

Original Article

Ovarian Cancer Awareness among Women: A Cross-Sectional Study

Hatice Hayta, Nursing Student

Akdeniz University Faculty of Kumluca Health Sciences, Department of Nursing, Antalya, Turkiye

Sahra Cesuroglu, Nursing Student

Akdeniz University Faculty of Kumluca Health Sciences, Department of Nursing, Antalya, Turkiye

Yaren Kunttas, Nursing Student

Akdeniz University Faculty of Kumluca Health Sciences, Department of Nursing, Antalya, Turkiye

Melisa Erkal, Nursing Student

Akdeniz University Faculty of Kumluca Health Sciences, Department of Nursing, Antalya, Turkiye

Gamze Yavas, PhD

Associate Professor, Akdeniz University Faculty of Kumluca Health Sciences, Department of Nursing, Antalya, Turkiye

Correspondence: Gamze Yavas, PhD, Associate Professor Gamze Yavas Akdeniz University, Faculty of Kumluca Health Science, Department of Obstetrics and Gynecology Nursing, Antalya, Turkey E-mail : gteskereci@akdeniz.edu.tr

Abstract

Background: Although ovarian cancer is the third most common gynecologic cancer in women worldwide, it has a high mortality rate among gynecologic malignancies. However, it has a high survival rate with early diagnosis.

Objective: This study aimed to determine the awareness levels of women regarding ovarian cancer.

Methodology: This study is descriptive and cross-sectional. Research data were collected from women registered in vocational training courses in a district between April and June 2023, using a "Personal Information Form" and an "Ovarian Cancer Awareness Scale". The data were analyzed using the SPSS 22.0 package program.

Results: A total of 300 women participated in this study, with a mean age of 35.91 ± 14.16 years. 49.3% of women stated that they knew about ovarian cancer. While 77% of women could not recall any symptoms of ovarian cancer, 23% could recall at least one symptom related to ovarian cancer. Pelvic pain (57.3%) was the most recognized symptom, while difficulty in eating (17.0%) was the least recognized symptom. 60.7% of the participants could not recall any risk factors for ovarian cancer, while 39.3% could recall at least one risk factor. The most recognized risk factor was having a close relative with ovarian cancer (67.7%), while the least recognized risk factor was receiving IVF treatment (27.3%).

Conclusions: There is a significant lack of knowledge among participants regarding the symptoms and risk factors of ovarian cancer. Due to the absence of an effective screening program, national awareness campaigns are recommended to increase awareness of ovarian cancer symptoms and risk factors and to enhance women's confidence in symptom recognition.

Keywords: awareness, knowledge, ovarian cancer, risk factors, symptoms

Introduction

Ovarian cancer is the third most common gynecological cancer in women worldwide. In 2022, it was reported that 324,603 new

cases of ovarian cancer were diagnosed globally, with 206,956 women losing their lives due to ovarian cancer. In our country, ovarian cancer is the second most common gynecological cancer after endometrial

cancer. In 2022, it was reported that 3,855 cases of ovarian cancer were diagnosed in our country, with 2,848 women losing their lives due to ovarian cancer. Furthermore, it is projected that by 2050, there will be an estimated 55% increase in the number of women diagnosed with ovarian cancer worldwide and nearly a 70% increase in the number of women dying from ovarian cancer. Ovarian cancer, known as the silent killer, is often not diagnosed until it has reached an advanced stage due to its vague symptoms, making treatment challenging (Ebell et al. 2016; Stewart et al., 2019). Despite advancements in surgical and chemotherapy procedures for the treatment of ovarian cancer, most cases of ovarian cancer are detected at advanced stages. This is because there is no single, reliable, specific screening procedure for detecting ovarian cancer at an earlier stage (Ali et al., 2023; Matulonis et al., 2016). Due to their deep anatomical location in the pelvic region, ovarian malignancies are usually advanced when diagnosed. Treatment success is higher in the early stages when the tumor is limited to the ovary. The silent growth of ovarian cancer increases mortality rates and worsens prognosis. The five-year survival rate for ovarian cancer is 46% (Tanha et al., 2021).

Advanced stages of ovarian cancer are associated with a poor prognosis and a significant decrease in survival rates compared to those diagnosed in stage I (Ali et al., 2023). The five-year survival rate for stage I ovarian cancer patients is over 90% (Tanha et al., 2021).

In recent years, there has been increasing international interest in determining women's awareness of ovarian cancer (Maryam et al., 2022; Saki et al. 2021). The increasing number of ovarian cancer cases in our country also indicates the need to determine women's awareness of ovarian cancer.

Increasing awareness among women about the symptoms and risk factors of ovarian cancer is a crucial step in early diagnosis. There are limited studies evaluating women's awareness of ovarian cancer in our country (Evgin and Sahin 2022; Ugurlu et al. 2024). The aim of this study was to determine the awareness levels of women about ovarian cancer.

Material and methods

Study design: This study was conducted as descriptive and cross-sectional.

Population and Sampling: The population of the study consisted of women registered in vocational training courses in a district in 2023. No sampling method was applied, and all women who met the inclusion criteria of the study were included. Women aged 18 and above, willing to participate in the study, with at least primary school education, and capable of written and verbal communication were included in this research. Women diagnosed with ovarian cancer were excluded from the study.

Data collection method: Research data were collected through face-to-face interviews with women who agreed to participate in the study between April and June 2023, among those registered in vocational training courses in a district in 2023. The "Personal Information Form" and the "Ovarian Cancer Awareness Scale" were used to collect research data. "Personal Information Form" which includes questions about women's sociodemographic history, medical history, gynecological and obstetric history, was prepared by the researchers based on the literature (Brain et al., 2014; Freij et al., 2018; Lockwood-Rayermann et al. 2009). The validity and reliability study of "Ovarian Cancer Awareness Scale", developed to measure awareness of ovarian cancer, was conducted by Simon et al (2012). Its adaptation into Turkish was performed by Evgin and Sahin. The first, third, and fifth questions of the scale are open-ended, requiring participants to write their answers. The second question consists of 10 sub-items with "yes", "no", and "I don't know" options, and participants are asked to select only one. The sixth question has 12 sub-items, and participants are asked to indicate their level of agreement (strongly disagree, disagree, unsure, agree, and strongly agree) for each item. In the first open-ended question, participants are asked to write down the symptoms they know about ovarian cancer. The second question provides the symptoms of ovarian cancer and participants who listed these symptoms as answers to the first question are scored. Participants who select "yes" in response to the second question receive 1 point, while those who select "I don't know" and "no" receive 0 points. The

maximum score that can be obtained separately in these questions is 10, while the minimum score is 0. In the fourth question of the scale, the b and c options are considered correct, following the original scale. The fifth question is prepared in an open-ended format, asking women to write down the risk factors of ovarian cancer. The sixth question provides 12 risk factors. Participants who list the provided risk factors as answers to the fifth question are scored, with a maximum score of 12 and a minimum score of 0. The sixth question is a five-point Likert-type question. Participants can score a minimum of 12 and a maximum of 60 points from this question. There are no reverse-coded items in the scale. As the score obtained from the scale increases, it indicates an increase in ovarian cancer awareness (Simon et al., 2012). In the study by Evgin and Sahin Cronbach's alpha values were found to be 0.76 in the symptoms section and 0.83 in the risk factors section. In this study, Cronbach's alpha values were found to be 0.88 in the symptoms section and 0.93 in the risk factors section.

Statistical Analysis: The data obtained in the study were entered into the SPSS 22 program, and percentage and frequency, mean, standard deviation, Cronbach's alpha value calculation, and hypothesis testing were performed. In this study, a significance level of $p < 0.05$ was accepted.

Ethical Approval: Necessary permissions were obtained from Akdeniz University Faculty of Medicine Clinical Research Ethics Committee (Number: 70904504/720, Date: 09.12.2022) and District Directorate of National Education (E-98057890-605.01-71672866, Date: 07.03.2023). The women included in the study were informed about the research, and invited to participate in the study, and their verbal and written consents were obtained.

Results

The mean age of the women who participated in this study was 35.91 ± 14.16 years (18-70 years). 47.3% of the women were university graduates and 75.0% were not employed full-time. 52.0% of the women had an income level equal to their expenses and 77.3% had social security. 58.3% of the women were married and the mean number of years of marriage was 22.36 ± 11.90 . 39.2% of the

women had two pregnancies. 85.3% of the women had undergone a gynecological operation, 60.3% had undergone a gynecological examination at least once in their lives and 59.3% had undergone a pap-smear test at least once. Of the women, 98.6% reported that there was no family history of ovarian cancer and 50.7% reported that they did not know about ovarian cancer (Table 1).

Women were asked to write the symptoms they remembered about ovarian cancer in a free text box. While 77.0% of the women could not recall any of the symptoms of ovarian cancer, 23.0% could write at least one symptom of ovarian cancer. The most commonly recognized symptoms were "pelvic pain" and "abdominal pain". When the women's awareness of recognizing the symptoms of ovarian cancer was examined, the mean score of the total symptoms recognized was 3.34 ± 3.08 out of 10. "Pelvic pain" (57.3%), "abdominal pain" (45.3%) and "enlargement of the abdominal circumference day by day" (44.3%) were the three most recognized symptoms, while "difficulty eating" (17.0%), "back pain" (18.3%) and "change in bowel habits" (27.3%) were the three least recognized symptoms (Table 2).

Women were asked to write the risk factors they remembered about ovarian cancer in a free text box. While 60.7% of the women could not remember any of the risk factors for ovarian cancer, 39.3% could write at least one risk factor for ovarian cancer. The most common risk factor written by women was family history. When the women's awareness of recognizing the risk factors of ovarian cancer was examined, the mean score of the total symptoms recognized was 40.06 ± 10.20 (lowest: 12, highest: 60). "Having a close relative with ovarian cancer" (67.7%), "having an ovarian cyst" (61.7%) and "smoking" (57.0%) were the three most recognized risk factors, while "receiving IVF treatment" (27.3%), "using talcum powder on the genital area" (34.3%) and "not being able to have children" (36%) were the three least recognized risk factors (Table 2).

Women were asked how confident they were in recognizing signs of ovarian cancer and 74% of the women stated that they were not confident. Despite this low rate, 60% of them stated that they would immediately consult a

health institution when they noticed the symptoms of ovarian cancer. In addition, 42.7% of the participants thought that ovarian cancer was more common in women over the age of 50 (Table 3).

Table 1. Distribution of participants according to socio-demographic and some characteristics (n=300)

Variables	n	%
Education level		
Primary school	67	22.3
Middle school	30	10.0
High school	58	19.3
University	142	47.4
Postgraduate	3	1.0
Employment status		
Employed full-time	75	25.0
Not working or retired	225	75.0
Income status		
Income less than expenses	106	35.3
Income equal to expenses	156	52.0
Income greater than expenses	38	12.7
Presence of social security		
Yes	232	77.3
No	68	22.7
Marital status		
Single	125	41.7
Married	175	58.3
Number of pregnancies (n=171)		
1	23	13.5
2	67	39.2
3	38	22.2
4 and above	43	25.1
History of gynecological surgery		
Yes	44	14.7
No	256	85.3
History of undergoing gynecological examination		
Yes	181	60.3
No	119	39.7
Status of undergoing Pap smear test		
Yes	122	40.7
No	178	59.3
Family history of ovarian cancer		

Yes	4	1.4
No	296	98.6
Having knowledge about ovarian cancer		
Yes	148	49.3
No	152	50.7

Table 2. Participants' awareness of ovarian cancer symptoms and risk factors (n=300)

Ovarian Cancer Symptoms	n	%
Persistent pelvic pain	172	57.3
Persistent abdominal pain	136	45.3
Gradual enlargement of the abdomen	133	44.3
Persistent bloating	105	35.0
Persistent feeling of fullness	98	32.7
Excessive fatigue	89	29.7
Increased frequency of urination	85	28.3
Changes in bowel habits	82	27.3
Back pain	55	18.3
Increasing difficulty eating over time	51	17.0
Ovarian Cancer Risk Factors		
Having a close relative with ovarian cancer	203	67.7
Having an ovarian cyst	185	61.7
Smoking	171	57.0
Having a history of breast cancer in the past	163	54.3
Being over the age of 50	160	53.3
Being overweight	138	46.0
Being postmenopausal	137	45.7
Undergoing hormone replacement therapy	127	42.3
Having endometriosis	122	40.7
Not having children	108	36.0
Using talcum powder in the genital area	103	34.3
Undergoing IVF treatment	82	27.3

Table 3. Participants' confidence levels in recognizing ovarian cancer symptoms, time to seek help, and perceptions of the relationship between age and ovarian cancer (n=300)

Confidence in recognizing symptoms of ovarian cancer	n	%
No confidence at all	87	29.0
Very little confidence	135	45.0
Quite confident	70	23.3
Very confident	8	2.7
Time to seek help		
Within 1-2 weeks	45	15.0
Within 1-2 months	34	11.3
Within 3-6 months	5	1.7
Within 1-2 years	6	2.0
Urgent	180	60.0
Uncertain	30	10.0
Association of age with ovarian cancer		
In women over 30 years old	91	30.3
In women over 50 years old	128	42.7
In women over 70 years old	17	5.7
Ovarian cancer is not associated with age	64	21.3

Discussion

This study aimed to determine the level of awareness among women regarding ovarian cancer. While approximately half of the participants (49.3%) claimed to know about ovarian cancer, a significant portion did not recall the symptoms (77.0%) and risk factors (60.7%) associated with ovarian cancer. It is concerning that only a very small proportion of women remembered at least one symptom or risk factor of ovarian cancer. Similar to our study findings, in a study by Low et al. in the UK, 58.0% of the participants could not recall any symptoms of ovarian cancer. Additionally, studies conducted in the United States (Lockwood-Rayermann et al. 2009), India (Naik et al., 2019), Malaysia (Al-Naggar et al., 2013; Elmahdi et al., 2017; Keng et al., 2015), and Palestine (Elshami et al., 2022) have found low levels of awareness among women regarding ovarian cancer

symptoms, risk factors, and preventive factors.

In our study, when women were presented with a list including symptoms and risk factors of ovarian cancer, the mean score for recognizing ovarian cancer symptoms was low (3.34 ± 3.08), and the mean score for recognizing risk factors was moderate (40.06 ± 10.20). These results are consistent with findings from some studies indicating inadequate knowledge among women, particularly regarding symptoms of ovarian cancer. A study conducted in Jordan found that the mean recognition score for ovarian cancer was 3.2 ± 2.7 (Freij et al., 2018), while studies in the UK reported scores of 6.3 ± 2.2 (Low et al., 2013) and 6.85 ± 2.73 (Brain et al., 2014). In a study in Iran, the total score for recognizing risk factors was found to be moderate (34.29 ± 7.63). These findings are interpreted as indicating lower awareness

among women regarding the symptoms of ovarian cancer, particularly in studies conducted in developing countries.

In this study, the most recognized symptom of ovarian cancer among women was "pelvic pain," while "difficulty eating" (17.0%) was the least recognized symptom. Similarly, in studies by Al-Azri et al., (2018), Bohsas et al. (2023), Low et al. (2013), and Saki et al., (2021), "pelvic pain" was identified as the most recognized symptom of ovarian cancer, while "difficulty eating" was identified as the least recognized symptom in studies by Bohsas et al., (2023), Freij et al., (2018), Low et al., (2013), Maryam et al., (2022), and Okunowo & Adaramoye (2018). Some studies have found that symptoms such as "abdominal pain" (Freij et al., 2018; Maryam et al., 2022; Naik et al., 2019), "unexplained weight loss" (Okunowo and Adaramoye, 2018) were more recognized as symptoms of ovarian cancer, while symptoms such as "change in bladder habits" (Brain et al., 2014), "change in bowel habits" (Al-Naggar et al., 2013), and "persistent feeling of fullness" (Al-Azri et al., 2018; Naik et al., 2019; Saki et al., 2021) were less recognized. These findings emphasize the importance of increasing awareness, especially regarding lesser-known symptoms of ovarian cancer such as "difficulty eating" and "persistent feeling of fullness." Educating women about the symptoms of ovarian cancer will be a significant step towards early diagnosis and treatment.

In our study, 74% of women stated that they had little or no confidence in recognizing the symptoms of ovarian cancer. Similarly, in the study by Ugurlu et al., (2024) 86.5% of women, in the study by Elshami et al., (2021) 79.1%, in the study by Maryam et al., (2022) 73.3%, in the study by Freij et al., (2018) 71.8%, and in the study by Saki et al., (2021), 71% did not feel confident enough to notice a possible symptom of ovarian cancer. A study conducted in the United States found that after a health education session aimed at raising awareness and educating women and healthcare professionals about the risk factors, symptoms, recommended screening, and prevention strategies for gynecological cancers, there was an increase in ovarian cancer awareness, self-confidence in noticing

ovarian cancer, and behavioral attitudes among participants (Puckett et al., 2018). Similarly, Spanish women showed an increase in knowledge about ovarian cancer and awareness of symptoms after an educational video intervention (Schlumbrecht et al., 2016).

In our study, "having a close relative with ovarian cancer" (67.7%) were identified as the most recognized risk factor, while "undergoing IVF treatment" (27.3%) were the least recognized risk factor. Consistent with our study findings, in the studies conducted by Naik et al., (2019) and Okunowo & Adaramoye (2018), "having a close relative with ovarian cancer" was also identified as the most recognized risk factor, while in the studies by (Al-Azri et al., 2018, Al-Naggar et al., 2013, Elshami et al., 2022, Maryam et al., 2022, Naik et al., 2019, Okunowo & Adaramoye, 2018), "undergoing IVF treatment" was found to be the least recognized risk factor. Moreover, in some studies, "smoking" (Elshami et al., 2022; Freij et al., 2018) and "having an ovarian cyst" (Al-Azri et al., 2018; Maryam et al., 2022; Saki et al., 2021) were identified as the most recognized risk factors, while "use of talcum powder on the genital area" (Freij et al., 2018) and "infertility" (Saki et al., 2021) were identified as the least recognized risk factors.

Conclusion: The results of this study indicate that women have a low level of knowledge about the symptoms and risk factors of ovarian cancer. The average score for recognizing ovarian cancer symptoms was low, while the average score for recognizing risk factors was moderate. "Pelvic pain," "abdominal pain," and "gradual increase in abdominal circumference" were the three most recognized symptoms of ovarian cancer, while "change in bowel habits," "back pain," and "increasing difficulty in eating" were the three least recognized symptoms. "Having a close relative with ovarian cancer," "having an ovarian cyst," and "smoking" were the three best-known risk factors, whereas "being childless," "applying talcum powder to the genital area," and "undergoing IVF treatment" were the three least known risk factors. Approximately three-quarters of the women in our study stated that they lacked confidence in recognizing ovarian cancer symptoms.

Considering that awareness of ovarian cancer symptoms, risk factors, and age of occurrence can facilitate early diagnosis of ovarian cancer, it is recommended that women be educated and awareness be increased on these issues. It is suggested that health education and information campaigns be expanded to raise awareness in the community about recognizing the symptoms of ovarian cancer and learning about risk factors.

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