



Knowledge toward ovarian cancer symptoms among women in Syria: Cross-sectional study

Haidara Bohsas^a, Hidar Alibrahim^{a,*}, Sarya Swed^a, Amro A. El-Sakka^b,
Mohammad Alyosef^c, Haia Haitham Sarraj^a, Bisher Sawaf^d, Mhd Baraa Habib^d,
Sherihan fathey^e, Gowhar Rashid^f, Ahmed Thabet Daraghmi^g,
Angham Thabet Daraghmi^g, Wael Hafez^{g,h}

^a Faculty of Medicine Aleppo University, Aleppo, Syria

^b Faculty of Medicine, Suez Canal University, Ismailia, Egypt

^c Faculty of Medicine Hama University, Hama, Syria

^d Department of Internal Medicine, Hamad Medical Corporation, Qatar

^e Department of Health, Giza, Egypt

^f Department of Amity Medical School, Amity University, Haryana, India

^g NMC Royal Hospital, 16th Street, Khalifa City, Abu Dhabi, United Arab Emirates

^h Medical Research Division, Department of Internal Medicine, The National Research Centre, Cairo, Egypt

ARTICLE INFO

Keywords:

Ovarian cancer
Symptoms
Awareness
Cross-sectional study

ABSTRACT

Background: Ovarian cancer is the second most prevalent malignancy in women over 40, especially in low-income nations. For every 100,000 women in Syria, 473 new cases of ovarian cancer are diagnosed. This study aims to investigate the knowledge of ovarian cancer symptoms among Syrian women and determine the factors associated with good knowledge. **Methods:** An online cross-sectional was performed between July 29 and August 17, 2022. The inquired participants in the study were Syrian females above 18 years. The questionnaire consists of 41 questions organized into three sections: sociodemographic information, Confidence in recognizing ovarian cancer symptoms, and women's Awareness of the symptoms of ovarian cancer. **Results:** This research included 557 Syrian women, and the average age was 23. Only 20.5% of involved women demonstrated a good knowledge of the symptoms of ovarian cancer. The participants who agreed that abdominal pain and pelvic pain are ovarian cancer symptoms formed (36.8%), and (63.9%), respectively.

Regarding the additional presenting symptoms of ovarian cancer, "extreme generalized fatigue" was the most often reported symptom (66.1%). Divorced women showed greater knowledge scores than other marital status groups (7.13 ± 3.31 , P -value<0.05), while public sector participants scored higher than other occupational groups (6.38 ± 2.5 , P -value<0.05). **Conclusion:** Our findings indicate that Syrian females have inadequate knowledge regarding ovarian

* Corresponding author.

E-mail addresses: www.haidara.bohsas@gmail.com (H. Bohsas), haideralibrahem1999@gmail.com (H. Alibrahim), saryaswed1@gmail.com (S. Swed), amroelsakka@gmail.com (A. A. El-Sakka), mhmdalywsf291@gmail.com (M. Alyosef), haiasarraj23@gmail.com (H. Haitham Sarraj), Bishersawaf.94@gmail.com (B. Sawaf), mhabib2@hamad.qa (M. Baraa Habib), sherihanabdelgalil@gmail.com (S. fathey), gowhar9@gmail.com (G. Rashid), ahmeddaraghmi@gmail.com (A. Thabet Daraghmi), angham3333@gmail.com (A. Thabet Daraghmi), Waelhafez@yahoo.com (W. Hafez).

<https://doi.org/10.1016/j.heliyon.2023.e19076>

Received 18 January 2023; Received in revised form 2 August 2023; Accepted 10 August 2023

Available online 12 August 2023

2405-8440/© 2023 Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

cancer symptoms. More ovarian cancer awareness programs for Syrian women of all ages are needed to increase the early identification of this illness.

1. Introduction

1.1. Background

According to the World Health Organization, there will be 15,526 new cases of ovarian cancer (OC) for every 100,000 Arab women in 2022, with 10,499 deaths for every 100,000 women. In Syria, there are 473 ovarian cancer cases for every 100,000 women [1,2]. OC is the second most common cancer in women over 40. In addition, 1 in 75 women will get OC at some point in their lifetimes. In most cases, OC symptoms do not manifest until the late stages, resulting in a 5-year survival rate of 29%. If the cancer is diagnosed early, 92% of OC patients will still be alive after five years [3]. Several factors increase the development of ovarian cancer, including BRCA1, BRCA2, and MMR gene mutations, endometriosis, hormone replacement therapy (HRT), being overweight, and smoking [4]. As mentioned above, ovarian cancer manifests at late stages; thus, there is a high risk of developing metastases. Ovarian cancer may induce various symptoms, including abdominal pain, edema, back pain, diarrhea, tiredness, nausea, and urinary disorders. However, precocious puberty, menstrual irregularity, and hirsutism may also be present [5]. A careful pelvic and abdominal examination, as well as a clear medical history of gynecologic cancers, must be performed as part of the diagnosis protocol of OC. Transvaginal ultrasonography is one of the most important diagnostic tools as it gives a true image of the structure and blood supply of the ovaries and differentiates between cystic and solid masses [6]. Women's knowledge of ovarian cancer and its symptoms has been shown to play a significant role in halting the disease's progression and lowering the burden of treatment costs on the healthcare system, which could encourage women to make positive changes to their lifestyle and their exposure to potential risk factors [7]. This study examines the Awareness of ovarian cancer symptoms among Syrian women and identifies the factors associated with adequate knowledge.

2. Methods

2.1. Study design and setting

An online cross-sectional study was conducted in Syria between July 29 and August 17, 2022. The inclusion criteria of study participants were females aged 18 or older with Syrian nationality from all Syrian governorates. Exclusion criteria were non-Syrian nationality females under 18 years of age, females working in health sector, and females (or their first degree relatives) diagnosed with ovarian cancer. An informed consent was taken from all participants at the first page of the questionnaire. All participants were informed about the ability to withdraw their response at any section during answering the questionnaire at the description of the survey. This questionnaire was developed based on prior research that included a comprehensive, validated scale [8,9]. Then, medical researchers translated the questionnaire into Arabic so that participants could read and answer the questions easily; the final version of the questionnaire was included in the study's supplemental material (S1 Table 1). A Data Collection Group collected data made up of volunteers from several Syrian medical universities; they used the social media platforms such as WhatsApp, Telegram, and Facebook to publicize a Google Form (<https://www.google.com/forms/>). This study's sample size was determined using the sample size calculator at "<https://www.calculator.net/sample-size-calculator.html>." The minimal sample size was computed by interrupting the formula $n = [(Za/2) \cdot P(1-P)]/d^2$, [Confidence level = 95%, $Z a/2 = 1.96$, Margin of error = 5%, $P =$ the proportion of females who were aware of OC risk factors and symptoms (17.4%) [8] and the requested sample size was 221.

2.2. Measures

The evaluation was conducted using a modified ovarian cancer awareness measure (OCAM) [10]. The questionnaire had 41 questions separated into three parts. The first segment included sociodemographic information. The second segment examined individuals' Confidence in their capacity to identify ovarian cancer symptoms. The last part tested women's Awareness of the manifestations of ovarian cancer. Participants' Confidence in their capability to identify ovarian cancer manifestation was assessed using a four-point measurement (1 = not at all confident, 4 = extremely confident). On the other hand, a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) was employed to assess participants' Awareness of 11 ovarian cancer manifestations. The questions that originally had yes/no/unknown answers were changed to a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to decrease the probability that people would answer randomly. Similar to earlier research, the participant answers were transformed into correct or incorrect replies [11,12].

2.2.1. Sociodemographic variables

This section contains eight questions about the participants' sociodemographic variables, which include (age, residency, educational level, whether the participants are not educated or finished school or college, economic status, social status, whether the participant is in a relationship or married or single, occupational status, if the participants are suffering from chronic diseases such as diabetes or hypertension, and if the participant is a smoker or not).

2.2.2. Confidence in identifying ovarian cancer symptoms

This section contains 11 questions about participants' Confidence in identifying ovarian cancer symptoms, which include the participants mentioning all the symptoms they know about ovarian cancer if the participants noticed any symptoms of ovarian cancer when they visited the doctor to investigate, what are the reasons that the participants think to increase a woman's chances of developing ovarian cancer, how confident are participants in recognizing ovarian cancer manifestations (not at all confident, not confident, confident, very confident), do the participants think there are programs for early detection of breast cancer (if yes, at what age do women receive their first call for early detection of breast cancer), and the same questions for colorectal and ovarian cancer.

2.2.3. Awareness of ovarian cancer symptoms

This section contains ten questions evaluating participants' knowledge of ovarian cancer symptoms, including if the respondent considers (abdominal pain, pelvic discomfort, bloated abdomen, sense of fullness, urinary symptoms, weariness, and other symptoms stated in the survey) as ovarian cancer symptoms.

2.3. Pilot study

We sent the online survey to 47 Syrian individuals to check that the questionnaire was clear and comprehensible for responders, and based on their responses, we adjusted the questionnaire. Although we obtained the questionnaire from previously published research done in an Arabic nation (Palestine), we re-verified its reliability and validity by calculating Cronbach's alpha (above 0.71) for each scale (Knowledge of symptoms of ovarian cancer). The language has been adapted from informal to formal, and a simplified explanation has been provided for each question to ensure comprehension among all participants in the community. A concise clarification was incorporated below the symptoms of the disease, pelvic pain and how to distinguish it from abdominal pain in order for the participants to provide clear answers. Similarly, for (change in bowel habit) sign, which we added an explanation for it (diarrhea or constipation etc.), because it was incomprehensible to some participants.

2.4. Ethical consideration

The Aleppo University Syrian Ethical Society for Scientific Research conducted an ethical assessment and authorized the research (IRB: RE 22/03). On the first page of the online survey, all participants were informed of the study's purpose, the research group's name, their ability to withdraw from the study, the privacy and protection of gathered data, and the fact that only fully submitted data would be examined. The whole survey may be completed in 5–7 min.

2.5. Statistical analysis

We conducted the analysis by employing SPSS V.28 (Statistical Package for the Social Sciences), considering the values of P-value

Table 1
Sociodemographic characteristic of the participants.

Variable	Categories	N(%)
Age, median [IQR]		23 (22–28)
Age group	18–29	431 (77.4)
	30 or older	126 (22.6)
Level of education	Primary school	10 (1.8)
	Middle school	28 (5)
	secondary school	46 (8.3)
	University (Bachelor's or Master's)	473 (84.9)
Occupation	Student	327 (58.7)
	House wife	81 (14.5)
	Public sector	85 (15.3)
	Private sector	66 (9.9)
	Idle	9 (1.6)
living location	City	462 (82.9)
	Countryside	95 (17.1)
marital status	Single	4.3 (72.4)
	Married	137 (24.6)
	Widowed	9 (1.6)
	Divorced	8 (1.4)
Monthly income	High	40 (7.2)
	Good	200 (35.9)
	Middle	286 (51.3)
	Low	31 (5.6)
Do you suffer from chronic diseases?	Yes	70 (12.6)
	No	487 (87.4)
Smoking	Yes	64 (11.5)
	No	493 (88.5)

under 0.05 statistically significant. We present the categorical data as frequency and percentage and the continuous data as mean and standard deviation. We ensured that the data was non-parametric after performing the Shapiro–Wilk test, then we performed a Kruskal–Wallis one-way analysis of variance and variance of variance (ANOVA) to determine the difference between the subgroups toward the knowledge of ovarian cancer symptoms. We also performed binary logistic regression to define the predictor factors (Independent variables: Sociodemographic variables) of having an adequate level of knowledge of the symptoms of ovarian cancer based on the cut-off points presented in the survey’s published article [8,9].

3. Results

3.1. Demographic characteristics of the study sample

Among the 586 respondents contacted, 557 filled out the survey, while 29 declined to participate. Participants’ median ages (IQR) were 23 years (22–28), and participants living in the city were (82.9%); however, participants with a university education level were compressed (84.9%). More than half the participants were students (58.7%). Less than a quarter of respondents (24.6%) were married, and approximately half of the participants (51.3%) had a moderate economic status. Only 20.5% of participants showed good knowledge (prompt recognition of more than 8 out of 11 OC symptoms) (Table 1).

3.2. Confidence and the ability to recognize ovarian cancer symptoms

Regarding the pain-related symptoms of ovarian cancer, participants reported abdominal pain and pelvic pain (36.8%) and (63.9%), respectively, as symptoms of ovarian cancer. Concerning other symptoms associated with ovarian cancer, the most frequently identified symptoms were “extreme generalized fatigue” (66.1%), “passing more urine than usual” (50.1%), and “increased abdominal size on most days” (39%) (Table 2). Only 20.5% of participants showed good knowledge (prompt recognition of more than 8 out of 11 OC symptoms), whereas participants with poor knowledge were 24.6%. (Table 3).

3.3. Differences between the subgroups and the knowledge of the ovarian cancer symptoms score

Table 4 showed that there is a statistically significant difference between the material status and occupational subgroups toward the score of the knowledge of ovarian cancer symptoms, in which the divorced (7.13 ± 3.314) and widowed women (6.56 ± 3.678) have the highest score compared to single and married women (P-value = 0.028). As well, the students (6.37 ± 3.061) and the women who are workers in the public sector (6.38 ± 2.507) have the highest score in the knowledge of ovarian cancer symptoms compared to other occupational subgroups (P-value = 0.027) (Table 4).

3.4. Predictors related to good knowledge of ovarian cancer symptoms and participant characteristics

Logistic regression in Table 5 has shown no association between the sociodemographic variables and predicting an adequate knowledge of ovarian cancer (P value > 0.05). (Table 5).

Table 2
Confidence and recognition of OC symptoms.

Variable	Categories	n (%)
Symptoms with pain	Yes	205 (36.8)
	No	352 (63.2)
Persistent pain in the abdomen	Yes	356 (63.9)
	No	201 (36.1)
Persistent pain in the pelvis	Yes	346 (62.1)
	No	211 (37.9)
Persistent low back pain	Yes	217 (39)
	No	340 (61)
Other symptoms	Yes	190 (34.1)
	No	367 (65.9)
Increased abdominal size on most days	Yes	124 (22.3)
	No	433 (77.7)
Feeling full persistently	Yes	279 (50.1)
	No	278 (49.9)
Difficulty eating on most days	Yes	245 (44)
	No	312 (56)
Passing more urine than usual	Yes	368 (66.1)
	No	189 (33.9)
Changes in bowel habit	Yes	22.8 (40.9)
	No	329 (59.1)
Extreme generalized fatigue	Yes	
	No	
Persistent bloating	Yes	
	No	

Table 3
Knowledge level of ovarian cancer symptoms among study participants.

Statement	n (%)
Good	114 (20.5)
Fair	306 (54.9)
Poor	137 (24.6)

Table 4
Differences between the subgroups and the knowledge of the ovarian cancer symptoms score.

Variable	Categories	Mean (SD)	95%CI (lower-upper)	P-value
Age groups	18 to 29	6.27 (3.002)	5.99–6.56	0.115
	30 or older	5.87 (2.951)	5.34–6.39	
Marital status	Single	6.38 (2.924)	6.09–6.44	0.028
	Married	5.52 (3.061)	5–6.04	
	Widowed	6.56 (3.678)	3.73–9.38	
	Divorced	7.13 (3.314)	4.35–9.9	
Living location	City	6.08 (3.004)	5.8–6.35	0.92
	Countryside	6.68 (2.9)	6.09–7.27	
Occupation	Student	6.37 (3.061)	6.04–6.7	0.027
	House wife	5.35 (2.971)	4.69–6	
	Public sector	6.38 (2.507)	5.84–6.92	
	Private sector	6.18 (2.963)	5.38–6.98	
	Idle	5 (4.093)	1.85–8.15	
Level of education	Primary school	5.4 (2.757)	3.43–7.37	0.42
	Middle school	5.75 (3.051)	4.57–6.93	
	secondary school	5.96 (2.503)	5.21–6.7	
	University (Bachelor's or Master's)	6.25 (3.041)	5.97–6.52	
Monthly income	High	6.75 (2.753)	5.87–7.63	0.153
	Good	5.81 (3.252)	5.36–6.26	
	Middle	6.28 (2.86)	5.94–6.61	
	Low	6.97 (2.496)	6.05–7.88	
Do you suffer from chronic diseases?	Yes	5.93 (3.316)	5.14–6.72	0.391
	No	6.22 (2.946)	5.96–6.48	
Smoking	Yes	5.75 (3.441)	4.89–6.61	0.202
	No	6.24 (2.929)	5.98–6.5	

4. Discussion

OC is one of the most common cancers globally, accounting for hundreds of thousands of cases worldwide and tens of thousands of deaths annually [13]. In Syria, the situation is no different. Thousands of cases emerge every year with relatively high rates of mortality [14]. Women with good knowledge of OC symptoms have a greater ability to perform informative discussions with their physicians about the disease, which is crucial for achieving earlier diagnoses and improving survival rates [15]. Therefore, it is paramount to tackle the disease early in its course before it reaches a stage beyond any realistic hope of a cure. This study investigated Syrian women's awareness of OC symptoms. Our results showed that only about one-fifth (20.5%) of the participants had good knowledge of OC symptoms, in which they recognized at least 8 out of 11 OC symptoms. Previous studies in Palestine, Jordan, and Nigeria showed similar results [8,16,17]. This is quite alarming as only a minority of women have adequate knowledge about the symptoms of the disease. The most recognized symptoms were "extreme generalized fatigue" (66.1%), "persistent pain in the pelvis" (63.9%), and "persistent low back pain" (62.1%), mirroring the results from previous studies [8,16,18]. The least commonly recognized symptoms were "difficulty eating on most days" (22.3%), followed by "feeling persistently full" (34.1%), and "persistent pain in the abdomen" (36.8%). Similar results were found in previous studies [8,16], while, unsimilar to our results, a UK and an Omani study found that 85.0% and 60.3% of women, respectively, recognized "persistent pain in the abdomen" as a symptom of OC [18,19]. These symptoms being less known among women might be their overlap with other benign conditions. Indeed, women might mistake these symptoms for gastrointestinal upset, as the suspicion of malignancy would not be the first thing that comes to the mind of a less knowledgeable individual. However, the fact that Goff and colleagues found that these symptoms were significantly associated with OC should catalyze starting awareness campaigns as soon as possible [20]. Among the most knowledgeable women about OC symptoms were the

Table 5
Predictors related to good knowledge of ovarian cancer symptoms and participant characteristics.

Variable	Categories	OR (95%CI)	p-value
Age group	18–29	Ref	
	30 or older	1.617 (0.51–5.1)	0.412
Level of education	Primary school	Ref	
	Middle school	3.14 (0.26–37.23)	0.365
	secondary school	2.99 (0.54–16.69)	0.212
Occupation	University (Bachelor's or Master's)	2.21 (0.71–6.9)	0.172
	Student	Ref	
	House wife	0.97 (0.18–5.41)	0.976
	Public sector	1.67 (0.21–13.39)	0.632
living location	Private sector	1.71 (0.28–10.51)	0.565
	Idle	1.13 (0.16–7.99)	0.904
	City	Ref	
marital status	Countryside	1.641 (0.92–2.93)	0.094
	Single	Ref	
Monthly income	Married	4.10 (0.61–27.65)	0.147
	Widowed	5.06 (0.8–31.91)	0.085
	Divorced	1.42 (0.15–13.53)	0.761
	High	Ref	
Do you suffer from chronic diseases?	Good	0.88 0.22–2.48)	0.853
	Middle	0.76 (0.23–2.48)	0.648
	Low	0.92 (0.29–2.94)	0.889
Smoking	Yes	Ref	
	No	1.13 (0.16–2.24)	0.756
		Ref	
		1.03 (0.52–2.06)	0.934

divorced, women who work in the public sector, and students. This might be due to their higher education level than their counterparts. Educated women are more empowered to recognize health-related issues and are more aware of disease symptoms and risk factors. [21] Nonetheless, further research is needed to evaluate the relationship between educational level and cancer awareness. Spreading knowledge about OC among Syrian women should be undertaken by all means at our disposal. Social media platforms can provide rapid and widespread access to many recipients. Awareness campaigns should be deployed at schools, universities, and primary healthcare units. Many of the elderly population, who are at higher risk for OC and other malignancies, do not have access to social media and are staying at home, so neither online nor physical campaigns can reach them. Thus, national television and radio broadcasts should target this population and host programs to draw their attention to such issues. Syria currently has no national screening program for OC, which is one of the significant barriers to early diagnosis nationally. In the past few years, the Syrian government established successful polio vaccination and smoking cessation campaigns that produced fruitful results. [21,22] A similar campaign is needed to raise awareness about OC among the general public and healthcare professionals and provide the necessary tools for appropriate screening and diagnosis. Awareness campaigns should focus on OC symptoms, risk factors, and when to seek medical care. Also, the current economic difficulties should not deter the efforts of those facing such an issue. Because despite the financial burden that these campaigns might pose, early diagnosis and improved quality of life will prove cost-effective in the long run. OC is a grim reality that faces women worldwide and particularly in Syria. As shown in our results, awareness among Syrian women is inadequate, and with the prevalence of OC in the country, the condition becomes unsettling. Significant steps should be taken, and collaborative efforts from policymakers and healthcare professionals should be exerted to enhance the effectiveness and quality of the healthcare provided.

4.1. Strengths and limitations

This is the first cross-sectional study conducted in Syria about this topic which reflects the knowledge level about ovarian cancer, and we collected data from all Syrian governorates. A professional investigator was investigating the data collection process and deleting duplicated or illogical responses in order to minimize the bias. This study has some limitations. Firstly, the young age of the participants. Most participants were university students; thus, older age groups at the most risk of OC needed to be better represented in the study. Secondly, the questionnaire assessed OC symptom recognition instead of a recall, which might lead to guessing the symptoms. Therefore, our study is cross-sectional, accessible, and does not need much time to conduct; however, it might not present the actual causal relationship and the generality of the findings. This is an online cross-sectional study based on Google form survey which may contain bias data; thus, areas with bad internet and electricity services could not participate in the study, and elderly people who cannot deal with smart phone could not participate in the study. Participants aged under 30 were more than participants aged above 30 which makes an important limitation of our study.

5. Conclusion

Syrian women appear to have low levels of awareness about OC symptoms. Educational programs are urgently needed to raise

awareness about the disease's symptoms, risk factors, and when to seek medical care. Establishing an organized national screening program for OC is also of paramount importance to allow for diagnosing the disease at its early stages, offer prompt treatment, and consequently provide a better quality of life for Syrian women.

Data Collection Group

JOUDY KARH DAMOUR (Faculty of medicine Aleppo University, Aleppo, Syria; joudydamoor1999@gmail.com).
Danya Mourad (AL-HAWASH PRIVATE UNIVERSITY, Syria; danyamourad@gmail.com).

Author contribution statement

Haidara Bohsas: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper. Hidar Alibrahim; Sarya Swed: Conceived and designed the experiments; Performed the experiments; Wrote the paper. Amro A. El-Sakka: Performed the experiments; Analyzed and interpreted the data; Wrote the paper. Mohammad Alyosef; Mhd Baraa Habib; Sherihan fathey; Gowhar Rashid: Analyzed and interpreted the data; Wrote the paper. Haia Haitham Sarraj; Performed the experiments; Wrote the paper. Bisher Sawaf: conceived and designed the experiments; wrote the paper. Ahmed Thabet Daraghmi; Angham Thabet Daraghmi; Wael Hafez: conceived and designed the experiments; analyzed and interpreted the data; wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Hidar Alibrahim reports was provided by University of Aleppo. Hidar Alibrahim reports a relationship with University of Aleppo that includes: non-financial support. Hidar Alibrahim has patent pending to NA. None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2023.e19076>.

References

- [1] WHO, WHO East Mediterranean. https://gco.iarc.fr/today/online-analysis-table?v=2020&mode=cancer&mode_population=continents&population=900&populations=993&key=asr&sex=0&cancer=39&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=0&ages_group%5B%5D=17&group_cancer=1&include_nmssc=0&include_nmssc_other=1.
- [2] Today, W.C., WHO Syria cancer today. https://gco.iarc.fr/today/online-analysis-table?v=2020&mode=cancer&mode_population=continents&population=900&populations=760&key=asr&sex=0&cancer=39&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=0&ages_group%5B%5D=17&group_cancer=1&include_nmssc=0&include_nmssc_other=1.
- [3] B.M. Reid, et al., Epidemiology of ovarian cancer: Rev. 14 (1) (2017) 9.
- [4] C. La Vecchia, Ovarian cancer: epidemiology and risk factors, Eur. J. Cancer Prev. 26 (1) (2017) 55–62.
- [5] M.A. Roett, P. Evans, Ovarian cancer: an overview, Am. Fam. Physician 80 (6) (2009) 609–616.
- [6] C.A. Doubeni, A.R. Doubeni, A.E. Myers, Diagnosis and management of ovarian cancer, Am. Fam. Physician 93 (11) (2016) 937–944.
- [7] B. Maryam, et al., Women's awareness of ovarian cancer risk factors and symptoms in Western Iran in 2020–2021, BMC Wom. Health 22 (1) (2022) 192.
- [8] M. Elshami, et al., Knowledge of ovarian cancer symptoms among women in Palestine: a national cross-sectional study, BMC Publ. Health 21 (1) (2021) 1992.
- [9] M. Elshami, et al., Awareness of ovarian cancer risk and protective factors: a national cross-sectional study from Palestine, PLoS One 17 (3) (2022), e0265452.
- [10] A.E. Simon, et al., Ovarian and cervical cancer awareness: development of two validated measurement tools, J. Fam. Plann. Reprod. Health Care 38 (3) (2012) 167–174.
- [11] M. Elshami, et al., Knowledge level of cancer symptoms and risk factors in the Gaza Strip: a cross-sectional study, BMC Publ. Health 20 (1) (2020) 414.
- [12] M. Elshami, et al., Perceived barriers to seeking cancer care in the Gaza Strip: a cross-sectional study, BMC Health Serv. Res. 21 (1) (2021) 28.
- [13] J. Ferlay, et al., Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods, Int. J. Cancer 144 (8) (2019) 1941–1953.
- [14] S. Razi, et al., The incidence and mortality of ovarian cancer and their relationship with the Human Development Index in Asia, Ecancermedicallscience 10 (2016) 628.
- [15] C.-A. Radu, et al., Awareness of ovarian cancer symptoms and risk factors in a young ethnically diverse British population, Cancer Med. (2023) n/a(n/a).
- [16] M. Freij, et al., Awareness and knowledge of ovarian cancer symptoms and risk factors: a survey of Jordanian women, Clin. Nurs. Res. 27 (7) (2018) 826–840.
- [17] A.A. Okunowo, V.O. Adaramoye, Women's knowledge on ovarian cancer symptoms and risk factors in Nigeria: an institutional-based study, J Epidemiol Glob Health 8 (1–2) (2018) 34–41.
- [18] K.E. Brain, et al., Ovarian cancer symptom awareness and anticipated delayed presentation in a population sample, BMC Cancer 14 (1) (2014) 171.
- [19] M. Al-Azri, et al., Awareness of risk factors, symptoms and time to seek medical help of ovarian cancer amongst Omani women attending teaching hospital in muscat governorate, Oman, Asian Pac. J. Cancer Prev. APJCP 19 (7) (2018) 1833–1843.
- [20] B.A. Goff, et al., Development of an ovarian cancer symptom index: possibilities for earlier detection, Cancer 109 (2) (2007) 221–227.
- [21] C. Mbaeyi, et al., Strategic response to an outbreak of circulating vaccine-derived poliovirus type 2 - Syria, 2017–2018, MMWR Morb. Mortal. Wkly. Rep. 67 (24) (2018) 690–694.
- [22] T. Asfar, et al., Building evidence-based tobacco treatment in the eastern mediterranean region: lessons learned by the Syrian center for tobacco studies, J. Smok. Cessat. 11 (2) (2016) 116–123.