

Cervical Cancer-Related Knowledge and Practice among Omani Women Attending a Family and Community Health Clinic

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Abstract

Objectives: This study aimed to assess knowledge, attitudes, and screening behaviors related to cervical cancer and Papanicolaou (Pap) smear testing among Omani women visiting a family and community health clinic and to establish correlations with various sociodemographic characteristics.

Methods: This cross-sectional study was carried out from February 2020 to April 2021 at the Family and Community Health Clinic of Sultan Qaboos University Hospital in Muscat, Oman. A self-administered questionnaire was used to assess the participants' sociodemographic characteristics, cervical cancer-related risk factors, and their knowledge, attitudes, and practices related to cervical cancer, cervical cancer screening, and Pap smear testing.

Results: Overall, 89.8% and 73.0% of the Omani women had previously heard of cervical cancer and Pap smear testing, respectively; however, only 11.2% and 62.8% demonstrated high levels of knowledge concerning these topics. Cervical cancer knowledge scores were significantly associated with education level ($p = 0.039$), whether their qualification was related to healthcare ($p < 0.001$), and employment status ($p = 0.033$). Pap smear knowledge scores were significantly associated with age ($p = 0.001$), education level ($p < 0.001$), whether their qualification was related to healthcare ($p < 0.001$), employment status ($p = 0.001$), and number of children ($p = 0.001$). The majority were aware of the availability of Pap smear testing in Oman ($n = 206$; 72.3%); however, only 114 women (40.0%) had themselves previously undergone Pap smear testing. Nevertheless, among those who had never undertaken Pap smear testing ($n = 171$; 60.0%), many were willing to do so in future ($n = 103$; 60.2%).

Conclusions: These results provide a better understanding of cancer-related awareness, knowledge, and screening behaviors among Omani women. These findings could be utilized to inform strategies aiming to improve knowledge of cervical cancer signs and symptoms and screening availability among Omani women, as well as measures to promote utilization of available screening services.

Keywords: Cervical Cancer; Papanicolaou Smear; Cancer Screening; Risk Factors; Health Knowledge, Attitudes, Practice; Human Papilloma Virus; Surveys and Questionnaires; Women; Oman.

INTRODUCTION

Worldwide, cervical cancer was the fourth most common type of cancer among females in 2018, with 570,000 new diagnoses that year.¹ Based on data from the Global Cancer Observatory, cervical cancer resulted in approximately 311,000 deaths globally in the same year, with an estimated worldwide age-standardized incidence of 13.1 per 100,000 women.² The disease appears to be more prevalent in under-resourced or developing countries, with the highest age-standardized rates in 2018 reported in Swaziland (75.3 per 100,000 individuals), followed by Malawi (72.9 per 100,000 individuals) and Zambia (66.4 per 100,000 individuals).³ Overall, cervical cancer was reported to be the leading cause of cancer-related deaths among women in most regions of Africa.^{2,3}

According to the World Health Organization, cervical cancer is one of the most easily preventable forms of cancer among women with early detection and effective management.⁴ As such, many cervical cancer screening guidelines recommend that screening be initiated for all sexually active women from the age of 21–25 years and continue until the age of 65–70 years.^{5–7} Most screening measures focus on early screening with Papanicolaou (Pap) smear testing alone every three years, or a combination of Pap smear testing and human papillomavirus (HPV) screening every five years. In addition, there is strong evidence indicating that HPV vaccination is safe and effective to prevent against the main carcinogenic HPV subtypes.⁸ However, diagnosis of cervical cancer cases at a late stage is an indication of underutilization of screening services, as well as a lack of knowledge regarding cervical cancer and cervical cancer screening.^{4,9}

In Oman, cervical cancer is also the fourth most common cancer in women of all ages, as well as the third most common in women aged 15–44 years.^{10,11} Every year, approximately 88 new

cases of cervical cancer cases are diagnosed, with an estimated 50 deaths in 2020.¹¹ While the incidence of cervical cancer in Oman is relatively low, there is currently no national screening program for early detection or HPV vaccination; consequently, many Omani women are diagnosed at an advanced stage, resulting in a high mortality rate.¹¹ Previous studies from Oman have shown that levels of knowledge regarding cervical cancer, its risk factors, and cervical cancer screening are generally poor among Omani women.¹²⁻¹⁵

In 2017, a Women's Health Clinic was launched by the Family and Community Health (FCH) Clinic of the Sultan Qaboos University Hospital (SQUH), a tertiary care teaching hospital in Muscat, Oman. The FCH clinic provides primary care services to SQUH and SQU staff and their immediate dependents. One of the main aims of the newly established Women's Health Clinic is to provide guidance for routine cervical cancer screening to all women attending the clinic as well as those considered at high risk of developing cervical cancer in order to monitor warning signs and ensure early referral.

Although previous studies have reported low levels of knowledge and awareness of cervical cancer and its screening among Omani women, none have so far sought to assess awareness of such topics following the introduction of the SQUH Women's Health Clinic. Thus, the current study aimed to provide updated information regarding the knowledge, attitudes, and practices related to cervical cancer and its screening test among Omani women visiting the FCH at SQUH and to establish a correlation with various sociodemographic characteristics. These findings will hopefully provide vital information that can be used to improve the utilization of screening services in Oman and plan for future health promotion programs focusing on women's health.

METHODS

A cross-sectional survey was conducted at the FCH clinic of SQUH over a 14-month period from February 2020 to April 2021. The target population consisted of all ≥ 18 -year-old Omani women who were married or had ever been married and who attended the clinic during the study period for various reasons. Women who did not speak Arabic or English, those with learning difficulties, and those who were critically ill and required urgent care were excluded from the study. An online sample size calculator was used to estimate the required sample size, taking into account the average number of Omani women attending the FCH clinic per month. According to unpublished hospital data, approximately 800 Omani women attend the clinic per

month; therefore, considering a 5% margin of error, 95% level of confidence, and 5% alpha error, the optimum sample size for the study was estimated to be 328 women.

A structured, self-administered, validated Arabic-language questionnaire from a similar study performed in Oman was used to collect data from the participants.¹⁵ The survey consisted of three main parts. The first part assessed the participants' sociodemographic characteristics, including age, marital status, age upon first marriage, total number of children, employment status, educational qualification, and whether their qualification was related to healthcare. The second part of the survey assessed the participants' knowledge and awareness regarding cervical cancer and HPV. Questions included whether the participants had previously heard of cervical cancer, their source of information if so, and if they thought cervical cancer was a common cause of cancer-related death worldwide.

In addition, the participants were questioned about their knowledge regarding warning signs of cervical cancer (e.g., intermenstrual bleeding, persistent low back pain, persistent foul-smelling vaginal discharge, dyspareunia, menorrhagia, persistent diarrhea, postmenopausal bleeding, persistent pelvic pain, postcoital bleeding, blood in urine or stool, and unexplained weight loss). Furthermore, this section assessed knowledge regarding risk factors of developing cervical cancer, including history of HPV infection, smoking, weakened immunity of self or spouse, long-term use of contraceptive pills, early marriage (<16 years), having many children (≥ 3), and family history of cervical cancer. Finally, the last few questions in this part of the survey assessed knowledge regarding HPV and its vaccine, including if they had previously heard of either of these and whether they were generally accepting of the notion of providing the HPV vaccine to middle school-aged girls.

The third part of the questionnaire assessed the participants' knowledge, attitudes, and practices regarding cervical cancer screening including whether they had ever heard of cervical cancer screening, their source of information if so, and if they had ever been recommended to undergo screening by their treating physician, nurse, or other healthcare professional. In addition, they were asked to specify the body part evaluated during a Pap smear, the ideal frequency and candidate for testing (e.g., if cervical cancer screening should be performed only for married women or only before menopause), and how abnormal test results were interpreted; moreover, they were asked if they believed that cervical cancer screening could lead to the successful prevention and treatment of cervical cancer and comment on the availability of cervical cancer

screening in Oman. Several items were also included to determine barriers to screening, including whether the gender of the physician would affect their decision to undertake screening. Actual screening practices were also evaluated, with participants asked if they had previously undergone cervical cancer screening and, if so, their reasons for doing so, while those who had never undertaken cervical cancer screening were asked their reasons for not doing so.

All items in the latter two sections of the questionnaire were compiled and scored as follows. The second section comprised four items assessing knowledge of cervical cancer (four questions on general knowledge, one on warning signs, and one on risk factors), with the latter two questions listing 11 specific warning signs and eight risk factors of cervical cancer. Each correct answer received a score of one, resulting in a maximum score of 23. Total scores of <8, 8–15, and >15 were considered to indicate poor, acceptable, and high levels of knowledge, respectively. The third part of the questionnaire consisted of seven items assessing knowledge about the cervical cancer screening. Each correct answer was assigned one point, with total scores out of 7 similarly categorized as indicative of poor (scores of <3), acceptable (scores of 3–4), or high (scores of >4) levels of knowledge.

The final version of the questionnaire was published online using Google Forms (Google LLC, Menlo Park, CA, USA). A link to the online survey was provided to every woman who attended the clinic during the study period and who agreed to take part in the survey. However, due to the ongoing coronavirus disease 2019 pandemic and the initially low response rate, additional recruitment measures were necessary. The contact details of eligible candidates were retrieved from the SQUH hospital information system and these candidates were subsequently sent an invitation to participate in the study along with an electronic link to the questionnaire via regular text and WhatsApp messages (Facebook Inc., Menlo Park, CA, USA). The average time taken to fill out the questionnaire was 8–10 minutes.

Data analysis was performed using the Statistical Package for the Social Science (SPSS), Version 23.0 (IBM Corp., Armonk, NY, USA). Categorical data were presented as frequencies and percentages, whereas continuous variables were presented as means and standard deviations. Pearson's Chi-squared (χ^2) test was used when appropriate to determine correlations and Fisher's exact test was used for low cell frequencies in which the expected frequency was <5 in any of the cells. A *p* value of ≤ 0.05 was considered statistically significant.

Ethical approval for this study was obtained from the Medical Research and Ethics Committee of the College of Medicine and Health Sciences, SQU (#SQU-EC/170/19). The aims and objectives of the study were stated clearly at the beginning of the online questionnaire and all participants were informed that participation in the study was voluntary in nature and that they had the right to withdraw at any time. Participants were clearly informed that completion of the questionnaire constituted consent to take part in the study. In addition, it was made explicitly clear that all collected data were confidential in nature and that the survey would not offer any medical advice. Collected data were kept anonymous and completed questionnaires were coded and stored in a secured database which was later used solely for data analysis.

RESULTS

A total of 285 Omani women participated in the study. The mean age was 35.9 ± 6.8 years (range: 19–57 years old). More than half were 31–40 years ($n = 152$; 53.3%), while the rest were equally divided between ≤ 30 years ($n = 66$; 23.2%) and >40 years ($n = 67$; 23.5%). The majority ($n = 171$; 60.0%) were educated to the undergraduate level, with either a diploma or bachelor's degree; the remaining participants were educated to either the postgraduate ($n = 64$; 22.5%), secondary ($n = 45$; 15.8%), or primary ($n = 3$; 1.1%) levels. Only two women (0.7%) had no formal education. Almost one-third of the participants ($n = 107$; 37.5%) held healthcare-related degrees. More than half ($n = 191$; 67.0%) were employed. The vast majority were currently married ($n = 280$; 98.2%). The average age at first marriage was 24.0 ± 3.83 years, with 200 women (70.2%) having gotten married at an age less than or equal to 25 years. The total number of children ranged from 1–10, with an average of 2.89 ± 1.84 children.

Upon assessing cervical cancer-related knowledge, most participants ($n = 256$; 89.8%) had previously heard of cervical cancer, with the most common source of such information being the Internet or social media ($n = 135$; 47.4%), followed by healthcare providers ($n = 123$; 43.2%), schools or universities ($n = 73$; 25.6%), written media such as magazines or newspapers ($n = 60$; 21.1%), television programs or advertisements ($n = 52$; 18.2%), and family or friends ($n = 42$; 14.7%). Just over one-quarter ($n = 88$; 30.9%) believed that cervical cancer was one of the top five leading causes of death worldwide. More than two-thirds of the participants ($n = 204$; 71.6%) had never heard of HPV or its vaccine. Nevertheless, 125 (43.9%) agreed that it should be offered to middle school-aged girls.

Frequently identified warning signs of cervical cancer included dyspareunia (n = 204; 71.6%), postmenopausal bleeding (n = 196; 68.8%), spotting between periods (n = 194; 68.1%), persistent pelvic pain (192; 67.4%), postcoital bleeding (n = 181; 63.5%), vaginal discharge (n = 172, 60.4%), and menorrhagia (n = 147; 51.6%). In addition, just under half of the participants identified persistent low back pain (n = 138; 48.4%) and weight loss (n = 134; 47.0%); however, blood in the stool and urine (n = 70; 24.6%) and diarrhea (n = 27; 9.5%) were infrequently identified as warning signs of cervical cancer. The most frequently identified risk factors of cervical cancer were a family history of cervical cancer (n = 140; 49.1%) and immunosuppression (n = 138; 48.4%). Moderately identified risk factors included long-term use of combined oral contraceptives (n = 105; 36.8%), HPV infection (n = 101; 35.4%), low immunity on the part of the husband (n = 95; 33.3%), and smoking (n = 80; 28.1%). Having three or more children (n = 51; 17.9%) and early marriage (n = 39; 13.7%) were the risk factors least commonly recognized as being associated with cervical cancer.

With regards to knowledge of cervical cancer screening, 208 women (73.0%) had previously heard of this screening method, with the source of such information most frequently being healthcare services (n = 145; 50.9%), followed by the Internet or social media (n = 71; 24.9%), school or universities (n = 41; 14.4%), family or friends (n = 31; 10.9%), written media (n = 20; 7.0%), and television programs or advertisements (n = 16, 5.6%). Most of the participants (n = 244; 85.6%) agreed that cervical cancer screening involved the collection of a sample from the cervix, although some thought the sample was collected from the vagina (n = 41; 14.4%). The majority of the participants did not know the ideal frequency of cervical cancer screening (n = 200; 70.2%) or the interpretation of an abnormal cervical cancer screening result (n = 157; 55.1%).

Most women were aware of the availability of cervical cancer screening in Oman (n = 206; 72.3%) and 114 (40.0%) had themselves previously undergone cervical cancer screening for various reasons, including being reminded by their doctors (n = 92; 80.7%), understanding its importance (n = 44; 38.6%), having reached the designated age for screening (n = 42; 36.8%), having had multiple births (n = 22; 19.3%), the fact that such screening was offered by the government for free (n = 17; 14.9%), and having ample time to undergo the test (n = 14; 12.3%). Among those who had never undertaken cervical cancer screening (n = 171; 60.0%), many were willing to do so in the future (n = 103; 60.2%). Reasons for being reluctant to undertake cervical cancer screening included a lack of familiarity with the test (n = 113;

66.1%), having no time (n = 50; 29.2%), having a healthy lifestyle (n = 50; 29.2%), fear of the test itself (n = 44; 25.7%), privacy concerns (n = 35; 20.5%), fear of the results (n = 34; 19.9%), having received normal Pap smear results previously (n = 34; 19.9%), and being unmarried (n = 26; 15.2%).

Overall, 64 (22.5%), 189 (66.3%), and 32 (11.2%) of the women demonstrated poor, acceptable, and high levels of knowledge related to cervical cancer, respectively, with a mean score of 10.36 ± 4.46 . Cervical cancer knowledge scores were significantly associated with education level ($p = 0.039$), whether the qualification was related to healthcare ($p < 0.001$), and employment status ($p = 0.033$) [Table 1]. In turn, 31 (10.9%), 75 (26.3%), and 179 (62.8%) participants demonstrated poor, acceptable, and high levels of knowledge regarding cervical cancer screening, respectively, with a mean score of 4.79 ± 1.71 . cervical cancer screening knowledge scores were significantly associated with age ($p = 0.001$), education level ($p < 0.001$), whether the qualification was related to healthcare ($p < 0.001$), employment status ($p = 0.001$), and number of children ($p = 0.001$) [Table 2]. Significant associations were observed between cervical cancer screening practices and age ($p < 0.001$), education level ($p < 0.001$), whether the qualification was related to healthcare ($p = 0.002$), employment status ($p < 0.001$), and number of children ($p < 0.001$) [Table 3]. However, no significant associations were noted between willingness to undertake cervical cancer screening in future and any sociodemographic characteristics [Table 4].

Table 1: Associations between sociodemographic characteristics and cervical cancer-related knowledge among Omani women attending a family and community health clinic (N = 285).

Characteristic	Knowledge level* n (%)			p value
	Poor	Acceptable	High	
Age (years)				
≤40	48 (16.8)	146 (51.2)	24 (8.4)	0.914
>40	16 (5.6)	43 (15.1)	8 (2.8)	
Education level				
None/primary/secondary	18 (6.3)	29 (10.2)	3 (1.1)	0.039 [†]
Undergraduate	37 (13.0)	116 (40.7)	18 (6.3)	
Postgraduate	9 (3.2)	44 (15.4)	11 (3.9)	
Healthcare-related degree				
No	54 (18.9)	115 (40.4)	9 (3.2)	<0.001 [†]
Yes	10 (3.5)	74 (26.0)	23 (8.1)	
Employment status				
Employed	36 (12.6)	128 (44.9)	27 (9.5)	0.033 [†]
Unemployed	20 (7.0)	49 (17.2)	2 (0.7)	

Retired	8 (2.8)	12 (4.2)	3 (1.1)	
Marital status				
Currently married	62 (21.8)	187 (65.6)	31 (10.9)	0.454
Ever married	2 (0.7)	2 (0.7)	1 (0.4)	
Number of children				
≤3	48 (16.8)	123 (43.2)	21 (7.4)	0.334
>3	16 (5.6)	66 (23.2)	11 (3.9)	
Age at first marriage (years)				
≤25	46 (16.1)	126 (44.2)	28 (9.8)	0.055
>25	18 (6.3)	63 (22.1)	4 (1.4)	

*Assessed using a previously described, self-administered, Arabic-language questionnaire.¹³

Total scores of <8, 8–15, and >15 were considered to indicate poor, acceptable, and high levels of knowledge, respectively. †Statistically significant at $p \leq 0.05$.

Table 2: Associations between sociodemographic characteristics and knowledge regarding Papanicolaou smear testing among Omani women attending a family and community health clinic (N = 285).

Characteristic	Knowledge level* n (%)			p value
	Poor	Acceptable	High	
Age (years)				
≤40	28 (9.8)	66 (23.2)	124 (43.5)	0.001†
>40	3 (1.1)	9 (3.2)	55 (19.3)	
Education level				
None/primary/secondary	13 (4.6)	18 (6.3)	19 (6.7)	<0.001†
Undergraduate	17 (6.0)	45 (15.8)	109 (38.2)	
Postgraduate	1 (0.4)	12 (4.2)	51 (17.9)	
Healthcare-related degree				
No	30 (10.5)	62 (21.8)	86 (30.2)	<0.001†
Yes	1 (0.4)	13 (4.6)	93 (32.6)	
Employment status				
Employed	16 (5.6)	46 (16.1)	129 (45.3)	0.001†
Unemployed	15 (5.3)	25 (8.8)	31 (10.9)	
Retired	0 (0.0)	4 (1.4)	19 (6.7)	
Marital status				
Currently married	31 (10.9)	73 (25.6)	176 (61.8)	0.631
Ever married	0 (0.0)	2 (0.7)	3 (1.1)	
Number of children				
≤3	24 (8.4)	62 (21.8)	106 (37.2)	0.001†
>3	7 (2.5)	13 (4.6)	73 (25.6)	
Age at first marriage (years)				
≤25	22 (7.7)	50 (17.5)	128 (44.9)	0.740
> 25	9 (3.2)	25 (8.8)	51 (17.9)	

*Assessed using a previously described, self-administered, Arabic-language questionnaire.¹³ Total scores of <3, 3–4, and >4 were considered to indicate poor, acceptable, and high levels of knowledge, respectively. †Statistically significant at $p \leq 0.05$.

Table 3: Associations between sociodemographic characteristics and previous experience undergoing Papanicolaou smear testing among Omani women attending a family and community health clinic (N = 285).

Characteristic	Previously undergone Papanicolaou smear testing, n (%)		p value
	No	Yes	
Age (years)			
≤40	157 (55.1)	61 (21.4)	<0.001*
>40	14 (4.9)	53 (18.6)	
Education level			
None/primary/secondary	38 (13.3)	12 (4.2)	<0.001*
Undergraduate	113 (39.6)	58 (20.4)	
Postgraduate	20 (7.0)	44 (15.4)	
Healthcare-related degree			
No	119 (41.8)	59 (20.7)	0.002*
Yes	52 (18.2)	55 (19.3)	
Employment status			
Employed	108 (37.9)	83 (29.1)	<0.001*
Unemployed	55 (19.3)	16 (5.6)	
Retired	8 (2.8)	15 (5.3)	
Marital status			
Currently married	166 (58.2)	114 (40.0)	0.065
Ever married	5 (1.8)	0 (0.0)	
Number of children			
≤3	139 (48.8)	53 (18.6)	<0.001*
>3	32 (11.2)	61 (21.4)	
Age at first marriage (years)			
≤25	122 (42.8)	78 (27.4)	0.597
>25	49 (17.2)	36 (12.6)	

*Statistically significant at $p \leq 0.05$.

Table 4: Associations between sociodemographic characteristics and willingness to undergo Papanicolaou smear testing among Omani women attending a family and community health clinic (N = 285).

Characteristic	Willingness to undergo Papanicolaou smear testing, n (%)	p value
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	No	Yes	
Age (years)			
≤40	141 (49.5)	77 (27.0)	0.604
>40	41 (14.4)	26 (9.1)	
Education level			
None/primary/secondary	29 (10.2)	21 (7.4)	0.624
Undergraduate	112 (39.3)	59 (20.7)	
Postgraduate	41 (14.4)	23 (8.1)	
Healthcare-related degree			
No	114 (40.0)	64 (22.5)	0.933
Yes	68 (23.9)	39 (13.7)	
Employment status			
Employed	125 (43.9)	66 (23.2)	0.431
Unemployed	41 (14.4)	30 (10.5)	
Retired	16 (5.6)	7 (2.5)	
Marital status			
Currently married	177 (62.1)	103 (36.1)	0.090
Ever married	5 (1.8)	0 (0.0)	
Number of children			
≤3	126 (44.2)	66 (23.2)	0.373
>3	56 (19.6)	37 (13.0)	
Age at first marriage (years)			
≤25	125 (43.9)	75 (26.3)	0.464
>25	57 (20.0)	28 (9.8)	

DISCUSSION

Many studies have been conducted in various countries worldwide to evaluate levels of awareness among women regarding cervical cancer risk factors, cervical screening tests, and preventive practices.¹²⁻²² Unfortunately, previous research has shown that while most women have heard of cervical cancer, their knowledge of its specific signs and symptoms and screening tests remains low.^{12-14,17} Other studies have indicated that awareness of cervical cancer is greater than that of its related screening and testing measures.^{23,24} The current study was conducted to determine levels of knowledge, attitudes, and screening practices related to cervical cancer and its screening among Omani women visiting a family and community health clinic.

When evaluating cervical cancer-related knowledge, the vast majority of participants in the current study had previously heard of cervical cancer, whereas just under three-quarters had heard of cervical cancer screening, with common sources of such information being the Internet/social media and healthcare services, respectively. These findings are not surprising as the role of social media has increased dramatically in recent times, with the scope of such media no longer limited to communication between individuals; instead, these avenues have become a very important tool for spreading health awareness and increasing knowledge among the general public.²⁵ A previous study conducted in Oman similarly showed that social media and healthcare providers were the most common sources of information concerning cervical cancer and its screening test, respectively.^{12, 13} Hence, it is important that policy-makers capitalize on the popularity of social media in order to promote public health awareness, education, and utilization of preventive screening measures.

The present study showed that Omani women less frequently demonstrated acceptable-to-high levels of knowledge regarding cervical cancer compared to cervical cancer screening (77.5% versus 89.1%). Al Yahyai *et al.* reported comparable findings among women attending primary healthcare centers in Oman.¹² Variations in the education level of the participants and the availability of the test could be part of the reason for these findings, as cervical cancer screening is routinely provided by the clinic and the majority of women who attend the FCH are usually highly educated, given that the clinic caters primarily to employees of the university and its affiliated hospital. Other studies conducted in Oman have highlighted that specific knowledge of cervical cancer, its risk factors, and cervical cancer screening is generally poor among Omani women.¹²⁻¹⁵

Nevertheless, the high levels of knowledge and awareness of cervical cancer screening in the current study did not appear to translate to service utilization. The results showed that although 72.3% of women were aware of the availability of cervical cancer screening, only 40.0% had themselves previously undergone a cervical cancer screening. This percentage is similar to rates of service utilization reported in other studies conducted in nearby Middle Eastern countries, such as Qatar (39.4%) and Bahrain (40.7%), although higher than that reported among female healthcare professionals at one of the largest medical facilities in Saudi Arabia (26.2%).²⁶⁻²⁸ Regardless of the low uptake of cervical cancer screening, many women in the current study indicated that they were willing to undertake such testing in future. Taneja *et al.*

also reported that many Indian women expressed a positive attitude and willingness to undergo screening, despite low uptake of available services (13.22%).²⁹

The most frequently reported reason by women in the current study for having previously undertaken cervical cancer screening was being reminded by their doctors (80.7%). Another study performed in Gabon similarly found that 68.3% of women had undergone a cervical cancer screening on the suggestion of a doctor.²³ On the other hand, the most commonly reported reason for being reluctant to undertake cervical cancer screening or for not participating in such screening on a regular basis (i.e., at least once every three years) was a lack of familiarity with the test (66.1%). Significant associations were noted between cervical cancer screening practices and age, education level, employment status, and number of children. These associations have also been reported in other local and international studies.^{21,30,31} These findings highlight the importance of implementing a well-structured national awareness program regarding cervical cancer and screening tests in order to promote screening uptake and improve public health by detecting early signs and symptoms of cervical cancer among Omani women.

More than two-thirds of participants in the present study had never heard of HPV infection, a common sexually transmitted infection of which two subtypes, HPV-16 and -18, are responsible for about 70% of all cervical cancer cases worldwide.³² As a conservative Muslim country in which extramarital sexual activity is prohibited by both the local culture and laws, it is possible that many cases of cervical cancer in Oman may be unrelated to HPV infection. Nevertheless, previous research from Saudi Arabia, a neighboring country with many shared sociocultural and religious similarities to Oman, found that 92% of cervical tumor cases were HPV-positive.³³ Despite this, no national vaccination program against HPV is currently available in either Oman or Saudi Arabia. This is likely because Arab Muslim individuals are often fearful of stigma related to behaviors that suggest sexual activity, such as gynecological examinations, cervical cancer screening, or HPV vaccination.³⁴ In contrast, even though few of the participants in the current study had heard of the HPV vaccine, just under half were amenable to the idea of offering the vaccine to middle school-aged girls in Oman. This may be due to a fundamental lack of knowledge regarding HPV infection and its link to risky sexual behaviors.^{33,34}

The results of the current study should be considered in the light of certain limitations. As the study targeted women attending a single family and community health clinic, the generalizability of the results to Omani women in the general community is limited. In addition, other limitations include the length of the questionnaire, the inclusion of questions referring to the participants' past experiences, and the self-administered nature of the data collection tool, as these factors could have inadvertently led to recall or response bias.

CONCLUSIONS

Overall, awareness of cervical cancer-related knowledge, its screening methods, and risk factors such as HPV infection among Omani women was low. Despite that, the majority were not aware of HPV and its role, they were open and accepting of the idea of offering the HPV vaccine to middle school-aged girls. Hence, the Ministry of Health is strongly urged to consider initiating a national screening program in order to reduce the incidence of cervical cancer in the country. Community outreach programs may help in enriching public knowledge as well as in correcting common misinformation, myths, and elements of social stigma related to cervical cancer and HPV infection.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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