



Evaluating the level of awareness regarding ovarian cancer signs and risks among women in Kirkuk: a cross-sectional study

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Abstract

Introduction: Ovarian cancer is a malignant type of illness, the misinterpretation of the symptomatic ovarian cancer average in women and their physicians might cause a subsequent misdiagnosis of the illness.

Objective: Aim of the research was to find out the level of awareness of the symptoms and risk factors of ovarian cancer among women visiting teaching hospital in Kirkuk city. **Methods:** This study is quantitative descriptive (cross-sectional) design. The data collection was performed using a constructed questionnaire of purposive (non-probability) sample of (200) women visiting at outpatient and inpatients in the Teaching Hospitals in Kirkuk City. **Results:** The average of the subjects under assessment was (33.16). Juvenile cases were divided into the following groups of Married (66.5%) and house wife (66%). most cases (33%) had high level of education. The cases with adequate economic condition were 57 percent and (72%) percent of cases were urban dwelling. A statistically significant association was observed between Awareness of the risk factors of ovarian cancer in relation to age (p-value = 0.000) and educational level (p-value=0.013), also statistically significant difference was observed between awareness of the symptoms of the ovarian cancer in related to age (p-value = 0.024), Educational level (p-value=0.043) and Economic status (p=0.003). The good awareness (61%) of the participants toward risk factors of the ovarian cancer is more than the poor

awareness of the risk factor, while the good awareness (49%) of the participants toward the symptoms is less than the poor awareness (51%) of the ovarian cancer symptoms. **Conclusion:** The general awareness of the symptoms of ovarian cancer in this study was low.

Keywords: Evaluating. Awareness. Ovarian. Cancer. Women.

Introduction

The cause of cancer and other malignant diseases is an uncontrolled division of the cells. The growing cell scan enters into other tissues either directly or via the circulatory system [1]. The ovaries are magnificent glands which are part of the female reproductive system. Every woman has two ovaries and one is located on each side of the uterus. They are about 1.5 inches long and oval-shaped. These are glands containing germ cells which are eggs. Estrogen and progesterone are mostly produced by ovaries. These hormones affect the growth of the breast, body shape, body hair, and regulate the menstrual cycle and pregnancy. During menopause, the ovaries cease their egg release and the production of certain hormones [2].

Cancer is a disease of malignancy that occurs due to the uncontrolled cell division. The emerging proliferating cells can invade other tissues either

directly with their cell migration or via the vascular system [3]. In 2020, 313,959 new cases and 207,252 deaths by ovarian cancer were reported worldwide [4]. In 2020, 313,959 new cases and 207,252 deaths by ovarian cancer were reported worldwide [4]. There is a difference in the occurrence of ovarian cancer in the world. The risk factors that explain the occurrence of ovarian cancer can be attributed to the epidemiological diversity of ovarian cancer in the different regions. Asian/Pacific Islander women (9.2 per 100,000), Hispanic women (10.3 per 100,000), non-Hispanic white women (12.0 per 100,000) and non-Hispanic black women (9.4 per 100,000) had the highest incidence of ovarian cancer. Due to differences in access to diagnostic and therapeutic services, the mortality of ovarian cancer has a different pattern, and the highest mortality rate is seen in African populations [5].

According to [6] "Ovarian Cancer, Not an Entirely Silent Disease." In a prospective survey of 1,709 women who presented in emergency departments, 44 of them had an ovarian tumor. Forty-one (94%) of this group had symptoms over the past year before diagnosis and 29 (67%) reported recurring symptoms, at least once per month. Bloating, abdominal swelling, asthenia, urinary problems and pelvic or abdominal pain were the most frequently reported. Because of the extremely low specificity of these clinical manifestations, the patients themselves are going to overlook these signs, thinking they are due to menstrual issues, menopause, age or other benign causes.

Women are born endowed with a limited supply of oocytes and as a woman age, there is a decline in the number of oocytes with each menstrual cycle; frequent ovulation (incessant ovulation) is a known risk factor for ovarian cancer [7]. Thus, this study aimed to find out the level of awareness of the symptoms and risk factors of ovarian cancer among women visiting teaching hospital in Kirkuk city.

Methods

This study is quantitative descriptive cross-sectional design and it implemented to assess the awareness of ovarian cancer symptoms and risk factors among women who attended hospitals in Kirkuk city. The research was carried out in Teaching Hospitals in Kirkuk City both in outpatient and inpatient departments when receive outpatient and inpatient women who require medical diagnosis and treatment.

A representative sample of 200 patients was the sample that included the age of 13 to 60 years old and the women who consented to take part in the study.

The study questionnaire is structured questionnaire and it has been designed based on the review of literature and past researches and has four sections, as follows:

Part one: participant's socio-demographic information that including Age, Marital status, Occupation, Residential area, Economic status and Level of education.

Part two: Consist of the most important risk factors of ovarian cancer.

Part three: Consist of symptoms of ovarian cancer.

Part four: Consist of a question which is knowing ovarian cancer or not, also five sources of gaining knowledge on ovarian cancer also mentioned as a multiple choice. Statistical method (SPSS 24) is used to enhance all the statistical computation. The data were coded, tabulated and was presented in a descriptive nature. The analysis of the data in this study was carried out by applying the simple statistical techniques which involve:

1. Descriptive statistical data analysis (Frequency, Percentage, Mean and Standard deviation).
2. Inferential data analysis:

Chi - square:

- There are criteria of the probability level of determining the significance of test:

P - Value as:

- High significant ($p < 0.001$)
- Significant ($p < 0.05$)
- Non-Significant ($p > 0.05$)
- Very highly significant ($p < 0.000$)

Ethical Approval

Formal approval to carry out the study was obtained by Teaching Hospitals in Kirkuk City, in accordance with the Helsinki criteria, the latest revision of which was in 2024. Informed consent was obtained.

Results

Table 1 shows the mean age of the examined subjects that ranged from 13 to 60 years old is 33.16 and the majority of participants age about 57 (28.5%) were between 36 – 45 years old, also 55 (27.5%) of the women were less than 25 years old while 52 (26%) were between 25-35 and finally 36 (18%) were more than 45 years old. Additionally, visualized the Marital status of sample under study and most of them were married about 133 (66.5%), while 59 (29.5%) of the participants were single, finally only 5 (2.5%) of women were widowed and only 3 (1.5%) of them were divorced.

On the level of education, most of the participants 63 (31.5%) graduated in university and 38 (19%) of

the participants graduated in Institution, 39 (19.5%) graduated in secondary school and 35 (17.5%) graduated in primary school and only 21 (10.5%) were Illiterate. The majority of the participants are residing in urban area 144 (72%) and very few 11 (5.5%) resides Rural, also 45 (22.5%) participants are suburban. The economic situation of the study sample was categorized into three components adequate, barely adequate and inadequate and around 114 (57%) of the participants had Sufficient economic situation, 61 (30.5%) had Barley sufficient economic condition and only 25 (12.5%) had Insufficient economic condition.

By the Occupation Housewife (66%), and the Employee were 35 (17.5%), were more than half of the respondents.

Table 1. Distribution of study samples according to their demographic characteristics.

Variables	Items	Frequency	%
Age (years)	< 25	55	27.5
	25 – 35	52	26.0
	36 – 45	57	28.5
	> 45	36	18.0
	Mean ± S.D	33.16 ± 11.52	
Marital status	Married	133	66.5
	Divorced	3	1.5
	Widowed	5	2.5
	Single	59	29.5
Educational level	Illiterate	21	10.5
	Primary	35	17.5
	Secondary	39	19.5
	Institution	38	19.0
	University	67	33.5
Residency	Urban	144	72.0
	Suburban	45	22.5
	Rural	11	5.5
Economic status	Sufficient	114	57.0
	Barley sufficient	61	30.5
	Insufficient	25	12.5
Occupation	Housewife	132	66.0
	Employee	35	17.5
	Others	33	16.5
Total		200	100

Source: Own authorship.

Table 2 indicates awareness of the participants regarding ovarian cancer risk factors Most participants, had a good awareness 127 (63.5%) that increased age could be a risk factor to ovarian cancer, and also, 121 (60.5%) of the participants had a good awareness that having close family member or relatives with ovarian cancer is a risk factor of ovarian cancer, while 100 (50%) of the respondents had a good awareness that having personal or family history of breast cancer is consider a risk factor for ovarian cancer, while 21 (10.5%) of the respondents have poor awareness about not having children may be a risk for ovarian cancer.

Table 2. Participants awareness toward ovarian cancer risk factors.

Risk factors of ovarian cancer	No		Yes		Total score	Level
	F	%	F	%		
Having a close relative with ovarian cancer	79	39.5	121	60.5	121	Good
Personal or family history of breast cancer	100	50.0	100	50.0	100	Good
Increasing age above 50 Years	73	36.5	127	63.5	127	Good
Not having children	179	89.5	21	10.5	21	Poor

Source: Own authorship.

In Table 3, the awareness of the participants towards the symptoms of ovarian cancer is described. The majority of the participants, had a good awareness 136 (68%) that postmenopausal bleeding is one of ovarian cancer symptoms, also they had a good awareness on increasing abdominal size 120(60%), having back pain 117 (58.5%), Persistent pain in the pelvic 111(55.5%) and extreme fatigue 111(55.5%) is one of ovarian cancer symptoms. While they have poor awareness on persistent pain in the abdomen, Persistent bloating, Difficulty eating on most days, change in bowel habits, passing more urine than usual and feeling full persistently.

Table 3. Distribution of participants' awareness to the symptoms of ovarian cancer.

Symptoms of ovarian cancer	No		Yes		Total score	Level
	F	%	F	%		
Persistent pain in your pelvic	89	44.5	111	55.5	111	Good
Persistent pain in your abdomen	103	51.5	97	48.5	97	Poor
Extreme fatigue	89	44.5	111	55.5	111	Good
Persistent bloating	153	76.5	47	23.5	47	Poor
Back pain	83	41.5	117	58.5	117	Good
Increase abdominal size	80	40	120	60	120	Good
Postmenopausal bleeding	64	32	136	68	136	Good
Difficulty eating on most days	122	61	78	39	78	Poor
Change in bowel habits	106	53	94	47	94	Poor
Passing more urine than usual	124	62	76	38	76	Poor
Feeling full persistently	114	57	86	43	86	Poor

Source: Own authorship.

Table 4 explains the participants' responses towards the Awareness and knowledge of ovarian cancer. Most participants 170 (85%) had heard of

ovarian cancer and the majority of participants 47.06% know about ovarian cancer through internet/social media, with 32.35% of the participants knowing about ovarian cancer through television /radio.

Table 4. Distribution of the awareness of ovarian cancer and the source of awareness.

Awareness and knowledge of ovarian cancer	No		Yes	
	F	%	F	%
Did you know about ovarian cancer	30	15.0	170	85.0
If yes	through television /radio		55	32.35
	through newspapers/magazines		4	2.35
	through internet/social media		80	47.06
	through doctors/nurses		13	7.65
	through friends, relatives and colleagues		18	10.59
	Total		170	100

Source: Own authorship.

Table 5 shows the association between Socio demographic characteristics of the study participants and the risk factors of ovarian cancer. The association between the good and the poor awareness in related to the Socio demographic characteristics.

Table 5. Association between Socio demographic and risk factors of ovarian cancer.

Variables	Items	Poor		Good		Significant test
		F	%	F	%	
Age (years)	< 25	32	16	23	11.5	22.025 p=0.000
	25 – 35	9	4.5	43	21.5	
	36 – 45	18	9	39	19.5	
	> 45	18	9	18	9	
Marital status	Married	47	23.5	86	43	2.917 p=0.405
	Divorced	2	1	1	0.5	
	Widowed	3	1.5	2	1	
	Single	25	12.5	34	17	
Educational level	Illiterate	9	4.5	12	6	12.691 p=0.013
	Primary	18	9	17	8.5	
	Secondary	20	10	19	9.5	
	Institution	15	7.5	23	11.5	
	University	15	7.5	52	26	
Residency	Urban	57	28.5	87	43.5	0.803 p=0.669
	Suburban	15	7.5	30	15	
	Rural	5	2.5	6	3	
Economic status	Sufficient	38	19	76	38	3.415 p=0.181
	Barley sufficient	29	14.5	32	16	
	Insufficient	10	5	15	7.5	
Occupation	Housewife	53	26.5	79	39.5	0.478 p=0.787
	Employee	12	6	23	11.5	
	Others	12	6	21	10.5	

Source: Own authorship.

Table 6 shows the association between Socio

demographic characteristics of the respondents and the symptoms of ovarian cancer. The association between the good and the poor awareness in related to the Socio demographic characteristics. The statistically significant difference (or association) was detected in terms of awareness of the symptoms of ovarian cancer against age (p-value=0.024), Educational level (p-value=0.043) or Economic status (p=0.003).

Table 6. Association between Socio demographic and symptoms of ovarian cancer.

Variables	Items	Poor		Good		Significant test
		F	%	F	%	
Age (years)	< 25	35	17.5	20	10	9.421 P=0.024
	25 – 35	20	10	32	16	
	36 – 45	25	12.5	32	16	
	> 45	22	11	14	7	
Marital status	Married	66	33	67	33.5	5.28 P=0.152
	Divorced	1	0.5	2	1	
	Widowed	5	2.5	0	0	
	Single	30	15	29	14.5	
Educational level	Illiterate	14	7	7	3.5	9.846 P=0.043
	Primary	23	11.5	12	6	
	Secondary	22	11	17	8.5	
	Institution	15	7.5	23	11.5	
Residency	Urban	75	37.5	69	34.5	1.011 P=0.603
	Suburban	23	11.5	22	11	
	Rural	4	2	7	3.5	
Economic status	Sufficient	48	24	66	33	11.479 P=0.003
	Barley sufficient	42	21	19	9.5	
	Insufficient	12	6	13	6.5	
Occupation	Housewife	74	37	58	29	4.06 P=0.131
	Employee	15	7.5	20	10	
	Others	13	6.5	20	10	

Source: Own authorship.

Table 7 shows that the awareness of participants on risk of factors of ovarian cancer is good (61.5%), (85% of the participants are aware of ovarian cancer) but most participants (51 %) lacked knowledge on the symptoms of ovarian cancer.

Table 7. Distribution of the general awareness of ovarian cancer.

Items	Risk factors of Ovarian Cancer		Symptoms of Ovarian Cancer		Knowing Ovarian Cancer	
	F	%	F	%	F	%
Poor	77	38.5	102	51.0	30	15
Good	123	61.5	98	49.0	170	85

Source: Own authorship.

Discussion

Most of the participants in this study were young, married and well educated (high level of education) this outcome is in congruence with the finding of a study by Fallowfield et al. [8]. Levels of education are highly effective consideration to sensitize the individual

on a lot of things and in his study, Lockwood-Rayerman [9] said that there is the relationship between a person with higher level of education and who is aware about the risk factors and symptoms of ovarian cancer.

The findings to this study revealed that the participants were well aware of the risk factors of ovarian cancer as four out of five potential risk factors were recognized by the majority of the participants and this finding is agreeable with a previous study carried out by Fallowfield et al. [8] who found that majority of the participants were aware as to the possible risk factor of ovarian cancer of having a family history and breast cancer being a risk factor for ovarian cancer. Compared to this work a study that was carried out by Keng et al. [10] where their results showed that ovarian cancer risk factors awareness amongst Malaysian women is low.

Education about the symptoms of ovarian cancer is one of the determinants in the early medical consultation and might result in an improved prognosis [11]. This study resulted in the participants who exhibited low awareness of ovarian cancer symptoms and only forty-nine of them exhibited good awareness of ovarian Cancer, which is defined as the recognition of five among eleven possible Ovarian Cancer symptoms this result was supported by [12,13]. The most common symptom detected was 'Postmenopausal bleeding' followed by 'Increase abdominal size' 'Back pain' 'Extreme fatigue' and 'Persistent pain in the pelvic'. Persistent bloating, and urinary frequency were the least identified symptoms and this finding is consistent with a study by [14]. Babaei et al. [15] established in their study that women are well aware of ovarian cancer warning signs and symptoms however, also in their study, Elshami et al. [16] found that women awareness about ovarian cancer symptoms is good awareness.

In the current study most of the women had heard of what ovarian cancer is, majority have heard about ovarian cancer via the social media /internet and via newspapers/magazines was the least source of knowledge about what ovarian cancer is among the participants. The use of social media sites and internet can make health information more accessible, engaging and interactive to more and more diverse audiences and our study found that social media and internet can have a tremendous effect on awareness of the women who were involved in this study.

The outcome of the study was that the difference (or association) between knowledge of the risk factors of ovarian cancer, in terms of age (p-value = 0.000) and educational level (p-value=0.013) was significant but the difference between the knowledge of the risk

factors of ovarian cancer against other socio-demographic characteristics was not significant. Most of the subjects in this study were young and there was also association between young age and good knowledge on ovarian cancer risk factors and symptoms. young people are more inclined to use social media platforms as compared to the older women and they were also well informed about ovarian cancer using the internet/social media [16].

This study found that out of the multiple factors influence the awareness of ovarian cancer yet in this investigation, only the level of education and the age had significant influence on good awareness of risk factors, where education level, age and economic condition showed significant influence on good awareness of ovarian cancer symptoms. No wonder, more educated women had more knowledge compared to their counterparts and educated women are more likely to be empowered to be more knowledgeable about health-related matters [17].

Also, having a Sufficient economic condition is very important in order to make the women to seek the hospital to be treated, where they could also learn more about diseases, know its symptoms and the risk factors. This study outcome coincides with a research article conducted by Elshami et al. [16] and the findings of his research indicated that there is an association between sufficient economical condition and good awareness of ovarian cancer symptoms.

The awareness of ovarian cancer risk factor is good while the awareness of the ovarian cancer symptoms is poor in the present study and this is in agreement with [18], who in his study found that the awareness of the ovarian cancer symptoms amongst the populations is low.

Study Limitations

There are a number of limitations to the current study. Firstly, it was only carried out in hospitals in a one city, which might have a limited impact on how broadly the results can be applied in other areas. Secondly, it is not possible to determine the casual links between the variables that are using cross-sectional study approach.

Conclusion

- Mostly their ages were (28.5%) and it fell within (36 – 45) years old, they were mostly married (66.5%), attended university (33.5 %), and mostly they were urban (72%).
- There were more than half who had sufficient economic status (57 %), though they were mostly house wife (66%).

- Awareness of the ovarian cancer risk factors by the women who participated in this study was good.
- All the awareness regarding Ovarian Cancer symptoms was low in this study. There is need to do educational interventions to enhance the knowledge of women with regards to the symptoms of Ovarian Cancer.
- Most of the women were aware of what the ovarian cancer is and the most source of knowledge that women received in this study was via internet/social media.
- There was an association between good awareness of the risk factors of ovarian cancer in related to age and educational level.
- Any relationship that existed was between good awareness of ovarian cancer symptoms relative to age, education level and sufficient economic condition.

Recommendation

- Awareness is a necessary factor to prevent, detect and treat at an early stage and being aware is the key to the effectiveness of the treatment. To enhance the health system sector with significant issue, the government should significantly contribute by working towards strengthening it and enable it financially and materially to conduct research system and education programmes within ministry of health.
- The Ministry of Health should consider creating a closer liaison with the hospitals involving (doctors and nurses), health organizations, women organizations and media in the society to raise awareness of risk factors and symptoms of ovarian cancer in order to assist and empower the women with the knowledge that could help them address their own health.
- The larger numbers of women such as all governorates of Iraq are those that require further study to be done.

CrediT

Author contributions: Conceptualization; Data curation; Formal Analysis; Investigation; Methodology; Project administration; Supervision; Writing - original draft; Writing-review & editing – All authors.

Acknowledgment

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Ethical Approval

Formal approval to carry out the study was obtained by Teaching Hospitals in Kirkuk City, in accordance with the Helsinki criteria, the latest revision of which was in 2024.

Informed Consent

It was applicable.

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Data Sharing Statement

All referenced sources are accessible through the respective journals or public repositories.

Conflict of Interest

The authors declare no conflict of interest.

Similarity Check

It was applied by Ithenticate®.

Application of Artificial Intelligence (AI)

Not applicable.

Peer Review Process

It was performed.

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