Research Article

Open Access

Awareness of Signs and Symptoms of Ovarian Cancer among Gynecology Nurses in a Large Teaching Hospital in the UK (Awareness of Ovarian Cancer among Gynecology Nurses)

Olumide Ofinran[1]*, Daniel Hay[1], Raheela Khan[1] and Summi Abdul[2]

[1]Division of Medical Sciences and Graduate Entry Medicine, University of Nottingham, Royal Derby Hospital, Uttoxeter road, Derby, UK
[2]Department of Gynecological Oncology, Royal Derby Hospital, Uttoxeter road, Derby, UK

Abstract

Background: The overall mortality of ovarian cancer is high because of its late presentation, with over 80% of patients presenting with advanced disease largely due to the vague symptoms in its early stages. Ninety percent of those diagnosed with early stage ovarian cancer were symptomatic before diagnosis. It is therefore important that women are aware of the signs and symptoms of ovarian cancer as early detection greatly improves the chances of successful treatment, and because nurses play an important helping role which is useful in public education and awareness, they should be aware of the red flags of ovarian cancer.

Objectives: To evaluate how well informed Gynecology nurses are about the signs and symptoms of ovarian cancer.

Methods: A cross-sectional questionnaire survey was carried out among 60 Gynecology nurses of the Royal Derby Hospital, UK between April and July 2014.

Conclusion: Fifty-three percent of the respondents had good knowledge of the signs and symptoms of ovarian cancer. Significantly more nurses working with inpatients (63%) had better knowledge than those working in the outpatient (40%), and only 20 of the 60 respondents had good knowledge of the risk factors for ovarian cancer. More knowledge of the red flags of ovarian cancer is needed among the Gynecology nurses and these can be done through various educational programs.

Keywords: Awareness; Risk factors; Gynecology nurses; Health services needs and demand

Abbreviations: BRCA1: Breast Cancer Susceptibility Gene 1; BRCA2: Breast Cancer Susceptibility Gene 2; CA 125: Cancer Antigen 125; CNS: Clinical Nurse Specialist; FIGO: International Federation of Obstetrics and Gynecology; GOPD: Gynecology outpatient department; GP: General Practitioner; HCAS: Health Care Assistants; HNPCC: Hereditary Nonpolyposis Colorectal Cancer; NICE: National Institute for Health and Care Excellence; SPSS: Statistical Package for the Social Sciences; TVUS: Transvaginal Ultrasound Scan; UK: United Kingdom

Introduction

Ovarian cancer is the second most common gynecological malignancy and the fifth most common in women in the UK with a lifetime risk of 2%. It accounts for 4% of all newly diagnosed cancers in the UK with over 7,000 new cases reported in 2011 [1-3], and it is the most common cause of gynecological cancer death in the UK with 4,271 women dying from the disease in 2012 [4,5]. The 5-year survival rate of this disease is 44% and this varies according to the stage at diagnosis using the International Federation of Gynecology and Obstetrics (FIGO) ovarian cancer staging system, with stage 1 having a 90% 5-year survival and stage 4 with a 4% 5-year survival [4]. Overall mortality is high (despite new treatment) because of its late presentation with more than 80% of patients presenting with advanced (stage 3 or 4) disease [6]. This is largely due to the absence of clearly defined symptoms in its early stages.

Over 90% of ovarian cancers are epithelial in origin and half of those are the serous subtype [7]. Other epithelial cancers include mucinous, clear cell and endometroid (about 10% each). The rest (non-epithelial) are made up of a small number of transitional, Brenner, mixed, undifferentiated and unclassified subtypes [7,8]. The exact cause of ovarian cancer is unknown. Several factors play an important role in its development including heritable (breast cancer susceptibility gene) BRCA1 or BRCA2 gene mutation which is the greatest risk factor and accounts for 5-15% of ovarian cancer cases [9,10], hereditary non-polyposis colon cancer gene (HNPCC) mutation, family history of ovarian cancer and personal history of primary breast cancer and colon cancer [11-19]. Other risk factors for ovarian cancer include age over 45 years (and especially over 60 years), nulliparity, infertility, low parity, early menarche and late menopause or normal menopause with hot flushes [17-19]. Chances of developing ovarian cancer are also greater with long term use of post-menopausal oestrogen-only hormone replacement therapy, high body mass index, endometriosis, and perineal talcum powder application [20-23].

Ovarian cancer cannot be prevented but a woman's risk for developing ovarian cancer can be reduced by factors that interrupt ovulation such as bilateral salpingo-oophorectomy, pregnancy, breastfeeding and oral contraceptive use [17,24,25]. Women with a history of dysmenorrhea and hysterectomy also have a lower risk of ovarian cancer [17].

The signs and symptoms of early disease are vague and associated with other conditions such as irritable bowel syndrome [26]. These include abdominal pain, bloating or distension, nausea, early satiety, anorexia, weight loss, urinary symptoms (urgency and frequency),

abnormal vaginal bleeding and pelvic mass, and most women would have had these symptoms for a while before presentation [27-29]. Ninety-five percent of women with ovarian cancer report having symptoms before diagnosis and there were more symptoms, which occurred more frequently and for a shorter duration of time in ovarian cancer than in benign conditions [26,30]. Of those diagnosed with early stage ovarian cancer, 90% were symptomatic before diagnosis [15].

There is no proven effective screening strategy to detect early-stage ovarian cancer. Cancer antigen 125 (CA-125) is the most commonly used tumour marker in the diagnosis of ovarian cancer but it is limited in both sensitivity and specificity [31-33]. Transvaginal ultrasound (TVUS) and serial measurements of CA-125 are used to monitor treatment response and recurrence of ovarian cancer but have no impact on long term outcomes or mortality rates and might actually cause harm by exposing women without cancer to unnecessary surgery [34]. The exceptions to this are women at high risk of developing ovarian cancer but even in these women, there is no evidence that screening with CA-125 and TVUS reduces their chances of death from ovarian cancer [35]. Recognition of early warning signs of ovarian cancer is therefore important as early detection greatly improves the chances of successful treatment.

The purpose of this study was to evaluate the knowledge and awareness among Gynecology nurses about the signs and symptoms of ovarian cancer and its prevention. It is expected that nurses working in Gynecology will know more about ovarian cancer. They can encourage patients to seek their general practitioner (GP) advice for their symptoms where the GPs following the National Institute for Health and Care Excellence (NICE) recommendations will perform a physical examination and serum CA125 blood test and refer to the hospital if the findings are abnormal [28]. The findings of this study will be useful at educational and policy levels to complement knowledge and awareness about this disease.

Materials and Methods

Study design

A cross-sectional self-administered questionnaire survey was carried out among 60 volunteer nurses working in the Gynecology department at the Royal Derby Hospital in Derby, UK. Of the 75 nurses working in the Gynecology outpatient department (GOPD) and inpatient ward, 60 agreed to take part in the study. This study was carried out and the participants were chosen because they were expected to have more knowledge about ovarian cancer than their non-gynecology colleagues because of the environment they work in and the role they play in the health promotion of women. Verbal informed consent was obtained. The survey took place between April and July 2014 and participation was voluntary and anonymous.

Sample population

Respondents were made up of healthcare assistants (HCAs), staff nurses and clinical nurse specialists (CNS) in Gynecology.

Questionnaire

A questionnaire was designed for the purpose of the study. Minor changes were made after a pilot test with 5 nurses. The self-administered questionnaire, made up of 10 close-ended and open-ended questions took approximately 5 mins to complete and consisted of 3 sections. The first section contained questions about the demographic characteristics of the participants (the job role of the respondents, the department they worked in and the number of years of experience worked).

The second section contained questions about the knowledge of the risk factors, prevention, signs and symptoms of ovarian cancer with multiple responses, which were grouped together for ease of analysis.

The third section contained questions on whether the participants thought the awareness of ovarian cancer was enough and what could be done to increase the awareness. Adequate knowledge of signs and symptoms and risk factors was defined as the ability to name ≥2 ovarian cancer warning signs or symptoms and risk factors. A sample of the questionnaire is shown in the appendix.

Statistical Analysis

Data from each filled questionnaire was entered into the Statistical Package for the Social Sciences (SPSS version 22). Fisher exact test and Chi squared test were used to compare the nominal data. All tests were two-sided.

Results

Sixty questionnaires were filled. Of all the nurses interviewed, 9 were CNS, 33 were staff nurses and 18 were HCAs. Twenty-two nurses worked in the GOPD while 38 worked on the inpatient ward. Twenty-seven nurses had less than 10 years' experience in Gynecology nursing, 18 had 10-20 years' experience, while 15 nurses had over 20 years' experience working in Gynecology (Table 1).

Knowledge of the signs and symptoms of ovarian cancer

The signs and symptoms described by respondents are presented in Table 2. When asked about the signs and symptoms of ovarian cancer, 32 respondents (53%) had good knowledge, while 28 (47%) had inadequate knowledge. Nineteen (59%) of those with good knowledge were staff nurses, while 8 (25%) were HCAs and 5 (16%) were CNS. Also 5 CNS, 19 staff nurses and 8 HCAs had good knowledge but this was not statistically significant (p>0.05).

Significantly more nurses working with inpatients (25 out of 38 nurses, 66%) had knowledge of the signs and symptoms of ovarian cancer than those working in the outpatient department (7 out of 22 nurses, 32%) (p<0.05), and nurses with 11-20 years' experience (78%) had significantly more knowledge of the signs and symptoms of ovarian cancer than either those with less than 10 years' experience (44%) or more than 20 years' experience (40%) (p<0.05).

Thirty-nine nurses (65%) said that ovarian cancer didn't have symptoms in its early stages, 8 nurses (13%) said that it did while 13 nurses (22%) had no idea. Thirty three respondents (55%) knew about the signs and symptoms of ovarian cancer from work alone, 2 (3%) from the media alone, 3 (5%) from knowing someone with ovarian cancer

Demographic features	Number (n)	Percentage (%)
Job role	**n=60**	
Clinical Nurse Specialist	9	15
Sister	33	55
Health Care Assistant	18	30
Nursing unit	**n=60**	
Outpatient department	22	37
Inpatient ward	38	63
Nursing experience	**n=60**	
Less than 10 years	27	45
10-20 years	18	30
More than 20 years	15	25

Table 1: Demographic data of 60 Gynecology nurses of the Royal Derby Hospital surveyed between April and July 2014.

Signs and symptoms	Number (n)	Percentage (%)
Abdominal swelling or bloating	50	83
Abdominal pain or discomfort	32	53
Anorexia	15	25
Asymptomatic	14	23
Irregular bleeding	12	20
Change in bowel habits	11	18
Weight loss	10	17
Early satiety	9	15
Nausea/Vomiting	6	10
Shortness of breath	5	8
Urinary frequency	5	8
Fatigue	4	7
Irritable bowel syndrome	4	7
Ascites	3	5
Feeling unwell	2	3
Abdominal mass	1	2
Backache	1	2
Difficult micturition	1	2
Fever	1	2
Post-menopausal bleeding	1	2
Vaginal discharge	1	2

Table 2: Distribution of signs and symptoms of ovarian cancer as reported by 60 Gynecology nurses of the Royal Derby Hospital surveyed between April and July 2014.

and 22 respondents (37%) from more than one source which included work and one or more of the following–media, courses, books and knowledge of someone with ovarian cancer, but there was no significant difference between the source of information and knowledge of the signs and symptoms of ovarian cancer.

Knowledge of the risk factors for ovarian cancer

Forty-four respondents (70%) reported that they knew the risk factors of ovarian cancer, while 16 (27%) didn't know any. Twenty (46%) out of the forty-four respondents who said they knew these risk factors had good knowledge, while 24 (56%) had inadequate knowledge. Of the 20 respondents who had good knowledge, five (25%) were CNS, 11 (55%) staff nurses and 4 (20%) were HCAs. There was however no statistical difference between the knowledge of the respondents on the risk factors for ovarian cancer based on their job roles, where they worked or number of years' experience in Gynecology (p>0.05) (Table 3).

Knowledge of the prevention and risk reduction of ovarian cancer

Nineteen out of sixty respondents (32%) said that ovarian cancer could be prevented, 18 (30%) said it couldn't be prevented, while 23 (38%) didn't know. Thirty-five (59%) however reported that the risk for developing ovarian cancer could be reduced, 5 (8%) said the risk couldn't be reduced, while 20 nurses (33%) didn't know if the risk for developing ovarian cancer could be reduced. Of those who said the risk for ovarian cancer could be reduced, only 13% had good knowledge of how this could be done and this knowledge wasn't significantly different between the respondents based on their job roles, where they worked or number of years' experience in Gynecology (p>0.05).

Ovarian cancer awareness

Seventy-two percent of the respondents didn't think that there was enough awareness of ovarian cancer, while 5% thought there was (23% didn't know) (Table 4).

Of those who said there wasn't enough awareness, 5% wanted only more media awareness, while 30% wanted more awareness in the media and by distribution of posters and patient information leaflets in Gynecology clinics and GP practices.

Discussion

Identifying signs and symptoms is necessary for the early diagnosis and optimum treatment of ovarian cancer. Early diagnosis is very important as the stage at diagnosis affects survival outcome [31]. Most women with ovarian cancer would have had these non-specific symptoms occurring frequently for months before presentation. Bankhead et al reported that 93% of women diagnosed with ovarian cancer had symptoms before diagnosis [36]; therefore more awareness of the early warning symptoms of ovarian cancer is needed [28]. Nurses play an important role in health promotion and education apart from being involved in the day-to-day management and care of patients. They are easily available to patients than doctors during their hospital stay and so most patients' questions are often aimed at them. Most women are also more willing to discuss symptoms and concerns with nurses - they feel it is easier to talk to the nurses and that they have more time. This means that Gynecology nurses can give the correct support and help women identify the red flags of ovarian cancer [37].

In our study, over half of the nurses described gastrointestinal symptoms as the possible symptoms of ovarian cancer with about one-

Signs and symptoms	Number (n)	Percentage (%)
Family history	29	48
Personal history of breast cancer	15	25
Age >50 years	11	18
Smoking	10	17
Hereditary gene	8	13
Obesity	7	12
Null parity	6	10
Fertility treatment	5	8
Low parity	2	3
Talcum powder	2	3
Early menarche	1	2
Early menopause	1	2
History of other cancers	1	2
Hysterectomy	1	2
Chemotherapy	1	2
Increased ovulation	1	2
Use of the pill	1	2
HRT	1	2
Endometriosis	1	2
Diet	1	2

Table 3: Distribution of the risk factors for ovarian cancer of 60 Gynecology nurses of the Royal Derby Hospital surveyed between April and July 2014.

Awareness	Number (n)	Percentage (%)
Is the awareness of ovarian cancer enough?	n=60	
Yes	3	5
No	43	72
I don't know	14	23
If No, how can it be improved?	n=43	
Media	2	5
Media, posters, patient leaflets, GPs	13	30
No answer	28	65

Table 4: Awareness of ovarian cancer of 60 Gynecology nurses of the Royal Derby Hospital surveyed between April and July 2014.

quarter describing no symptoms. A study by Goff et al. reported the symptoms of ovarian cancer as new onset abdominal pain, bloating early satiety, anorexia and urinary symptoms occurring almost daily and lasting over three weeks [30]. Overall, about half of the nurses knew what the signs and symptoms of ovarian cancer were, but we expected more knowledge from them, this deficiency may be due to a lack of awareness about ovarian cancer.

Successful identification of the symptoms didn't differ according to job role of the respondents, but the nurses working on the wards had more knowledge than those in the Gynecology clinics. This could be due to the fact that the inpatient nurses had more regular and prolonged contact with patients with ovarian cancer than the outpatient nurses. The knowledge of the nurses with between 11-20 years' experience was more than those over 20 years and those less than 20 years meaning that experience is not the same as knowledge. Those with over 20 years' experience may be stuck in their ways and may not think or know they need to learn new things.

From the study, it was clear that a good number of respondents believed that ovarian cancer had no symptoms in its early stage but there is evidence that significant number of women have symptoms in the early stage of ovarian cancer. Smith et al reported that 75% of women diagnosed with ovarian cancer had symptoms and 90% didn't report then because they assumed that these symptoms were due to some menstrual and other minor conditions [38]. About one in three respondents knew what the risk factors of ovarian cancer were and there was a deficiency in the knowledge of how the risk factors for ovarian cancer could be reduced.

Gynecology nurses are specially trained to provide nursing care for women; therefore one can assume that they will have very good knowledge about conditions like ovarian cancer. The results of this study are not characteristically representative of the knowledge of Gynecology nurses in other hospitals in the UK but this study has shown that there is a lack of awareness and this should be addressed as soon as possible.

Clinical nurse specialists were introduced to provide care specific to patient's needs. They are clinical experts in evidence-based nursing practice that also provide support and education for patients to manage their symptoms. They are care managers that act as a link between doctors, specialists and patients [39], and their presence in Gynecology has led to the increase in the provision of high quality and patient-centered care. The expectation is an increased knowledge of the signs and symptoms of diseases with their addition but this was not reflected in this study most probably due to the small size of the population studied. Future plans will include increasing the sample size to obtain more representative data.

Teaching programs on gynecological cancers should be developed, focused on strengthening knowledge, attitude and practices of Gynecology nurses highlighting the signs and symptoms of ovarian cancer. Study days and training courses already exist for Gynecology nurses and these can be improved to incorporate lectures, seminars and workshops on ovarian cancer. Learning goals will be set at the start of the sessions with active participation encouraged, and an assessment session will be included to gauge knowledge and understanding with feedback to the nurses to raise their attitude towards learning. Posters can also be produced to raise nurses' awareness of the importance of ovarian cancer highlighting its signs and symptoms, risk factors and risk reducing ways. These will be displayed in various clinical areas and an audit can be further performed after a period of time to assess their knowledge following the display of the posters.

With evidence that nurses play an important helping role useful

| | | | What are the signs and symptoms of ovarian cancer? | | Total |
			Inadequate knowledge	Good knowledge	
What is your job role?	Clinical Nurse Specialist	Count	4	5	9
		% within job role?	44.40%	55.60%	100.00%
		% of Total	6.70%	8.30%	15.00%
	Staff Nurse	Count	14	19	33
		% within job role?	42.40%	57.60%	100.00%
		% of Total	23.30%	31.70%	55.00%
	Health Care Assistant	Count	10	8	18
		% within job role?	55.60%	44.40%	100.00%
		% of Total	16.70%	13.30%	30.00%
Total		Count	28	32	60
		% within job role?	46.70%	53.30%	100.00%
		% of Total	46.70%	53.30%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.828	2	0.661
Likelihood Ratio	0.828	2	0.661
N of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.117	0.661
	Cramer's V	0.117	0.661
No of Valid Cases		60	

Table 5: Cross tabulation of knowledge of signs and symptoms of ovarian cancer by job role.

in public ovarian cancer education and awareness, it is important that nurses themselves are aware of the red flags of ovarian cancer if they are going to promote health as confidence in one's detection capability is strongly associated with early detection and improving survival rates.

Our results suggest that there is need for improvement in the level of knowledge of ovarian cancer among the Gynecology nurses, and with specially designed training programs directed towards these nurses, awareness can be improved (Tables 5-13).

			What are the signs and symptoms of ovarian cancer?		Total
			Inadequate knowledge	Good knowledge	
What area of gynecology are you working in?	Outpatient department	Count	15	7	22
		% within area of gynecology worked in?	68.20%	31.80%	100.00%
		% of Total	25.00%	11.70%	36.70%
	Inpatient ward	Count	13	25	38
		% within area of gynecology worked in?	34.20%	65.80%	100.00%
		% of Total	21.70%	41.70%	63.30%
Total		Count	28	32	60
		% within area of gynecology worked in?	46.70%	53.30%	100.00%
		% of Total	46.70%	53.30%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.461	1	0.011		
Continuity Correction	5.168	1	0.023		
Likelihood Ratio	6.565	1	0.01		
Fisher's Exact Test				0.016	0.011
No of Valid Cases	60				

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.328	0.011
	Cramer's V	0.328	0.011
No of Valid Cases		60	

Table 6: Cross tabulation of knowledge of signs and symptoms of ovarian cancer by area of gynecology.

			What are the signs and symptoms of ovarian cancer?		Total
			Inadequate knowledge	Good knowledge	
What is your nursing experience?	Less than 10 years	Count	15	12	27
		% nursing experience?	55.60%	44.40%	100.00%
		% of Total	25.00%	20.00%	45.00%
	10-20 years	Count	4	14	18
		% nursing experience?	22.20%	77.80%	100.00%
		% of Total	6.70%	23.30%	30.00%
	More than 20 years	Count	9	6	15
		% nursing experience?	60.00%	40.00%	100.00%
		% of Total	15.00%	10.00%	25.00%
Total		Count	28	32	60
		% nursing experience?	46.70%	53.30%	100.00%
		% of Total	46.70%	53.30%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.25	2	0.044
Likelihood Ratio	6.555	2	0.038
No of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.323	0.044
	Cramer's V	0.323	0.044
No of Valid Cases		60	

Table 7: Cross tabulation of knowledge of signs and symptoms of ovarian cancer by nursing experience.

			If Yes, what are the risk factors?			Total
				Inadequate knowledge	Good knowledge	
What is your job role?	Clinical Nurse Specialist	Count	2	2	5	9
		% within job role?	22.20%	22.20%	55.60%	100.00%
		% of Total	3.30%	3.30%	8.30%	15.00%
	Staff Nurse	Count	9	13	11	33
		% within job role?	27.30%	39.40%	33.30%	100.00%
		% of Total	15.00%	21.70%	18.30%	55.00%
	Health Care Assistant	Count	5	9	4	18
		% within job role?	27.80%	50.00%	22.20%	100.00%
		% of Total	8.30%	15.00%	6.70%	30.00%
Total		Count	16	24	20	60
		% within job role?	26.70%	40.00%	33.30%	100.00%
		% of Total	26.70%	40.00%	33.30%	100.00%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.233	0.518
	Cramer's V	0.164	0.518
No of Valid Cases		60	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.244	4	0.518
Likelihood Ratio	3.216	4	0.522
No of Valid Cases	60		

Table 8: Cross tabulation of knowledge of risk factors for ovarian cancer by job role.

			If Yes, what are the risk factors?			Total
				Inadequate knowledge	Good knowledge	
What area of gynecology are you working in?	Outpatient department	Count	8	8	6	22
		% within area of gynecology worked in	36.40%	36.40%	27.30%	100.00%
		% of Total	13.30%	13.30%	10.00%	36.70%
	Inpatient ward	Count	8	16	14	38
		% within area of gynecology worked in	21.10%	42.10%	36.80%	100.00%
		% of Total	13.30%	26.70%	23.30%	63.30%
Total		Count	16	24	20	60
		% within area of gynecology worked in	26.70%	40.00%	33.30%	100.00%
		% of Total	26.70%	40.00%	33.30%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.722	2	0.423
Likelihood Ratio	1.691	2	0.429
No of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.169	0.423
	Cramer's V	0.169	0.423
No of Valid Cases		60	

Table 9: Cross tabulation of knowledge of risk factors for ovarian cancer by area of gynecology.

			If Yes, what are the risk factors?			Total
				Inadequate knowledge	Good knowledge	
What is your nursing experience?	Less than 10 years	Count	7	13	7	27
		% within nursing experience?	25.90%	48.10%	25.90%	100.00%
		% of Total	11.70%	21.70%	11.70%	45.00%
	10-20 years	Count	3	7	8	18
		% within nursing experience?	16.70%	38.90%	44.40%	100.00%
		% of Total	5.00%	11.70%	13.30%	30.00%
	More than 20 years	Count	6	4	5	15
		% within nursing experience?	40.00%	26.70%	33.30%	100.00%
		% of Total	10.00%	6.70%	8.30%	25.00%
Total		Count	16	24	20	60
		% within nursing experience?	26.70%	40.00%	33.30%	100.00%
		% of Total	26.70%	40.00%	33.30%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.912	4	0.418
Likelihood Ratio	3.918	4	0.417
N of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.255	0.418
	Cramer's V	0.181	0.418
No of Valid Cases		60	

Table 10: Cross tabulation of knowledge of risk factors for ovarian cancer by nursing experience.

			If Yes, how can it be reduced?				Total
			Some knowledge	Good knowledge	No answer		
What is your job role?	Clinical Nurse Specialist	Count	3	2	2	2	9
		% within job role?	33.30%	22.20%	22.20%	22.20%	100.00%
		% of Total	5.00%	3.30%	3.30%	3.30%	15.00%
	Staff Nurse	Count	12	7	4	10	33
		% within job role?	36.40%	21.20%	12.10%	30.30%	100.00%
		% of Total	20.00%	11.70%	6.70%	16.70%	55.00%
	Health Care Assistant	Count	9	3	2	4	18
		% within job role?	50.00%	16.70%	11.10%	22.20%	100.00%
		% of Total	15.00%	5.00%	3.30%	6.70%	30.00%
Total		Count	24	12	8	16	60
		% within job role?	40.00%	20.00%	13.30%	26.70%	100.00%
		% of Total	40.00%	20.00%	13.30%	26.70%	100.00%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.173	0.937
	Cramer's V	0.123	0.937
No of Valid Cases		60	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.806	6	0.937
Likelihood Ratio	1.707	6	0.945
No of Valid Cases	60		

Table 11: Cross tabulation of knowledge of methods of reducing risk factors for ovarian cancer by job role.

| | | | If Yes, how can it be reduced? | | | Total |
			Some knowledge	Good knowledge	No answer	
What area of gynaecology are you working in?	Outpatient department	Count	10	5	3	4	22
		% within area of gynecology worked in?	45.50%	22.70%	13.60%	18.20%	100.00%
		% of Total	16.70%	8.30%	5.00%	6.70%	36.70%
	Inpatient ward	Count	14	7	5	12	38
		% within area of gynecology worked in?	36.80%	18.40%	13.20%	31.60%	100.00%
		% of Total	23.30%	11.70%	8.30%	20.00%	63.30%
Total		Count	24	12	8	16	60
		% within area of gynecology worked in?	40.00%	20.00%	13.30%	26.70%	100.00%
		% of Total	40.00%	20.00%	13.30%	26.70%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.328	3	0.723
Likelihood Ratio	1.377	3	0.711
No of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.149	0.723
	Cramer's V	0.149	0.723
No of Valid Cases		60	

Table 12: Cross tabulation of knowledge of methods of reducing risk factors for ovarian cancer by area of gynecology.

| | | | If Yes, how can it be reduced? | | | Total |
			Some knowledge	Good knowledge	No answer	
What is your nursing experience?	Less than 10 years	Count	12	5	2	8	27
		% within nursing experience?	44.40%	18.50%	7.40%	29.60%	100.00%
		% of Total	20.00%	8.30%	3.30%	13.30%	45.00%
	10-20 years	Count	6	4	4	4	18
		% within nursing experience?	33.30%	22.20%	22.20%	22.20%	100.00%
		% of Total	10.00%	6.70%	6.70%	6.70%	30.00%
	More than 20 years	Count	6	3	2	4	15
		% within nursing experience?	40.00%	20.00%	13.30%	26.70%	100.00%
		% of Total	10.00%	5.00%	3.30%	6.70%	25.00%
Total		Count	24	12	8	16	60
		% within nursing experience?	40.00%	20.00%	13.30%	26.70%	100.00%
		% of Total	40.00%	20.00%	13.30%	26.70%	100.00%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.407	6	0.879
Likelihood Ratio	2.377	6	0.882
N of Valid Cases	60		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.2	0.879
	Cramer's V	0.142	0.879
N of Valid Cases		60	

Table 13: Cross tabulation of knowledge of methods of reducing risk factors for ovarian cancer by nursing experience.

Limitations of this Study

A limitation of this study was the sample size. We felt that the non-significant results were probably due to the small sample size and might not be representative of a larger population.

The study was conducted by structured interview. The interviews were therefore not flexible and an interview schedule had to be followed and impromptu questions couldn't be asked. The closed questions in the interview made it difficult to obtain detailed data on attitudes and opinions.

Acknowledgement

Funding

Conflicts of Interest

Conflicts of interest: none to declare

Informed Consent

Voluntary participation and informed consent was obtained from all the participants. A written statement regarding the survey was provided informing the participants of the survey and its anonymity.

References

1. Ferlay JSI, Ervik M (2013) Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11. Lyon, France: International Agency for Research on Cancer.

2. National Cancer Intelligence Network Cancer e-Atlas Accessed January 2014.

3. Cancer Statistics Registrations, England (Series MB) (2012) No. 43.

4. The National Cancer Registration Service, Eastern Office (2009).

5. Network NCI (2012) Overview of Ovarian Cancer in England: Incidence, Mortality and Survival. National Cancer Intelligence Network.

6. Nossov V, Amneus M, Su F, Lang J, Janco JM, et al. (2008) The early detection of ovarian cancer: from traditional methods to proteomics. Can we really do better than serum CA-125? Am J Obstet Gynecol 199: 215-223.

7. Wang V, Li C, Lin M, Welch W, Bell D, et al. (2005) Ovarian cancer is a heterogeneous disease. Cancer Genet Cytogenet 161: 170-173.

8. Chen VW, Ruiz B, Killeen JL, Coté TR, Wu XC, et al. (2003) Pathology and classification of ovarian tumors.Cancer 97: 2631-2642.

9. Russo A, Calò V, Bruno L, Rizzo S, Bazan V, et al. (2009) Hereditary ovarian cancer. Crit Rev Oncol Hematol 69: 28-44.

10. South SA, Vance H, Farrell C, DiCioccio RA, Fahey C, et al. (2009) Consideration of hereditary nonpolyposis colorectal cancer in BRCA mutation-negative familial ovarian cancers. Cancer 115: 324-333.

11. Prat J, Ribé A, Gallardo A (2005) Hereditary ovarian cancer. Hum Pathol 36: 861-870.

12. Piver MS, Goldberg JM, Tsukada Y, Mettlin CJ, Jishi MF, et al. (1996) Characteristics of familial ovarian cancer: a report of the first 1,000 families in the Gilda Radner Familial Ovarian Cancer Registry. Eur J Gynaecol Oncol 17: 169-176.

13. Lynch HT, Fitzsimmons ML, Conway TA, Bewtra C, Lynch J (1990) Hereditary carcinoma of the ovary and associated cancers: a study of two families. Gynecol Oncol 36: 48-55.

14. Lynch HT, Watson P, Bewtra C, Conway TA, Hippee CR, et al. (1991) Hereditary ovarian cancer. Heterogeneity in age at diagnosis. Cancer 67: 1460-1466.

15. Bergfeldt K, Rydh B, Granath F, Grönberg H, Thalib L, et al. (2002) Risk of ovarian cancer in breast-cancer patients with a family history of breast or ovarian cancer: a population-based cohort study. Lancet 360: 891-894.

16. Gayther SA, Pharoah PD (2010) The inherited genetics of ovarian and endometrial cancer. Curr Opin Genet Dev 20: 231-238.

17. McGowan L, Norris HJ, Hartge P, Hoover R, Lesher L (1988) Risk factors in ovarian cancer. Eur J Gynaecol Oncol 9: 195-199.

18. Sueblinvong T, Carney ME (2009) Current understanding of risk factors for ovarian cancer. Curr Treat Options Oncol 10: 67-81.

19. Booth M, Beral V, Smith P (1989) Risk factors for ovarian cancer: a case-control study. Br J Cancer 60: 592-598.

20. Lacey JV Jr, Mink PJ, Lubin JH, Sherman ME, Troisi R, et al. (2002) Menopausal hormone replacement therapy and risk of ovarian cancer. JAMA 288: 334-341.

21. Melin A, Sparén P, Bergqvist A (2007) The risk of cancer and the role of parity among women with endometriosis. Hum Reprod 22: 3021-3026.

22. Borgfeldt C, Andolf E (2004) Cancer risk after hospital discharge diagnosis of benign ovarian cysts and endometriosis. Acta Obstet Gynecol Scand 83: 395-400.

23. Huncharek M, Geschwind JF, Kupelnick B (2003) Perineal application of cosmetic talc and risk of invasive epithelial ovarian cancer: a meta-analysis of 11,933 subjects from sixteen observational studies. Anticancer Res 23: 1955-1960.

24. Colombo N, Peiretti M, Parma G, Lapresa M, Mancari R, et al. (2010) Newly diagnosed and relapsed epithelial ovarian carcinoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol 21 Suppl 5: v23-30.

25. Rebbeck TR, Kauff ND, Domchek SM (2009) Meta-analysis of risk reduction estimates associated with risk-reducing salpingo-oophorectomy in BRCA1 or BRCA2 mutation carriers. J Natl Cancer Inst 101: 80-87.

26. Goff BA, Mandel L, Muntz HG, Melancon CH (2000) Ovarian carcinoma diagnosis. Cancer 89: 2068-2075.

27. Yang Z, Wei C, Luo Z, Li L (2013) Clinical value of serum human epididymis protein 4 assay in the diagnosis of ovarian cancer: a meta-analysis. Onco Targets Ther 6: 957-966.

28. Ovarian cancer: The recognition and initial management of ovarian cancer (2011) NICE guidelines.

29. Buys SS, Partridge E, Greene MH, Prorok PC, Reding D, et al. (2005) Ovarian cancer screening in the Prostate, Lung, Colorectal and Ovarian (PLCO) cancer screening trial: findings from the initial screen of a randomized trial. Am J Obstet Gynecol 193: 1630-1639.

30. Goff BA, Mandel LS, Melancon CH, Muntz HG (2004) Frequency of symptoms of ovarian cancer in women presenting to primary care clinics. JAMA 291: 2705-2712.

31. Jacobs IJ, Menon U (2004) Progress and challenges in screening for early detection of ovarian cancer. Mol Cell Proteomics 3: 355-366.

32. Wilder JL, Pavlik E, Straughn JM, Kirby T, Higgins RV, et al. (2003) Clinical implications of a rising serum CA-125 within the normal range in patients with epithelial ovarian cancer: a preliminary investigation. Gynecol Oncol 89: 233-235.

33. DePriest PD, DeSimone CP (2003) Ultrasound screening for the early detection of ovarian cancer. J Clin Oncol 21: 194s-199s.

34. Moyer VA; US. Preventive Services Task Force. (2012) Screening for ovarian cancer: U.S. Preventive Services Task Force reaffirmation recommendation statement. Ann Intern Med 157: 900-904.

35. Rosenthal AN, Menon U, Jacobs IJ (2006) Screening for ovarian cancer. Clin Obstet Gynecol 49: 433-447.

36. Bankhead CR, Kehoe ST, Austoker J (2005) Symptoms associated with diagnosis of ovarian cancer: a systematic review. BJOG 112: 857-865.

37. Tessaro I (1997) The natural helping role of nurses in promoting healthy behaviors in communities. Adv Pract Nurs Q 2: 73-78.

38. Smith EM, Anderson B (1985) The effects of symptoms and delay in seeking diagnosis on stage of disease at diagnosis among women with cancers of the ovary. Cancer 56: 2727-2732.

39. Ciccone MM, Aquilino A, Cortese F, Scicchitano P, Sassara M, et al. (2010) Feasibility and effectiveness of a disease and care management model in the primary health care system for patients with heart failure and diabetes. Vasc Health Risk Manag 6: 297-305.