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ORIGINAL ARTICLE

# Effect of health responsibility and health literacy on gynecological cancer awareness of university working women

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## Abstract

**Objective:** In this study, it was aimed to examine the effects of health responsibility and health literacy on gynecological cancer awareness of women working at university.

**Methods:** Relational screening model was used in this study. Data were collected from 409 women aged 20-65 working in university units in Turkey between February 2021 and May 2021. In data collection, socio-demographic characteristics, Gynecological Cancer Awareness Scale (GCAS), Turkish Health Literacy Scale (THLS-32) and Health Responsibility Subscale were used. Descriptive, comparative and multiple regression analyzes were conducted.

**Results:** The total mean score of GCAS was 158.65±16.01 and 8.3% of the participants had insufficient health literacy. A significant regression model, F (df1=14, df2=394) =10.849, p< .001, and 25% of the variance in the dependent variable (R2adjusted = .25) was found to be explained by the independent variables. In the model, the variables that predict and contribute most to women's awareness of gynecological cancer are health responsibility (β= .21, t (394) = 4.35, p< .01), and THLS-32 (β= .20, t(394)= 4.33 , p< .01).

**Conclusions:** It is suggested that especially health responsibility and health literacy levels should be taken into account while developing intervention programs for women's gynecological cancer awareness.

**Keywords:** Women's Health, Gynecological Cancer, Awareness, Health Literacy

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## INTRODUCTION

The most common type of cancer encountered in women worldwide after breast cancer is gynecological cancer. According to Global Cancer Observatory's (GLOBOCAN) 2020 data, cervical cancer (6.5%), which is one of the gynecological cancers, is the fourth most common cancer type encountered in women, while cancer of the corpus uteri (4.5%) is ranked as the sixth.[1]

Research indicates that gynecological cancers constitute approximately 10.35% of cancer-related deaths and constitute an important part of cancer-related deaths in women.[2]

Examining these data, it is seen that the frequency of total cases of gynecological cancer in Turkey constitutes a considerable majority of the cases among other cancer types. Along with early diagnosis, cancer prevention plays a huge role in decreasing cancer-related mortality. The most important objective in the prevention of gynecological cancers is raising awareness of individuals regarding this issue.[3] Research shows that women's awareness of gynecological cancers and their knowledge levels are low.[4-6] However, through increasing levels of awareness of gynecological cancers (creating informing and educational programs on this subject), women are going to be able to not only define risks that cause cancer and exhibit behaviors of decreasing these risks, but also participate in early diagnosis and treatment.[7] In addition, as a result of the awareness created in individuals, behaviors related to health responsibility aimed at cancer screening may be developed. Health responsibility refers to individuals' having health protective and health promoting behaviors, taking care of their health, getting informed about health and being able to seek professional help when necessary, with the purpose of maintaining well-being.[8] In the study, it has been expressed that information and reminders about participation in screening programs provided by healthcare personnel increase individuals' motivation to take on responsibilities about their health, hence increasing the participation in screenings such as for breast cancer or cervical cancer.[9]

Health literacy levels play a crucial role, as well, in increasing women's awareness of cancer. The health literacy level enables women to recognize their health problems, contact a health service at the right time, and receive treatment and monitoring in accordance with their conditions.[10] Health literacy is defined as the cognitive and social abilities necessary for individuals to obtain, understand and use healthcare information in order for them to be able to promote their health and maintain good health.[11]

Low levels of health literacy result in worse health conditions, lack of knowledge on medical care, decrease in understanding of medical information, lack of understanding and use of preventive services, worse health outcomes, and increasing hospitalization and healthcare costs.[12-14]

It is stated that individuals with low health literacy have lower rates of use of health services and participation in cancer screening programs.[15] Although Pap smear is a simple cytological test used in scanning and diagnosis of cervical cancer and precancerous lesions, very few women participate in this preventive program.[16] According to related studies, the low-level health literacy of individuals is seen as an obstacle to their participation in screening programs and their treatments.[17-19] In another study carried out among Chinese Amer-

icans, it is expressed that low health literacy of the participants decreases the participation in cancer screening.[14] In another research, it has been determined that women with low health literacy, compared to those with high health literacy, have a lower possibility of undergoing Pap smear.[20] It is indicated that women's general health literacy is low in Turkey, and the rate of participation in cancer screenings such as mammography and Pap smear is also very low.[21] Based on these data, it can be said that low health literacy is an extremely important problem that affects health, especially for women in Turkey.

In conclusion; the level of health literacy and health responsibility of women is of great importance in the protection and development of their health. These two concepts are thought to play a key role in the prevention of gynecological cancers and the implementation of preventive health services and screening programs. In order to promote awareness and early diagnosis of gynecological cancers, it is necessary to identify the factors that hinder and improve the implementation of interventions. When the studies on the subject in Turkey were examined, it was seen that the majority of the existing studies were aimed at examining women's knowledge, awareness and related factors about gynecological cancers.[7,22] None of the studies determined the effect of health responsibility and health literacy variables on gynecological cancer awareness. For these reasons, in this research; it was aimed to examine the effects of health responsibility and health literacy on gynecological cancer awareness of women working at university. The research questions to be addressed are: (i) What is the level of gynecological cancer awareness, health literacy and health responsibility among women? (ii) Does gynecological cancer awareness differ according to the sociodemographic characteristics of the participants? (iii) What are the predictors that affect gynecological cancer awareness in women?

## METHODS

### *Design and Participants*

In this study, the relational survey model, one of the quantitative research methods, was used. In this model, it is tried to explain in which direction (positive/negative) the change between the variables of the study, at what level and how, and to make predictions.

This study was conducted on women working in university units in Turkey between February 2021 and May 2021. The first planning phase of the research was considered cross-sectional and it was aimed to reach women working in all university units in Turkey. However, the Covid 19 pandemic in our country and even in the world has caused many people to die and become ill. It has been observed that this epidemic negatively affected the research process and therefore participation from many university institutions was much less than anticipated. However, the main reason why the research was desired to be carried out on women working in university units was easy accessibility and low cost to a large number of women. At the continuation point of the research, it was determined that the sample calculation would be appropriate in the unknown universe of the research. Thus, the sample of the study was calculated using the mean and standard deviation values obtained from a previous study on gynecological cancer awareness (average score of the Gynecological Cancer Awareness

Scale obtained from the previous study was 155.8±17.5).[3] In addition, the expected mean value of the study (160), power (95%), alpha and beta error values (0.05) were used to calculate the following formula (Figure 1).[23]

$$N = \frac{\sigma^2(z_{1-\beta} + z_{1-\alpha/2})^2}{(\mu_0 - \mu_1)^2}$$

$$N = \frac{(17{,}5^2(1.64 + 1.96)^2}{(155.8 - 160)^2}$$

$$N = 226$$

$\mu_0$ = population mean

$\mu_1$ = mean of study population

N = sample size of study population

σ = variance of study population

α = probability of type I error (usually 0.05)

β = probability of type II error (usually 0.2)

z = critical Z value for a given σ or β

**Figure 1**. Sample size calculation in universe with an unknown size.

According to this calculation, the sample size was determined as 226. Thus, 414 women who agreed to participate in the study were included in the study, among the women who were sent through university units and filled out the questionnaire. However, five participants were excluded from the study because they gave incomplete answers, and the study was completed with 409 participants. Women aged 20-65, Turkish speaking, literate and volunteers were included in the study. Women under the age of 20 and over the age of 65 were not included in the study due to the low probability of gynecological cancer.

In this study, purposive sampling method, which is one of the non-random sampling methods, was used as the sample selection. The reason for choosing this method; the low cost of the research adds speed and practicality to the research.

### *Data Collection Tools*

Data were collected using women information form, Gynecological Cancer Awareness Scale (GCAS), Turkish Health Literacy Scale (THLS-32) and Health Responsibility Subscale. There are approximately 130 state universities in Turkey. These university units were informed about the research and application permission was requested. However, positive responses were received from very few universities for the implementation of the research. Research Invitation Letters were sent to the university units that responded positively through official channels. University units also sent this invitation letter to the women working in their own institution by e-mail. An Informed Consent Form and other data collection forms were sent to women who volunteered to participate in the study. Women were provided with information about the purpose of the study.

### *Women Information Form*

The form included eight items about the women's sociodemographic characteristics, such as age, education level and income. Also, there were eleven questions about the women's obstetric, gynecologic and health behaviors.

### *Gynecological Cancer Awareness Scale (GCAS)*

This scale was developed by Alp Dal and Ertem in 2017 for the purpose of examining the gynecological cancer awareness of women be-

tween the ages of 20 and 65. A 5-point Likert-type scale, GCAS consists of 41 items and 4 subscales. The Cronbach's alpha value of the scale is 0.944. The scale is evaluated based on total score and the minimum score that can be obtained from the scale is 41, while the maximum score is 205. As the score obtained by the women from this scale increases, their awareness increases, as well.[3]

### *Turkish Health Literacy Scale (THLS-32)*

Reliability and validity of the scale was completed by Okyay et al. in 2016, based on European Health Literacy Scale (HLS-EU). THLS is a 32-item, 4-point Likert-type scale. It is composed of two health-related dimensions (1=Treatment and service, 2=Disease prevention/health promotion). Each item in the scale is evaluated by scoring between 0 and 4. The minimum score that can be obtained from the scale is 0 and the maximum score is 128. However, for easiness in calculation, the total score has been standardized as a value between 0 and 50, similarly to the HLS-EU study. Accordingly, index is calculated by the formula= (arithmetic mean-1) x [50/3]. As a result of this calculation, the scale is defined in 4 categories according to the score obtained, which follow as: 0-25: insufficient health literacy; >25-33: problematic/limited health literacy; >33-42: sufficient health literacy; >42-50: excellent health literacy, again similarly to the HLS-EU study. In this research, total mean score of THLS-32 was used. Increase in the scale score indicates increase in health literacy. The Cronbach's alpha value of the scale was determined as .92.[24]

### *Health Promoting Lifestyle Profile Ii/ Health Responsibility Subscale*

The scale, developed by Walker et al. in 1987, was reconstructed in 1996. It was adapted to Turkish by Bahar et al. in 2008. The 4-point Likert-type scale consists of 52 items and 6 subscales. However, only the "Health Responsibility" subscale was used in this research. A minimum score of 9 and a maximum score of 36 can be obtained from this subscale. Health responsibility is indicated to increase as the obtained score increases.[8]

### *Data Analysis*

All analyses were performed using SPSS Windows 21.0 package. Numbers, percentages, mean±standard deviation and minimum-maximum values were used for descriptive variables. In order to determine whether data were normally distributed, kurtosis and skewness values were used and values between -2 and +2 were accepted as normally distributed.[25] Comparison of GCAS mean scores based on independent variables was conducted using *Pearson's correlation, independent samples t-test,* and *ANOVA test*. *Multiple regression analysis* (enter model) was run with the variables found out to be significant as a result of univariate analysis. In this context, all of the independent variables were included in the created regression model and it was aimed to examine the common effect of all predictor variables on the predicted variable. Tolerance, inflating factor of variance (VIF), and Durbin-Watson values were used to decide which independent variable to include in the model (to determine whether there is multicollinearity). The independent variables, VIF value <10, tolerance value <0.2, and Durbin-Watson value between 1.5-2.5 were included in the regression analysis.

## RESULTS

The mean score of participants' ages is

38.48±8.47, the mean score of age at first marriage is 26.17±3.83, and the mean score of age at first pregnancy is 28.29±4.22. 20.8% of the participants stated that they had a miscarriage and 62.6% had at least one child.

The total mean scores that women obtained from GCAS is 158.65±16.01, health responsibility mean score is 22.06±4.68 and THLS-32 mean score is 92.41±13.71. In addition, it was determined that 8.3% of the women had insufficient health literacy, while 38.9% had problematic-limited health literacy (Table 1).

**Table 1** GCAS, Health Responsibility Subscale and THLS-32 score distribution (n=409)

| GCAS and Subscales | $\bar{X}$ ±SD | Min-max |
|---|---|---|
| **GCAS Total Score** | 158.65±16.01 | 103-205 |
| Awareness of early diagnosis and knowledge in gynecological cancers | 17.95±2.03 | 4-20 |
| Awareness of gynecological cancer risks | 28.00±5.36 | 10-45 |
| Awareness of prevention of gynecological cancers | 22.36±3.67 | 9-30 |
| Awareness of routine medical examinations and serious illness perception in gynecological cancers | 90.43±10.86 | 48-110 |
| **HPLP II/health responsibility subscale** | | |
| Health responsibility subscale | 22.06±4.68 | 10-36 |
| **THLS-32 and subscale** | | |
| THLS-32 total score | 92.41±13.71 | 49-120 |
| Treatment and service subscale | 50.75±7.59 | 28-64 |
| disease prevention and health promotion subscale | 47.65±7.94 | 20-64 |
| **THLS-32 categorical score distribution** | **n** | **%** |
| Insufficient health literacy (0-25 points) | 34 | 8.3 |
| Problematic – limited health literacy (>25-33 points) | 159 | 38.9 |
| Sufficient health literacy (>33-42 points) | 139 | 34.0 |
| Excellent health literacy (>42-50 points) | 77 | 18.8 |

Abbreviations: GCAS, Gynecological cancer awareness scale; THLS-32, Turkish health literacy scale.

A positive and moderately significant relationship for the total mean score obtained from GCAS was found with THLS-32 and health responsibility mean scores respectively ($r$=0.312; $r$=376, $p$<0.01), while a positive weak significant relationship was found between GCAS mean score and mean score of age ($r$=0.108, $p$=0.029) (Table 2).

A statistically significant difference was found between GCAS mean scores and women's educational background, occupation, family history of gynecological cancers, having gynecological diseases, having regular physical examinations, Pap smear screening behavior, having knowledge about HPV vaccine, having knowledge about KETEM (Early Cancer Diagnosis, Screening and Education Centre), having knowledge about gynecological cancers and their early diagnosis ($p$<.05). On the other hand, no statistically significant difference was found between GCAS mean scores and marital status, perception of income, smoking behavior, alcohol consumption, nutrition or having gone through menopause ($p$>.05) (Table 3).

**Table 2.** Correlations Among Women's Means Scores of GCAS, THLS-32, Health Responsibility Subscale and Age (n=409)

| Correlation analysis findings | GCAS | THLS-32 | Health responsibility subscale | Age |
|---|---|---|---|---|
| GCAS | 1 | | | |
| THLS-32 | .312** | 1 | | |
| Health responsibility subscale | .376** | .339** | 1 | |
| Age | .108*** | -.035* | -0.024* | 1 |

*p> .05 ** p< .01 *** p< .05

**Table 3.** Comparison of GCAS Mean Score and Certain Variables (n=409)

| Characteristics | n | % | GCAS Mean Score X̄ ±SD | Test value | p |
|---|---|---|---|---|---|
| Marital status | | | | | |
| Married | 298 | 72.9 | 159.28±16.37 | 1.305* | .193 |
| Single | 111 | 27.1 | 156.96±14.94 | | |
| Educational status | | | | | |
| Primary school | 12 | 2.9 | 149.25±21.37 | 3.520** | **.015** |
| Middle school | 3 | 0.7 | 142.33±18.55 | | |
| High school | 13 | 3.2 | 151.69±12.80 | | |
| University and above | 381 | 93.2 | 159.31±15.74 | | |
| Self-rated economic status | | | | | |
| Income>expense | 41 | 10.0 | 156.09±16.89 | 0.605** | .547 |
| Income = expense | 224 | 54.8 | 159.08±16.47 | | |
| Income<expense | 144 | 35.2 | 158.70±15.03 | | |
| Occupation | | | | | |
| Public official | 164 | 40.8 | 156.78±15.62 | 3.336** | **.019** |
| Academician | 191 | 47.4 | 159.12±15.37 | | |
| Healthcare personnel | 41 | 8.6 | 165.14±18.32 | | |
| Housekeeping personnel | 13 | 3.2 | 154.92±18.13 | | |
| Smoking behavior | | | | | |
| Yes | 68 | 16.6 | 158.33±15.61 | 0.583** | .559 |
| No | 305 | 74.6 | 159.03±16.40 | | |
| Quitted | 36 | 8.8 | 156.02±13.26 | | |
| Alcohol consumption | | | | | |
| Yes | 83 | 20.3 | 157.67±15.44 | -0.624* | .533 |
| No | 326 | 79.7 | 158.90±16.16 | | |
| Proper and balanced nutrition | | | | | |
| Yes | 329 | 80.4 | 158.69±15.61 | 0.112* | .911 |
| No | 80 | 19.6 | 158.47±17.65 | | |
| Family history of gynecological disease | | | | | |
| Yes | 54 | 13.2 | 163.12±17.10 | 2.215* | **.027** |
| No | 355 | 86.8 | 157.97±15.75 | | |

**Table 3.**(Continued) Comparison of GCAS Mean Score and Certain Variables (n=409)

| Characteristics | n | % | GCAS Mean Score X̄ ±SD | Test value | p |
|---|---|---|---|---|---|
| Existence of gynecological disease | | | | | |
| Yes | 55 | 13.4 | 163.30±14.91 | 2.329* | **.020** |
| No | 354 | 86.6 | 157.93±16.07 | | |
| Having gone through menopause | | | | | |
| Yes | 55 | 13.4 | 162.07±17.20 | -1.705* | .089 |
| No | 354 | 86.6 | 158.24±15.77 | | |
| Regular gynecological examination | | | | | |
| Yes | 159 | 38.9 | 163.47±15.39 | 4.999* | **.001** |
| No | 250 | 61.1 | 155.58±15.66 | | |
| Pap smear screening behavior | | | | | |
| Yes | 260 | 63.6 | 160.16±15.66 | 2.543* | **0.011** |
| No | 149 | 36.4 | 156.01±16.31 | | |
| Having knowledge about HPV vaccine | | | | | |
| Having knowledge about KETEM[a] | | | | | |
| Yes | 258 | 63.1 | 161.17±16.00 | 4.232* | .001 |
| No | 151 | 36.9 | 154.35±15.12 | | |
| Having knowledge about gynecological cancers | | | | | |
| Yes | 285 | 69.7 | 161.67±15.76 | 6.032* | .001 |
| No | 124 | 30.3 | 151.70±14.37 | | |
| Having knowledge about early diagnosis in gynecological cancers | | | | | |
| Yes | 279 | 68.2 | 161.43±15.95 | 5.317* | **.001** |
| No | 130 | 31.8 | 152.68±14.47 | | |

a Early Cancer Diagnosis, Screening, and Education Centre; *Independent samples t test; ** ANOVA

Likewise, no statistically significant relationship was detected between GCAS scores of women and frequency of physical activity *(F*=1.043*; p*=0.373*),* number of pregnancies *(F*=1.235*; p*=0.292*)*, number of miscarriages (*F*=0.854*; p*=0.512), having a child *(t*=0.171*; p*=0.864*)* and where they obtain information about gynecological cancers.

A significant regression model, *F(df1*=14, *df2*=394)=10.849, *p*< .001, and 25% of the variance in the dependent variable ($R^2$*adjusted* = .25) was found to be explained by the independent variables. Accordingly, Health responsibility (*β*= .21, *t*(394)= 4.35, *p*< .01), THLS-32 (*β*= .20, *t*(394)= 4.33, *p*< .01), Having knowledge about HPV vaccine (*β*= .11, *t*(394)= 2.28, *p*< .023), Existence of gynecological disease (*β*= .09, t(394)= 2.09, p=.037) predicts variables positively and significantly (Table 4).

**Table 4.** Multiple regression model of women's awareness of gynecological cancers (n = 409)

| Independent Variables | Unstandardized Coefficients | | Standardized Coefficients | | | |
|---|---|---|---|---|---|---|
| | **B** | **Std. Error** | **β** | **t** | **p** | **VIF** |
| Health responsibility | .736 | .16 | .216 | 4.354 | .001 | 1.340 |
| THLS-32 | .235 | .05 | .202 | 4.335 | .001 | 1.181 |
| Age | .157 | .09 | .083 | 1.732 | .084 | 1.258 |
| Regular gynecological examination | | | | | | |
| Yes | 2.536 | 1.65 | .077 | 1.532 | .126 | 1.390 |
| No[R] | | | | | | |
| Family history of gynecological disease | | | | | | |
| Yes | 2.234 | 2.13 | .047 | 1.048 | .295 | 1.111 |
| No[R] | | | | | | |
| Having knowledge about HPV vaccine | | | | | | |
| Yes | 3.704 | 1.61 | .115 | 2.287 | .023 | 1.374 |
| No[R] | | | | | | |
| Pap smear screening behavior | | | | | | |
| Yes | -.929 | 1.75 | -.028 | -.530 | .597 | 1.520 |
| No[R] | | | | | | |
| Having knowledge about KETEM | | | | | | |
| Yes | 2.680 | 1.56 | .081 | 1.718 | .087 | 1.210 |
| No[R] | | | | | | |
| Having knowledge about gynecological cancers | | | | | | |
| Yes | 4.003 | 2.14 | .115 | 1.871 | .062 | 2.065 |
| No[R] | | | | | | |
| Existence of gynecological disease | | | | | | |
| Yes | 4.383 | 2.09 | .094 | 2.095 | .037 | 1.088 |
| No[R] | | | | | | |
| Having knowledge about early diagnosis in gynecological cancers | | | | | | |
| Yes | -.953 | 2.13 | -.028 | -.446 | .656 | 2.113 |
| No[R] | | | | | | |
| Educational status | | | | | | |
| Middle school | | | | | | |
| High school | -15.63 | 9.12 | .083 | -1.714 | .087 | 1.294 |
| University and above | -.447 | 5.75 | .005 | -.078 | .938 | 2.175 |
| Primary school[R] | 4.629 | 4.23 | .073 | 1.092 | .275 | 2.444 |

Abbreviations: R, reference; Std.Eror, standard error; t, significance test; VIF, Variance inflation factors.

## DISCUSSION

Result of the study have shown that women's awareness of gynecological cancer (158.65±16.01) is above average (Considering that she scored a minimum of 41 and a maximum of 205 points from the scale). This finding is consistent with the results of most studies in Turkey.[3,5] It is considered that the fact that education received by the majority of the women is university-level and above may have had an influence on the results.

It was seen that in the model established in line with the purpose of the research, the variable which predicted women's awareness of gynecological cancer and had the greatest contribution was health responsibility. Health responsibility is individuals' fulfilling their duty of developing health protective and promoting behaviors in order to keep their physical, psychological and social well-being. It includes the concepts of taking care of one's health, undergoing medical check-up on time, getting information about health and seeking professional help when necessary.[26] Awareness of gynecological cancers can enable the improvement of women's responsibility behaviors for these concepts. In the study, it was determined that women recognized clinical breast examination, breast self-examination and mammography; however, it was health responsibility that was effective in turning this knowledge into behavior.[27] Another study demonstrated that gynecological cancer prevention scores of the individuals had a positive impact on their health responsibility scores. Health responsibility provides the individual with the opportunity of starting and maintaining the health promoting behavior.[22] At this point, it is a prospective result that health responsibility, one of the health protectives, preserving and promoting behaviors, is the most important variable that predicts awareness of gynecological cancer.

In the current study, approximately half of the women had insufficient and limited health literacy (47.2%). 68% of the women in the study carried out in Iran had insufficient and limited health literacy,[28] while in the United Kingdom, 13.5% had insufficient and 25.5% had limited health literacy.[29] In a previous study carried out in Turkey, on the other hand, it was expressed that 38.1% had insufficient and 42.6% had limited health literacy.[30] The finding of the present research shows similarities with the finding in the UK, while it differs from the results of other studies. It is considered that the reason might be related to the sample population of the study, different tools measuring the level of health literacy, or educational level of the participant women. It is a fact that general literacy level underlies health literacy. As the education level increases, reading and comprehension skills of individuals improve, as well, which is an important factor for health literacy.[16]

The present research has shown that health literacy level is a crucial predictor in increasing women's awareness of gynecological cancers. It has been established that health literacy is one of the factors that directly affect women's health. Accordingly, low levels of health literacy limit women's ability to determine cancer symptoms, make decisions about their health, adhere to treatment, participate in screening methods, and seek timely professional help. In this case, early diagnosis of cancer and treatment options are highly affected.[31]The

study has demonstrated that since women with a low level of health literacy participate less in screening services, more than half of them have never had Pap smear.[16] It is reported that this situation causes delay in cancer diagnosis and in recent years, health literacy skills also affect many areas of health.[16] Many studies have confirmed this.[30,32] Additionally, Boxell et al. (2012), in their interventional study on obstacles in the way of awareness of gynecological cancer symptoms and receiving medical help, found out that after the intervention, women's awareness of symptoms increased and obstacles to seeking medical help decreased ($p$ <.001).[29] However, for individuals with lower levels of health literacy, awareness of gynecological cancer symptoms was found lower both before and after the intervention, and no significant difference was detected between obstacles to seeking medical help. The research revealed that benefits gained after the intervention were less in women with lower levels of health literacy. Besides, it is stated that differing health literacy levels among women contribute to disparities in healthcare.[29] Similar to the result of the current study, other studies have also put forward that health literacy has an important impact on awareness of gynecological cancers.[16,29]

In the current study, women's having knowledge about HPV vaccine and whether they have any gynecological disease are the other two important variables that predict awareness of gynecological cancer. To what extent HPV vaccine is recognized by the public is an important issue for women's health in primary prevention of cervical cancer, which is one of the gynecological cancers. In the study, it was shown that the incidence of cervical cancer and the mortality rate were significantly reduced thanks to the HPV vaccine.[33]

In addition, clinical trial results have shown that HPV vaccines are very safe and very effective in preventing HPV infections and precancerous lesions. Therefore, it is important for women to be informed about the HPV vaccine.[34] In a study on American women carried out by Blake et al. (2015), percentage of those with knowledge about HPV infection and vaccine was determined to be 68%.[35] In a study conducted in Turkey, 33.1% of women were determined to have knowledge about HPV vaccine[36] Besides, no statistically significant difference was detected in this study between GCAS total median value and variables of women's knowledge about HPV vaccine and existence of a gynecological disease.[5] In the present research, having knowledge about HPV vaccine increased GCAS and it is assumed that the level of women's educational and health literacy levels is effective in increasing their awareness of gynecological cancers. When related studies are examined, it is seen that the majority of women in the research conducted by Gözüyeşil et al. (2020) are primary school graduates, while participants of our study are mostly university graduates or have an educational level above.[5] As previously mentioned, general literacy has a strong relationship with health literacy. Considering the low educational levels of the women in the related study, and thus their low levels of health literacy, it can be remarked that even if they had knowledge the HPV vaccine, the level of their awareness of gynecological cancers did not increase due to an insufficiency of cognitive and social skills which determine the ability and motivation to understand and use this knowledge in health promoting and pre-

serving ways. Additionally, the women in our study group having any gynecological disease are believed to have taken the responsibility of obtaining information about their diseases, as well as understanding and applying this information, and the awareness of gynecological cancer increased as a result of responsibility behaviors.

### *Limitations*

Our study had some limitations. First, due to the design of the study, causal relationships could not be determined. Secondly, although the study aimed to reach women working in all universities in Turkey, only a few participants were reached from a university. Therefore, the results cannot be generalized to all women nationwide. Thirdly, purposeful sampling method, which is one of the non-probabilistic sampling methods, was used in the determination of the participants in the research in order to speed and practicality to the research. The decision of the researcher in the selection of the participants according to his own predictions and knowledge can be considered as the disadvantage of this method. In addition, the generalizability of this sampling method is lower than the researches in which probability sampling methods are used.

## CONCLUSIONS

In the present research, the variables of health responsibility and health literacy in particular, existence of a gynecological disease, and having knowledge about HPV vaccine were determined as the variables that significantly predicted the awareness of gynecological cancers. Improving health responsibility and raising health literacy levels are key concepts in empowering women and eliminating disparities in healthcare. In this context, under the leadership of public health experts, it is recommended to plan health education programs to improve women's health responsibility and health literacy in order to increase knowledge and awareness about the risk factors and symptoms of gynecological cancers. These trainings should be planned in a way that women can easily understand and access, taking into account their education and health literacy levels.

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