

Knowledge of Risk Factors, Symptoms and Barriers to Seeking Medical Help for Cervical Cancer among Omani Women Attending Sultan Qaboos University Hospital

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معرفة عوامل الخطر والأعراض والحواجز التي تحول دون طلب المساعدة الطبية لسرطان عنق الرحم بين النساء العمانيات الحاضرات الى مستشفى جامعة السلطان قابوس

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ABSTRACT: Objectives: This study aimed to assess knowledge and attitudes among Omani woman regarding cervical cancer risk factors and symptoms as well as barriers to them seeking medical help. **Methods:** This cross-sectional study was conducted between December 2017 and March 2018 at the Sultan Qaboos University Hospital (SQUH) in Muscat, Oman. A validated Arabic-language version of the Cervical Cancer Awareness Measure questionnaire was used to collect data from 550 Omani women visiting SQUH during the study period. **Results:** A total of 490 women participated (response rate: 89.1%) in this study. Overall, the women demonstrated low levels of knowledge of cervical cancer risk factors and symptoms (28.5% and 45.0%, respectively). The most frequently recognised risk factor was having many children (36.1%), while the most recognised symptom was unexplained vaginal bleeding (69.8%). Women reported that being too scared was the greatest barrier to seeking medical help (68.0%). Various factors were significantly associated with greater knowledge of cervical cancer signs and symptoms including education level (odds ratio [OR] = 2.85; 95% confidence interval [CI]: 1.0–8.22; $P < 0.05$), income (OR = 4.34; 95% CI: 1.70–11.12; $P < 0.05$), parity (OR = 3.59; 95% CI: 1.38–9.36; $P < 0.05$) and a family history of cancer (OR = 1.71; CI: 1.0–2.90; $P < 0.05$). **Conclusion:** Overall, Omani women demonstrated poor knowledge with regards to cervical cancer; in addition, they identified several emotional barriers to seeking medical help. Healthcare practitioners should reassure female patients to encourage care-seeking behaviour. A national screening programme is also recommended to increase awareness and early diagnosis of cervical cancer in Oman.

Keywords: Cervical Cancer; Knowledge; Awareness; Risk Factors; Health Care Seeking Behavior; Women; Oman.

المخلص: الهدف: هدفت هذه الدراسة إلى تقييم المعرفة والمواقف لدى المرأة العمانية فيما يتعلق بعوامل الخطر والأعراض المرتبطة بسرطان عنق الرحم بالإضافة إلى العوائق التي تحول دون طلب المساعدة الطبية. **الطريقة:** أجريت هذه الدراسة المقطعية بين ديسمبر 2017 ومارس 2018 في مستشفى جامعة السلطان قابوس في مسقط، عمان. تم استخدام نسخة معتمده باللغة العربية من استبيان قياس الوعي بسرطان عنق الرحم لجمع بيانات من 550 امرأة عمانية زارت مستشفى جامعة السلطان قابوس خلال فترة الدراسة. **النتائج:** شاركت ما مجموعه 490 امرأة (معدل الاستجابة: 89.1%). بشكل عام، أظهرت النساء مستويات منخفضة من المعرفة بعوامل خطر الإصابة بسرطان عنق الرحم وأعراضه (28.5% و 45.0% على التوالي). كان عامل الخطر الأكثر شيوعاً هو إنجاب العديد من الأطفال (36.1%)، في حين أن أكثر الأعراض المعروفة كان النزيف المهبل غير المبرر (69.8%). ذكرت النساء أن الخوف الشديد كان أكبر عائق أمام طلب المساعدة الطبية (68.0%). ارتبطت عوامل مختلفة ذات دلالة إحصائية بمعرفة أكبر بعوامل وأعراض سرطان عنق الرحم، بما في ذلك مستوى التعليم (OR = 2.85; 95% CI: 1.0–8.22; $P < 0.05$)، فاصل الثقة (OR = 4.34; 95% CI: 1.70–11.12; $P < 0.05$)، عدد مرات الحمل (OR = 3.59; 95% CI: 1.38–9.36; $P < 0.05$)، والتاريخ العائلي لسرطان (OR = 1.71; 95% CI: 1.0–2.90; $P < 0.05$). **الخلاصة:** بشكل عام، أظهرت النساء العمانيات ضعف المعرفة فيما يتعلق بسرطان عنق الرحم. بالإضافة إلى ذلك، حددت النساء العمانيات العديد من الحواجز النفسية لطلب المساعدة الطبية. يجب على ممارسي واطباء الرعاية الصحية طمأنة المريضات ومحاولة تشجيع سلوك طلب الرعاية الصحية. توصى الدراسة أيضاً بضرورة وجود برنامج فحص وطني لسرطان عنق الرحم في عمان وذلك لزيادة الوعي والتشخيص المبكر لسرطان عنق الرحم في سلطنة عمان. **الكلمات المفتاحية:** سرطان عنق الرحم؛ المعرفة؛ الوعي؛ عوامل الخطر؛ سلوك البحث عن الرعاية الصحية؛ نساء؛ عُمان.

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ADVANCES IN KNOWLEDGE

- Omani women have low levels of knowledge regarding cervical cancer.
- Omani women reported several emotional barriers to seeking early medical attention for signs and symptoms of cervical cancer.

APPLICATION TO PATIENT CARE

- Healthcare workers in Oman should try to educate female patients regarding cervical cancer.
- Decision-makers should be aware of potential emotional barriers affecting care-seeking behaviours when raising awareness about cervical cancer.

CERVICAL CANCER IS THE FOURTH MOST common cancer affecting women worldwide. With an estimated 570,000 new cases diagnosed in 2018, cervical cancer represents 6.6% of all cancers affecting women.¹ The majority of deaths (90%) from cervical cancer occur in low- and middle-income countries, largely due to a lack of cancer screening programmes, poor health infrastructure and delays in diagnosis.^{1,2} Most women diagnosed with cervical cancer in low- and middle-income countries are aged between 15–49 years old.³

The main risk factor for cervical cancer is human papillomavirus (HPV) infection, particularly type 16.⁴ The virus can be detected in approximately 96.6% of women with cervical cancer; as such, prophylactic HPV vaccines could prevent up to 70–80% of cervical cancer cases.⁵ Other risk factors include having a history of sexually-transmitted diseases (STDs) or immunosuppression, engaging in sex at an early age (i.e. before 17 years old) or with multiple partners and using oral contraceptives or smoking cigarettes.^{6,7}

Knowledge of cancer symptoms among members of the public can prompt early medical help-seeking behaviours, thereby leading to earlier diagnosis and improved survival rates and prognosis.⁸ However, studies conducted in both developed and developing countries have shown that women have poor knowledge regarding cervical cancer risk factors and symptoms, which leads to many patients being diagnosed at later stages of the disease.^{9,10} In Middle Eastern countries, previous studies have reported several barriers to cervical cancer screening including poor knowledge of and negative attitudes towards risk factors (particularly HPV infection), physicians not referring or encouraging patients to take part in screening, fear of the results and concern regarding the gender of the doctor performing the test.^{11–13}

Although government-funded cervical screening services are currently available in Oman, they are only performed at the patient's request or if ordered by a doctor; moreover, as in other Middle Eastern countries, there is no national programme to promote cervical cancer screening or HPV vaccination.^{14,15} A recent study of female medical staff, university graduate students and gynaecology

outpatients in Oman revealed low levels of cervical cancer-related knowledge and awareness of cervical cancer screening.¹⁶ Therefore, the aim of this study was to identify levels of knowledge among Omani women regarding cervical cancer-related risk factors, symptoms and barriers to seeking medical help.

Methods

This cross-sectional study was conducted between December 2017 and March 2018 at the Sultan Qaboos University Hospital (SQUH), a tertiary care teaching hospital located in Muscat, Oman, which receives patients referred from primary healthcare centres located in Muscat Governorate and governmental hospitals throughout the country. This institution was selected for the study due to the high likelihood of recruiting a heterogeneous group of women originating from different regions of Oman and for the sake of convenience in collecting data.

A convenience sample was recruited of adult Omani female patients of >18 years of age attending SQUH as well as those accompanying them. The required sample size was calculated to be 400 based on the assumption that Omani women would have moderate knowledge of cervical cancer (50%), with a precision of 5% and a confidence level of 95%. However, in order to allow for missing responses, a total of 550 women were recruited. Seriously ill women or those who were in pain were excluded from the study.

A validated Arabic-language version of the Cervical Cancer Awareness Measure (CCAM) questionnaire was developed to collect data from the participants. The original CCAM is an English-language questionnaire that includes questions to measure awareness of cervical cancer risk factors (11 items), warning symptoms and anticipated time before seeking medical help for each symptom (12 items) and barriers to seeking medical help (10 items). The survey has been validated in multiple forms (i.e. by telephone, during face-to-face interviews and when self-completed) with high validity and test-retest reliability.^{17–19}

In order to be relevant to the Omani population, the sociodemographic section of the CCAM was

Table 1: Sociodemographic characteristics and awareness of cervical cancer among Omani women attending Sultan Qaboos University Hospital (N = 490)

Variable	n (%)
Age in years (n = 490)	
18–30	276 (56.3)
>30	214 (43.7)
Marital status (n = 490)	
Single	110 (22.5)
Married	370 (75.5)
Divorced/widowed	10 (2.0)
Education level (n = 490)	
None	33 (6.8)
Secondary	127 (25.9)
University	302 (61.6)
Postgraduate and above	28 (5.7)
Monthly income in OMR (n = 471)	
<500	73 (15.5)
500–1,000	202 (42.9)
1,000–2,000	147 (31.2)
>2,000	49 (10.4)
Number of marriages (n = 484)	
0	146 (30.2)
1	328 (67.8)
2	7 (1.4)
>2	3 (0.6)
Duration of marriage in years (n = 355)	
1–5	144 (40.6)
6–11	96 (27.0)
16–20	67 (18.9)
>20	48 (13.5)
Number of pregnancies (n = 416)	
0	94 (22.6)
1	80 (19.2)
2–4	139 (33.4)
>4	103 (24.8)
Do you know about cervical cancer? (n = 488)	
Yes	181 (37.1)
No	307 (62.9)
If yes, what was the source of your knowledge? (n = 263)	
Media (e.g. TV, newspapers or lectures)	137 (52.1)
OBGYN doctor	72 (27.4)
Relatives/friends	18 (6.9)
Family doctor	9 (3.4)
Social media	8 (3.0)
Other	19 (7.2)

How common is cervical cancer in Oman? (n = 484)	
Common	112 (23.1)
Not common	80 (16.5)
I don't know	292 (60.4)
Do you think that cervical cancer can be cured if it is detected earlier? (n = 487)	
Yes	390 (80.1)
No	4 (0.8)
I don't know	93 (19.1)

OMR = Omani rials; TV = television; OBGYN = obstetrics and gynaecology.

modified and the entire questionnaire was translated to Arabic using forwards-backwards translation methods. A pilot study of 50 women was conducted to assess the clarity, cultural validity and reliability of the translated questionnaire. Based on a standardised item analysis, the internal consistency of the Arabic CCAM questionnaire was high (Cronbach's $\alpha = 0.90$).

Subsequently, two female medical students were trained to distribute and collect the translated CCAM questionnaires from the participants. Women who were literate were asked to complete the survey themselves, whereas the questionnaire was administered to illiterate participants by the medical students via face-to-face interviews. The survey was conducted either in the waiting areas of the outpatient clinic or in the external resting area outside SQUH.

Data were analysed using the Statistical Package for the Social Sciences (SPSS), Version 22.0 (IBM Corp., Armonk, New York, USA). For the descriptive analysis, findings were presented as numbers and percentages. A Chi-square test was used to determine associations between demographic factors and knowledge of cervical cancer signs and symptoms. A multinomial analysis was conducted to adjust for various factors. A *P* value of <0.05 was considered statistically significant.

This study was approved by the Medical Research and Ethics Committee of the College of Medicine and Health Sciences of Sultan Qaboos University in Muscat, Oman (MREC#1190). All women provided written informed consent before participating in the study, following a detailed explanation of the study's purposes and nature. Women who did not agree to participate in the study were informed that this decision would not affect their medical care.

Results

A total of 490 women participated in the study (response rate: 89.1%). The mean age was 30.3 ± 7.6 years old (range: 18–68 years). The majority of women

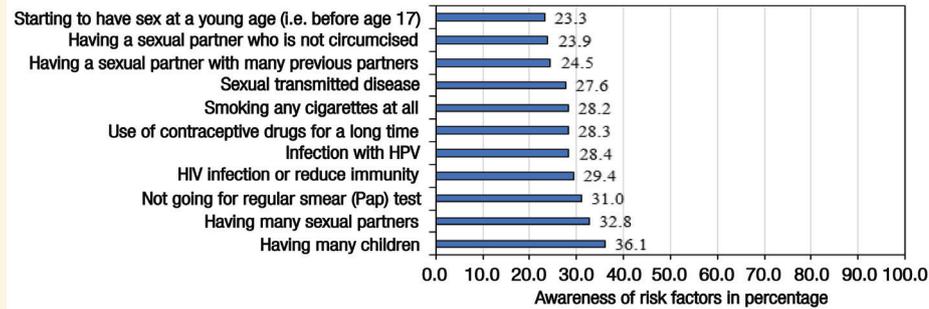


Figure 1: Awareness of cervical cancer risk factors among Omani women attending Sultan Qaboos University Hospital (N = 490). HPV = human papillomavirus.

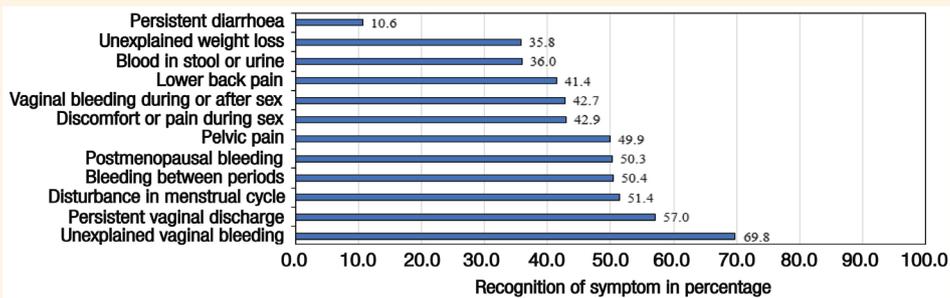


Figure 2: Recognition of cervical cancer symptoms among Omani women attending Sultan Qaboos University Hospital (N = 490).

Table 2: Anticipated time to seek medical help in response to possible cervical cancer symptoms among Omani women attending Sultan Qaboos University Hospital (N = 490)

Risk factor	Time before seeking help in percentage				
	Within two weeks	Within a month	Within six months	After six months	Never
Unexplained vaginal bleeding	88.8	5.1	1.8	0.6	3.7
Blood in stool or urine	85.0	6.2	3.5	1.2	4.1
Vaginal bleeding during or after sex	77.6	6.8	6.2	2.1	7.3
Persistent vaginal discharge	76.6	10.3	5.7	1.6	5.7
Postmenopausal bleeding	76.6	8.4	8.0	2.5	4.5
Persistent diarrhoea	72.2	6.2	6.0	2.7	13.0
Pelvic pain	70.8	11.3	10.7	1.0	6.2
Bleeding between periods	67.7	10.7	13.8	1.6	6.2
Discomfort or pain during sex	64.3	8.5	11.6	2.9	12.7
Lower back pain	58.5	13.7	15.1	3.1	9.6
Disturbance in menstrual cycle	48.9	12.1	24.6	4.9	9.4
Unexplained weight loss	48.2	10.9	16.0	6.1	18.9

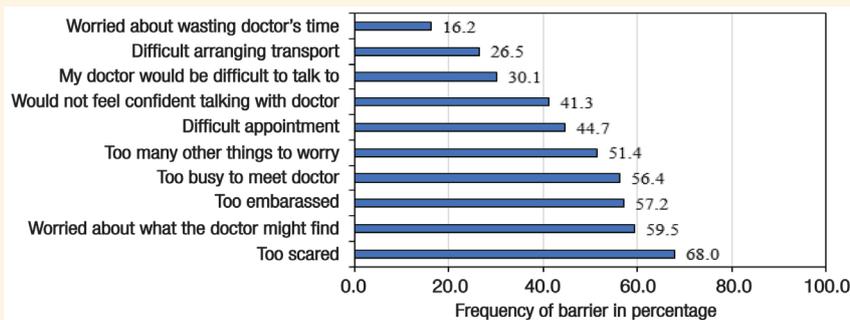


Figure 3: Reported barriers to seeking medical help for cervical cancer symptoms among Omani women attending Sultan Qaboos University Hospital (N = 490).

Table 3: Associations between sociodemographic variables and knowledge regarding cervical cancer signs and symptoms among Omani women attending Sultan Qaboos University Hospital (N = 490)

Variable	Sign or symptom											
	OR (95% CI)											
	Unexplained vaginal bleeding	Persistent vaginal discharge	Pelvic pain	Lower back pain	Discomfort or pain during sex	Blood in stool or urine	Post-menopausal bleeding	Unexplained weight loss	Disturbance in menstrual cycle	Persistent diarrhoea	Bleeding between periods	Vaginal bleeding during or after sex
Age in years												
≤30	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
>30	0.84 (0.47-1.48)	0.89 (0.53-1.48)	1.57 (0.94-2.61)	1.14 (0.69-1.90)	1.05 (0.63-1.75)	1.60 (0.56-4.53)	0.85 (0.51-1.42)	0.95 (0.56-1.62)	0.57 (0.34-0.94)*	1.64 (0.72-3.75)	1.19 (0.71-1.99)	1.24 (0.74-2.10)
Education level												
None	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Secondary	2.67 (0.94-7.5)	0.76 (0.29-2.0)	1.48 (0.55-4.01)	2.03 (0.73-5.66)	1.30 (0.49-3.47)	1.60 (0.56-4.53)	2.60 (0.94-7.19)	1.10 (0.38-3.20)	1.92 (0.71-5.23)	0.72 (0.17-3.40)	1.99 (0.72-5.53)	1.86 (0.65-5.34)
University/postgraduate	2.84 (0.95-8.49)	0.98 (0.35-2.71)	2.33 (0.83-6.54)	2.12 (0.73-6.17)	2.03 (0.72-5.68)	2.34 (0.79-6.93)	2.85 (1.0-8.22)*	1.22 (0.41-3.69)	2.2 (0.80-6.38)	0.69 (0.15-3.26)	2.78 (0.96-8.03)	2.23 (0.75-6.68)
Marital status												
Single	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Married	1.04 (0.42-2.61)	1.03 (0.42-2.52)	0.98 (0.41-2.37)	1.14 (0.46-2.81)	2.21 (0.89-5.50)	1.09 (0.46-2.63)	1.18 (0.49-2.86)	1.52 (0.72-3.20)	0.66 (0.27-1.60)	9.36 (1.18-49.39)*	2.58 (1.05-6.35)*	2.89 (1.06-7.87)*
Monthly income in OMR												
<500	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
500-1,000	2.58 (1.3-5.08)*	2.24 (1.15-4.34)*	1.19 (0.62-2.29)	0.72 (0.37-1.40)	1.16 (0.59-2.28)	0.81 (0.41-1.60)	1.59 (0.82-3.09)	1.52 (0.72-3.20)	1.21 (0.63-2.34)	1.16 (0.38-3.54)	1.84 (0.93-3.65)	1.53 (0.75-3.15)
1,000-2,000	2.43 (1.11-5.31)*	2.0 (0.95-4.2)	1.08 (0.52-2.27)	0.99 (0.47-2.07)	1.23 (0.58-2.62)	0.94 (0.44-2.02)	1.63 (0.77-3.44)	2.33 (1.03-5.27)*	1.14 (0.55-2.39)	1.13 (0.31-4.09)	1.91 (0.89-4.09)	2.13 (0.96-4.72)
>2,000	4.09 (1.49-11.2)*	2.42 (1.01-5.83)*	1.28 (0.54-3.04)	1.45 (0.61-3.47)	1.97 (0.82-4.77)	1.03 (0.42-2.50)	2.82 (1.16-6.90)*	3.43 (1.36-8.65)*	1.86 (0.78-4.44)	4.79 (1.30-17.61)*	4.37 (1.75-10.92)*	4.34 (1.70-11.12)*
Number of pregnancies												
0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	1.13 (0.49-2.59)	0.81 (0.36-1.79)	0.91 (0.41-2.0)	1.03 (0.46-2.30)	0.73 (0.33-1.61)	0.78 (0.35-1.72)	1.07 (0.49-2.36)	0.64 (0.28-1.46)	1.05 (0.48-2.31)	0.29 (0.10-0.82)*	0.67 (0.31-1.48)	1.37 (0.61-3.05)
2-4	1.55 (0.71-3.38)	0.87 (0.41-1.84)	0.92 (0.44-1.94)	1.14 (0.54-2.41)	0.80 (0.38-1.69)	0.49 (0.23-1.04)	1.48 (0.70-3.11)	0.79 (0.37-1.69)	1.12 (0.53-2.34)	0.17 (0.06-0.47)*	0.63 (0.30-1.31)	1.07 (0.50-2.27)
>4	3.59 (1.38-9.36)*	1.40 (0.60-3.28)	0.62 (0.27-1.43)	0.82 (0.35-1.90)	1.51 (0.66-3.49)	1.01 (0.44-2.33)	2.39 (1.02-5.58)*	0.89 (0.38-2.09)	1.63 (0.71-3.75)	0.16 (0.05-0.50)*	0.78 (1.13-0.49)	1.28 (0.55-2.96)
Family history of cancer												
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Yes	1.02 (0.56-1.88)	1.33 (0.77-2.28)	1.07 (0.63-1.81)	1.01 (0.60-1.72)	1.12 (0.66-1.90)	0.84 (0.48-1.46)	1.21 (0.71-2.07)	1.71 (1.0-2.90)*	1.26 (0.74-2.15)	0.94 (0.41-2.14)	0.78 (0.46-1.34)	1.23 (0.71-2.11)

OR = odds ratio; CI = confidence interval; OMR = Omani rials. *Significant at P < 0.05.

were married (75.5%), with 40.6% having been married for five years or less. Most women had been educated to a university or postgraduate level (67.3%) and the majority (99.8%) were non-smokers. Few women (20.3%) had a family history of cancer; of these, 30.3% knew someone with breast cancer [Table 1].

A bivariate analysis showed that average overall awareness of cervical cancer risk factors was low (28.5%). The most recognised risk was having many children (36.1%) while the least recognised was having sex at a young age (23.3%) [Figure 1]. In addition, average overall awareness of cervical symptoms was low (45.0%). The most commonly recognised symptom was unexplained vaginal bleeding (69.8%); in contrast, persistent diarrhoea was least frequently recognised (10.6%) [Figure 2]. Most participants stated that they would seek medical help within two weeks when faced with each cervical cancer sign or symptom (48.2–88.8%) [Table 2]. Overall, the most commonly reported barriers to seeking medical help were emotional barriers (i.e. being too scared or embarrassed to seek medical help or being afraid of the doctor's findings), while service-related barriers (i.e. difficulty making an appointment or relating their concerns to the doctor) were infrequently noted [Figure 3].

After adjusting for other variables, a multivariate analysis showed that older women were significantly less likely than their younger counterparts to recognise menstrual cycle disturbances as a symptom of cervical cancer (odds ratio [OR] = 0.57; 95% confidence interval [CI]: 0.34–0.94; $P < 0.05$). However, women with a university or postgraduate degree were significantly more likely than women with no formal education to be aware of postmenopausal bleeding as a symptom of cervical cancer (OR = 2.85; 95% CI: 1.0–8.22; $P < 0.05$). Married women were significantly more likely than single women to recognise persistent diarrhoea (OR = 9.36; 95% CI: 1.18–49.39; $P < 0.05$), bleeding between periods (OR = 2.58; 95% CI: 1.05–6.35; $P < 0.05$) and vaginal bleeding during or after sex (OR = 2.89; 95% CI: 1.06–7.87; $P < 0.05$) as symptoms of cervical cancer [Table 3].

Participants in a higher income bracket were significantly more likely than women with lower incomes to demonstrate awareness of various symptoms of cervical cancer including unexplained vaginal bleeding (OR = 4.09; 95% CI: 1.49–11.2; $P < 0.05$), persistent vaginal discharge (OR = 2.42; 95% CI: 1.01–5.83; $P < 0.05$), postmenopausal bleeding (OR = 2.82; 95% CI: 1.16–6.90; $P < 0.05$), unexplained weight loss (OR = 3.43; 95% CI: 1.36–8.65; $P < 0.05$), persistent diarrhoea (OR = 4.79; 95% CI: 1.30–17.61; $P < 0.05$), bleeding between periods (OR = 4.37; 95% CI: 1.75–10.92; $P < 0.05$) and vaginal bleeding during

or after sex (OR = 4.34; 95% CI= 1.70–11.12; $P < 0.05$) [Table 3].

Parity was also found to be a significant factor for awareness with multiparous women significantly more likely than nulliparous women to recognise unexplained vaginal bleeding (OR = 3.59; 95% CI: 1.38–9.36; $P < 0.05$) and postmenopausal bleeding (OR = 2.39; 95% CI: 1.02–5.58; $P < 0.05$) as symptoms of cervical cancer. However, the reverse was true when it came to awareness of persistent diarrhoea as a symptom of cervical cancer (OR = 0.16; 95% CI: 0.05–0.50; $P < 0.05$). Finally, women with a family history of cancer were significantly more likely than those without to recognise unexplained weight loss as a symptom of cervical cancer (OR = 1.71; CI: 1.0–2.90; $P < 0.05$) [Table 3].

Discussion

After breast and thyroid cancer, cervical cancer is the third most common type of cancer affecting women in Oman, with an annual incidence of 26.2 per 100,000 individuals.²⁰ As in other developing countries, cancer patients in Oman usually present at a later stage and younger age.²¹ In the current study, only 37.1% of Omani women knew of cervical cancer and the average level of awareness regarding cervical cancer-related risk factors was low (28.5%). These findings support those of a previous study observing that knowledge levels of cervical cancer and cervical cancer screening were low among Omani women.¹⁶

Other studies from developing countries, however, have reported conflicting results. A study conducted in Uganda found that recognition of cervical cancer-related risk factors among women was high, particularly for risk factors such as having multiple sexual partners or HPV infection and engaging in sexual activity at a young age.¹⁰ Greater knowledge levels in African countries such as Uganda and Cameroon might be due to the existence of preventative campaigns to stop the spread of STDs such as HIV and HPV.^{10,22} Even in Western countries such as the UK, most women are not aware that HPV is sexually transmitted and can cause cervical cancer.²³

Low levels of knowledge among Omani women regarding cervical cancer risk factors might be due to the unavailability of a national policy or programme for cervical cancer screening or HPV vaccination.^{14,15} Although Arab countries traditionally have lower rates of HPV infection due to social and cultural factors which encourage more conservative sexual behaviour, the prevalence of HPV infection is increasing at an alarming rate as a result of increased levels of sexual activity by younger members of the population (i.e.

10–24 years old).²⁴ Furthermore, the majority of women in these countries are either not aware of the availability of the HPV vaccination or do not wish to be vaccinated.^{15,25} A fear of potential side-effects, the absence of clear benefits and objections from religious authorities have been cited as reasons for not accepting the HPV vaccine.^{24,25}

The present study noted low overall recognition of cervical cancer symptoms (45.0%); this frequency of recognition supports previous research conducted in the UK, in which 75.0% of participants were unable to recall any key cervical cancer symptoms.⁹ Women in Oman have also previously shown low levels of knowledge regarding other gynaecological cancers such as ovarian and breast cancer.^{26,27} However, higher levels of recognition were observed for more visible cervical cancer symptoms such as vaginal bleeding or persistent vaginal discharge; this difference in levels of recognition is to be expected, as people usually tend to be more cognisant of and alarmed by visible symptoms, thereby influencing them to seek medical help.²⁸ Nevertheless, the key issue is not only recognition of cervical cancer symptoms themselves, but also whether such symptoms are perceived by women as a serious concern.²⁶ For example, less than 50% of the women in the present study reported that they would seek early medical help (i.e. within two weeks) for unexplained weight loss, which is often not perceived to be a specific symptom of cervical cancer.

In the current study, various emotional barriers—such as fear, anxiety about what the doctor might find, embarrassment and a lack of confidence in speaking with the doctor—were frequently reported as reasons for not seeking medical help. Fear of a cancer diagnosis is a common factor influencing delays in seeking medical help.⁸ In a conservative society such as Oman, many women may feel embarrassed to talk to or be examined internally by a male doctor, particularly when dealing with sensitive or gynaecological symptoms. Although both Omani and expatriate female physicians are employed at all local healthcare centres and government hospitals in Oman, female Muslim patients often report delays in seeking care due to a perceived lack of female clinicians, particularly among those with higher self-rated levels of modesty and religious belief.²⁹

Several factors were found to be associated with awareness of various cervical cancer signs and symptoms in the current study including age, education level, income, parity and a family history of cancer. Older Omani women were significantly less likely than younger women to recognise menstrual cycle disturbances as a symptom of cervical cancer; in contrast, younger participants in the UK have been

reported to demonstrate lower levels of knowledge regarding cervical cancer risk factors.⁹ This difference in findings may be because younger Omani women tend to have higher education levels than older women, as formal education was only established 50 years ago in Oman, thus explaining why they were able to recognise more risk factors and symptoms than their older counterparts.²⁶

In addition, both multiparous women and women with a family history of cancer were significantly more likely to recognise cervical cancer symptoms compared to nulliparous women or those without a family history of cancer. These findings support those reported in a previous study conducted in Oman.¹⁶ Multiparous women are more likely to be exposed to sources of health-related knowledge such as through information leaflets or when visiting healthcare professionals for check-ups. The distribution of tailored information leaflets at hospitals or local healthcare centres has been found to be an effective measure for increasing cancer-related knowledge levels.²⁸ Moreover, having close family members with cancer would presumably also increase one's knowledge of cancer, as such women would receive information from healthcare providers and might also be involved in treatment decision-making and caring for the patient.^{30,31}

This study was subject to certain limitations. First, the study was conducted at a single teaching hospital in Muscat, which could affect the generalisability of the results. However, the authors believe that this is not a major issue, as many patients attending this hospital are originally from other regions in Oman. Second, some women had a family history of cancer and may therefore have introduced the possibility of bias when answering the survey. Nevertheless, the questionnaire was specifically tailored to cervical symptoms; moreover, the authors of the original CCAM questionnaire do not recommend excluding participants with a family history of cancer.¹⁷ Third, although the CCAM questionnaire was translated to Arabic, some cultural differences may have affected the results. Finally, although the medical students were trained to remain neutral while administering the questionnaire to illiterate women, some disparity may have been present in the meaning of some translated statements. Results from the pilot study, however, indicated that the internal consistency of the Arabic version of the CCAM questionnaire was high.

Conclusion

Overall awareness of cervical cancer-related risk factors and symptoms among Omani women was low. Educating members of the public, perhaps by

distributing information leaflets at local healthcare centres and government hospitals in Oman or via collaboration with the Omani Women's Association, is recommended to increase knowledge of signs and symptoms of cancer and hopefully encourage early diagnosis and treatment. Healthcare practitioners should reassure patients regarding the availability of female doctors for consultations of a gynaecological or sensitive nature to try to decrease emotional barriers to seeking early medical help. Finally, as it is likely that acceptance of HPV vaccinations in Oman might be limited due to local cultural and religious stigma, further research is needed to explore attitudes towards the introduction of a national cervical cancer screening and HPV vaccination programme.

ACKNOWLEDGEMENTS

The authors are grateful to all of the women who agreed to take part in this study.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

No funding was received for this study.

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