness		
Those who have information	349	48.2
Those who lack knowledge	375	51.8
Information source about gynecological cancer (n=503) *		
Internet	298	58.0
University courses	239	46.5
Relative/friend	102	19.8
Health workers	112	21.8
Mass media	100	19.5

Note: *Mean: Average; SD: Standard Deviation; KETEM: Cancer Early Detection, Screening and Education Centers. * Percentages exceed 100% as participants may provide more than one response.*

The mean total score on the GCAS was 149.36±21.77. Among the sub-dimensions, the highest mean score was observed for the Routine check-ups and awareness of serious illnesses in gynecological cancers sub-dimension (83.55 ± 13.93), whereas the lowest mean score was found for the Early diagnosis and awareness of gynecological cancers sub-dimension (16.64 ± 3.17). The Cronbach's alpha coefficient for the total scale was 0.93, while the Cronbach's alpha coefficients of the sub-dimensions ranged from 0.67 to 0.93 (Table 2).

Table 2. Descriptive Statistics of the GCAS Sub-Dimensions and Total Score

Scale and Sub-Dimensions	Mean ± SD	Min–Max	Cronbach α
Routine check-ups and awareness of serious illnesses in gynecological cancers	83.55 ± 13.93	25-110	0.93
Gynecological cancer risk awareness	27.88 ± 6.12	9-45	0.84
Awareness of gynecological cancer prevention	21.29 ± 4.28	6-30	0.67
Early diagnosis and awareness of gynecological cancers	16.64 ± 3.17	4-20	0.78
GCAS Total Score	149.36 ± 21.77	51-205	0.93

Note: *Mean: Average; SD: Standard deviation; Min: Minimum; Max: Maximum.*

Table 3. Comparison of GCAS Total Scores According to Participant Characteristics

Variables	n	Mean ± SD	Test *t / F*	p
Class				
1st Class	277	144.44 ± 20.45	***F* = 6.369**	**<0.001**
2nd Class	185	151.85 ± 19.92		
3rd Class	161	151.50 ± 24.59		
4th Class	101	154.88 ± 21.45		
Income level				
High	86	153.33 ± 20.66	***F* = 6.092**	**0.002**
Middle	599	149.47 ± 21.39		
Low	39	138.82 ± 26.64		
Smoking				
Smokers	101	148.42 ± 22.33	*t* = -0.47	0.640
Non-smokers	623	149.51 ± 21.69		
Family history of cancer				
Those with a family history of cancer	225	148.27 ± 21.21	*t* = –0.902	0.367
Those without a family history of cancer	499	149.85 ± 22.02		
Information on gynecological cancers				
Sufficient	93	161.72 ± 21.99	***F*=25.220**	**<0.001**
Partially sufficient	478	149.29 ± 20.89		
Insufficient	153	142.05 ± 21.08		
Information on preventing gynecological cancers				
Those who have information	503	151.60 ± 22.30	***t* = 4.446**	**<0.001**
Those who lack knowledge	221	144.25 ± 19.62		
Information on early diagnosis/screening of gynecological cancers				
Those who have information	454	153.11 ± 22.00	***t* = 6.163**	**<0.001**
Those who lack knowledge	270	143.05 ± 19.86		
KETEM awareness				
Those who have information	349	153.45 ± 21.86	***t* = 4.963**	**<0.001**
Those who lack knowledge	375	145.55 ± 21.00		

Note: *Mean: Average; SD: Standard deviation; Min: Minimum; Max: Maximum.*
Independent samples t-test was used for comparisons between two groups, and one-way analysis of variance (ANOVA) was used for comparisons of three or more groups. Tukey post-hoc test was applied for multiple group comparisons found to be significant. The significance level was accepted as p<0.05.

It was determined that the total GCAS scores of the participants differed significantly according to their class level (p<0.001). Students in higher grades had higher GCAS total scores. A significant difference was also found according to income level (p=0.002), with students from higher income levels having higher GCAS total scores. No significant difference was found in total scores according to smoking status and family history of cancer (p>0.05). It was determined that students with sufficient knowledge of gynecological cancers had significantly higher GCAS total scores than those with partial or insufficient knowledge (p<0.001). Similarly, students with knowledge of prevention, early diagnosis/screening, and awareness of KETEM had significantly higher total GCAS scores (Table 3).

A multiple linear regression analysis was conducted to determine the factors affecting the total GCAS score, and the model was found to be significant (F=9.621; p<0.001). The model explained 9.7% of the total variance (R^2=0.097). Class level (β=0.107; p=0.010), income level (β=-0.115; p=0.001), knowledge of early diagnosis/screening (β=0.155; p=0.001), and awareness of KETEM (β=0.083; p=0.035) were found to significantly affect the total GCAS score. The negative β coefficient for the income level variable indicates that the total GCAS score decreases as income level worsens. Age was not significantly associated with the total GCAS score (p=0.413). Regression analyses of the GCAS sub-dimensions showed that age, class level, income level, knowledge of early diagnosis/screening, and KETEM awareness were significant predictors of one or more GCAS sub-dimensions (Table 4).

Table 4. Multiple Linear Regression Analysis of GCAS Total and Sub-Dimensions

Independent Variables	GCAS Total Score			Perception of Routine Control			Risk Awareness			Protection Awareness			Early Diagnosis Awareness		
	B(SE)	β	p	B(SE)	β	p	B(SE)	β	p	B(SE)	β	p	B(SE)	β	p
Age	0.316 (0.386)	0.034	0.413	0.570 (0.249)	0.096	0.023	−0.339 (0.111)	−0.129	0.002	0.106 (0.076)	0.058	0.164	−0.022 (0.057)	−0.016	0.704
Class	2.122 (0.820)	0.107	0.010	0.603 (0.530)	0.048	0.256	1.062 (0.235)	0.191	0.001	0.120 (0.162)	0.031	0.458	0.338 (0.121)	0.117	0.005
Income level (1=High, 2= Middle, 3=Low)	−6.118 (1.888)	−0.115	0.001	−3.803 (1.220)	−0.112	0.002	−0.669 (0.541)	−0.045	0.216	−1.038 (0.373)	−0.100	0.006	−0.608 (0.279)	−0.079	0.030
Knowledge of early diagnosis/ screening methods (1=Yes, 2=No)	6.988 (1.831)	0.155	0.001	−2.969 (1.184)	−0.103	0.012	−1.421 (0.524)	−0.112	0.007	−1.359 (0.362)	−0.154	0.001	−1.239 (0.271)	−0.189	0.001
KETEM awareness (1=Yes, 2=No)	3.613 (1.711)	0.083	0.035	−2.965 (1.106)	−0.106	0.008	0.228 (0.490)	0.019	0.642	−0.706 (0.338)	−0.082	0.037	−0.170 (0.253)	−0.027	0.503
Model Statistics															
R^2	0.097			0.079			0.064			0.090			0.068		
Adjusted R^2	0.087			0.069			0.053			0.079			0.058		
F	9.621			7.709			6.084			8.789			6.539		
p	<0.001			<0.001			<0.001			<0.001			<0.001		

B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; R^2 = coefficient of determination; Adjusted R^2 = adjusted coefficient of determination.

Discussion

The mean total GCAS score of the participants was 149.36 ± 21.77. Similarly, a cross-sectional study conducted among university students to evaluate knowledge of cancer risk factors and awareness of cancer warning signs also reported low levels of cancer knowledge and awareness (19). This result is consistent with studies conducted in different samples in Türkiye (7,14,20). Many participants rated their knowledge of gynecological cancers as "partially adequate," suggesting that they perceived gaps in their knowledge. This finding may point to the importance of providing educational opportunities tailored to young women. Such initiatives may help strengthen knowledge of gynecological cancers while also increasing awareness of early diagnosis and screening services.

This study found that participants most frequently obtained information about gynecological cancers from the internet and university courses, suggesting that these were common sources of information among the participants. The literature reports that young adults frequently access health information through online platforms (14,21). Furthermore, the fact that university courses were reported as an important source of information may suggest the potential role of structured education in supporting awareness of gynecological cancers. However, the content, scope, or effectiveness of these courses was not evaluated in the present study. Since the internet was one of the most commonly reported sources of information in the present study, providing accurate and reliable online health content may help improve access to evidence-based information on gynecological cancers.

This study found that students in higher grades had higher gynecological cancer awareness scores, and that grade level was significantly associated with gynecological cancer awareness. Our study findings are similar to the literature. The literature also reports that as the level of education increases, women's knowledge and awareness levels regarding gynecological cancers, prevention methods, and early diagnosis practices also increase (22,23). The reasons for the association between class level and gynecological cancer awareness were not directly examined in the present study. Previous studies have reported that health literacy and access to health-related information are associated with cancer awareness (11,15,21). Since these factors were not evaluated in the present study, they may have contributed to the observed association. Based on these findings, educational initiatives on gynecological cancers and early detection practices may be beneficial for university students (8,9,24)

It was determined that students who were knowledgeable about early diagnosis/screening methods for gynecological cancers had a higher level of awareness. Furthermore, the fact that only 48.2% of participants were aware of KETEM may suggest that awareness of community-based cancer screening services is limited among university students. One possible explanation is that many participants were below the target age for the national cancer screening programmes and may therefore have had limited exposure to KETEM services (10,12). However, the higher awareness scores of students who were knowledgeable about KETEM suggest an association between knowledge of early diagnosis services and gynecological cancer awareness. The literature reports that health knowledge is effective in enabling individuals to recognize cancer symptoms early, develop risk perception, and adopt preventive health behaviors (8,9,15). Similarly, it has been noted that individuals who are knowledgeable about early diagnosis tend to utilize healthcare services more effectively and adopt more frequent and regular check-up behaviors (13,16,25). This finding suggests that awareness is not limited to theoretical knowledge alone, and that individuals' knowledge of health services and screening mechanisms may also contribute to behavioral awareness. Accordingly, expanding training and information programs for university students regarding early diagnosis, screening methods, and KETEM services may help improve awareness. Collaboration between universities and KETEM may also increase students' awareness of available screening services.

This study found a significant relationship between participants' income level and their total GCAS scores, with students from higher income levels having higher awareness scores. Furthermore, regression analysis revealed that income level was significantly associated with gynecological cancer awareness. The literature also reports that socioeconomic status has been associated with health awareness and early diagnosis behaviors (20,23,24). This association may be related to the fact that individuals with higher socioeconomic status may have better access to healthcare services and reliable health information. Furthermore, greater economic resources may provide more opportunities to seek health information and access healthcare services.

It is noteworthy that in this study, smoking and family history of cancer were not significantly associated with gynecological cancer awareness. The literature reports that a family history of cancer has been associated with cancer awareness and screening behaviors (8,26). Similarly, a study conducted among university students reported that participants with a family history of cancer had higher gynecological cancer awareness scores than those without a family history (8). However, no significant association between family history of cancer and gynecological cancer awareness was observed in the present study. This difference may be related to differences in participant characteristics or other unmeasured factors. Likewise, no significant association was observed between smoking and gynecological cancer awareness.

In the multiple linear regression analysis, class level, income level, knowledge of early diagnosis and screening

methods, and awareness of KETEM were significantly associated with the total GCAS score. Among these variables, knowledge of early diagnosis and screening methods showed the strongest association with gynecological cancer awareness. This finding may suggest that greater knowledge of early diagnosis and screening methods is associated with higher gynecological cancer awareness. However, the low explanatory power of the model (R^2 = 0.097) suggests that gynecological cancer awareness cannot be fully explained by the variables included in the model. Other unmeasured factors, including health literacy, individual characteristics, and access to healthcare, may also be associated with gynecological cancer awareness (27,28). Therefore, future studies should consider evaluating these factors to better understand the determinants of gynecological cancer awareness.

Limitations

This study has some limitations. Conducting the research at a single center limits the generalizability of the results. The self-report method of data collection may have led to response bias. Furthermore, the cross-sectional design of the study prevents the evaluation of cause-and-effect relationships between variables. In addition, some factors that may be associated with gynecological cancer awareness, such as health literacy and previous education related to women's health or cancer, were not evaluated in this study. However, the large sample size and the multidimensional assessment of gynecological cancer awareness in young women are among the strengths of the study.

Conclusion

In conclusion, this study determined that university students have a moderate-to-high level of awareness regarding gynecological cancers; class level, income level, knowledge of early diagnosis/screening, and awareness of KETEM were found to be significant variables associated with awareness. The finding that knowledge of early diagnosis and screening is particularly related to awareness suggests the potential value of education and awareness programs for university students. Accordingly, educational programs, digital health content, and KETEM promotional activities conducted at universities may be useful for supporting gynecological cancer awareness among young women. It is suggested that future multicenter studies should also evaluate other factors that may be associated with gynecological cancer awareness, including health literacy and psychosocial characteristics.

Declarations

Funding

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Ethics Approval

Ethical approval for the study was obtained from the Yozgat Bozok University Social and Human Sciences Ethics Committee *(Date: 23.10.2024, Decision No: 18/47),* and the necessary institutional permissions were obtained from the relevant institution *(E-88148187-900-324293)*.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Availability of Data and Materials

The datasets and materials used in this study are available from the corresponding author upon reasonable request.

Authors' Contributions

M.M. and F.Z.A. contributed to data collection. E.İ.A. contributed to the conception and design of the study and performed the data analysis. M.M., F.Z.A., and E.İ.A. contributed to drafting the article and critically revising it for important intellectual content. All authors approved the final version of the manuscript.

Disclosure Statement

This study was presented as an oral presentation at the 3rd BİLSEL International Safranbolu Scientific Research Congress held on March 14–15, 2026.

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References

1. Keyvani V, Kheradmand N, Navaei ZN, Mollazadeh S, Esmaeili SA. Epidemiological trends and risk factors of gynecological cancers: an update. Medical Oncology. 2023;40(3):93. doi:10.1007/s12032-023-01957-3
2. Park S, Lee Y. Lifestyle factors affecting the prognosis of gynecological cancer: systematic review and meta-analysis. Cancer Causes & Control. 2025;36(12):1633–45. doi:10.1007/s10552-025-02059-3
3. Nogueira-Rodrigues A, Rosa DD, Suzuki DA, Paulino E, Landeiro LCG, Scaranti M, et al. Breast and gynecologic cancers as a Brazilian health priority. Rev Assoc Med Bras. 2023;69(1):2023–120. doi:10.1590/1806-9282.2023s120
4. Zhu B, Gu H, Mao Z, Beeraka NM, Zhao X, Anand MP, et al. Global burden of gynaecological cancers in 2022 and projections to 2050. J Glob Health. 2024;14:04155. doi:10.7189/jogh.14.04155
5. Liu R, Jiang L, Wang F, Tan X, Sun L. Benefit Finding: The Mediator Linking Social Support to Self - Management Efficacy in Gynecological Cancer. Cancer Manag Res. 2025;17:1935–45. doi:10.2147/CMAR.S540258
6. Işik RA, Dönmez AA, Terzioğlu F. Healthy lifestyle behaviors and gynecological cancer awareness in women academicians: a descriptive and correlational study. Arch Gynecol Obstet. 2025;311(5):1379–93. doi:10.1007/s00404-024-07907-2
7. Perim Ketenciler A, Metinoğlu M, Karakaş S, Göncü G. Are Women of Reproductive Age Aware of Gynecological Cancers? Journal of Clinical Medicine of Kazakhstan. 2025;22(2):24–30. doi:10.23950/jcmk/16205
8. Burucu R, Kıyak S. Üniversite Öğrencilerinin Jinekolojik Kanser Farkındalıkları ve İlişkili Faktörler. Sürekli Tıp Eğitimi Dergisi. 2022;31(3):172–82. doi:10.17942/sted.883678
9. Muhammad ZB, Ezenkwa US, Imoudu IA, Katagum DA, Usman I, George SHL, et al. Cervical cancer awareness, perception, and attitude among tertiary health institution students in northeastern Nigeria. Front Oncol. 2024;14:1415627. doi:10.3389/fonc.2024.1415627
10. T.C. Sağlık Bakanlığı. Sağlık İstatistikleri Yıllığı 2024. Ankara; 2025.
11. Akcan K, Çapuk H, Fidan H. Kadınların Jinekolojik Kanser Farkındalığı ve Sağlık Okuryazarlığına İlişkin Faktörler. Sağlık Bilimleri Üniversitesi Hemşirelik Dergisi. 2024;6(3):185–94. doi:10.48071/sbuhemsirelik.1383749
12. Altun Y. Kadınların Kanser Taramalarına Katılımını Etkileyen Faktörler. Turkish Journal of Family Medicine and Primary Care. 2020;14(2):210–5. doi:10.21763/tjfmpc.645578
13. Kaloğlu Binici D, Erkal E, Avcı A. Gynecological Cancer Awareness and Determination of Healthy Lifestyle Levels Among Women in Türkiye. Public Health Nurs. 2026;43(2):228–36. doi:10.1111/phn.70054
14. Aydın R, Karakısla FS, Kabukcuoğlu K. Determination of the Relationship Between Gynecological Cancer Awareness and Fear of Cancer in Women Using Social Media and the Affecting Factors. Cancer Nurs. 2024;47(6):425–35. doi:10.1097/NCC.0000000000001230
15. Duman FN, Ozdemir A, Golbasi Z. Determining the relationship between gynecologic cancer awareness and health literacy among women of reproductive age: a descriptive study. Arch Gynecol Obstet. 2024;310(6):3067–76. doi:10.1007/s00404-024-07806-6
16. Yaşar BN, Şeker SA. Gynaecological cancer awareness and healthy lifestyle behaviors of women aged 20-65 years: A descriptive cross-sectional study. Afr J Reprod Health. 2025;29(3):76–84. doi:10.29063/ajrh2025/v29i3.10
17. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. The Lancet. 2007;370(9596):1453–7. doi:10.1016/S0140-6736(07)61602-X
18. Alp Dal N, Ertem G. Jinekolojik Kanserler Farkındalık Ölçeği Geliştirme Çalışması. İnsan ve Toplum Bilimleri Araştırmaları Dergisi. 2017;6(5):2351–67.
19. Al-taie A, Bakur A. Assessment of Knowledge of Cancer Risk Factors and Awareness of Early Cancer Warning Signs among University Students. Clinical and Experimental Health Sciences. 2024;14(1):139–45. doi:10.33808/clinexphealthsci.1235753
20. Toptaş Acar B, Gerçek Öter E, Şanli Çolakoğlu H. Awareness of gynaecological cancer and factors affecting in women: a cross-sectional study. J Obstet Gynaecol (Lahore). 2022;42(7):3193–8. doi:10.1080/01443615.2022.2109140
21. Stifjell K, Sandanger TM, Wien C. Exploring Online Health Information–Seeking Behavior Among Young Adults: Scoping Review. J Med Internet Res. 2025;27(1):e70379. doi:10.2196/70379
22. Atlas B, Er Güneri S. Kadınların Jinekolojik Kanserlerle İlgili Farkındalığı ve Farkındalığı Etkileyen Faktörler. İzmir Kâtip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi. 2022;7(1):77–85.
23. Özcan H, Demir Doğan M. Gynecological Cancer Awareness Among Women. Indian J Gynecol Oncol. 2021;19(1):13. doi:10.1007/s40944-020-00481-w
24. Teskereci G, Arslan ÜÖ, Öncel S. The awareness levels of women for gynecologic cancer in Turkey: A cross-sectional study. International Journal of Gynecology & Obstetrics. 2022;156(3):539–45. doi:10.1002/ijgo.13745
25. Mansori S, Tendulkar A, Rostamzadeh M. Gynecologic Cancer Screening: Understanding Barriers Through Social Cognitive Theory and Health Belief Model. Health Education & Behavior. 2025;52(5):561–71. doi:10.1177/10901981251328590
26. Gökşin İ, Ertuğrul Y, Sedakatlı Ü. Kadınların Jinekolojik Kanser Farkındalık Düzeyleri ve İlişkili Faktörler. Etkili Hemşirelik Dergisi. 2024;17(4):591–602. doi:10.46483/jnef.1566691
27. Ryman C, Warnicke C, Hugosson S, Zakrisson AB, Dahlberg K. Health literacy in cancer care: A systematic review. European Journal of Oncology Nursing. 2024; 70:102582. doi: 10.1016/j.ejon.2024.102582
28. Boxell EM, Smith SG, Morris M, Kummer S, Rowlands G, Waller J, et al. Increasing Awareness of Gynecological Cancer Symptoms and Reducing Barriers to Medical Help Seeking: Does Health Literacy Play a Role? J Health Commun. 2012;17(3):265–79. doi:10.1080/10810730.2012.712617