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Knowledge, perception, and sources of information towards cervical cancer and utilization of papanicolaou (pap) smear as screening among female in medina, Saudi Arabia

Abstract

Background and objectives: Cervical cancer (CC) is the fourth commonest cancer among women in the world. Screening using a Papanicolaou (Pap) smear can detect early cervical changes and allows early treatment with a high rate of success. Awareness of the importance of screening is a significant factor in encouraging women to have Pap smear testing. This study aimed to investigate perceptions, knowledge, and sources of information regarding CC and the utilization of Pap smeared used for screening in Medina, Saudi Arabia.

Methodology: An e-questionnaire-based cross-sectional study was conducted between December 2021 to July 2022. The targeted population were all non-medical staff females in childbearing age in Medina, Saudi Arabia. A total of 444 women were included in the study. The collected data was analyzed using descriptive statistical methods via Statistical Packages for Social Sciences version 26.

Result: Overall, the participants had high levels of awareness of CC (79.3%) and Pap smear (48.9%). However, only (23.6%) have heard of the human papillomavirus and (14.6%) have had a Pap smear. And (22.5%) only recognized that any woman over 21 years old should be screened for CC. Social media was the most frequently mentioned source of information (45.5%). Socio-demographic characteristics were not significantly associated with knowledge of CC or its screening. When women who had never had a Pap smear before were asked about the cause, half of them (47.2%) answered that they did not think about it, (32.2%) because they did not have symptoms, and (20.1%) reported a lack of awareness.

Conclusion: Despite the high level of awareness regarding CC and Pap smear testing among women in Medina, only small percentage undergo Pap smear testing. Lack of awareness and poor knowledge of the disease symptoms were the main barriers. This emphasizes the need to conduct community-based programs to raise awareness regarding the role of Pap smear in CC early detection.

Keywords: Cervical cancer, Papanicolaou smear, Medina, Saudi Arabia

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Abbreviations: CC, cervical cancer; HPV, human papillomavirus, Pap, papanicolaou; SD, standard deviation; IQR, interquartile range; HCW, health care worker

Introduction

Cervical cancer (CC) is the world's fourth most common cancer among women.[1] Moreover, it comprises 9% of female cancer deaths.[2] It is ranked as the 8th leading cause of female cancer in Saudi Arabia in women aged 15 to 44 years, with 358 new cases and 179 deaths every year.[3] According to the World Health Organization, CC is mostly a preventable disease. Activating early screening programs to detect the premalignant lesions of the disease is an important strategy towards the reduction of its burden in a developing country.[4]

Many factors contribute to developing CC. Almost all CC cases (99%) are linked to infection with high-risk Human Papillomaviruses (HPV).[1] Other risk factors include early age, sexual activity, multiple partners, smoking, and hormonal contraceptives.[5]

CC is a slowly progressing gynecological disease. Early-stage detection of CC is preventable and curable. Screening by Papanicolaou's (Pap) smear is a particularly viable method to detect pre-invasive and invasive stages. This screening has a sensitivity of 50%–75% and a specificity of 98%–99%.[5–7]

Since the CC is asymptomatic in the early stages, many cases (about 80%) are diagnosed in advanced stages, in which treatment has a reduced likelihood of success. The American Cancer Society recommends women have CC screening at age 25 through age 65 and should be screened with contesting (HPV testing in combination with Pap smear) every 5 years or Pap smear alone every 3 years (strong recommendation).[8,9]

It is important to improve awareness about CC prevention among communities through educational programs and the availability of screening facilities.[5] Well established screening programs for CC have a role in the reduction of morbidity and mortality of CC up to 80%.[6]

Several studies have been conducted in Nigeria, Romania and other countries which showed either low level of awareness of CC, Pap smear test or poorly utilization of Pap smear test.[4,10–13] Quantitative studies in Saudi Arabia revealed that knowledge and practice for CC screening and HPV are generally inadequate.[14,15]

As a result, the significance of this study is to assess perception and knowledge about CC and the use of Pap smear. Depending on the

findings of the study, well-established strategies can be implemented to educate women about the importance of routine Pap smears in reducing CC mortality and morbidity, as well as being more aware of curable and preventable types of cancer.

Methodology

Ethical considerations

At the beginning of the questionnaire, an electronic informed consent was obtained from each participant prior to completing the questionnaire. The participants were informed regarding the purpose of our study and were assured that all data collected would be confidential and not be used for any purpose except the study. This study was ethically approved by the Research Ethical Committee of Taibah University in Medina, Saudi Arabia. The study followed the Helsinki Declaration in all its stages.

Study design

A cross-sectional study during the period from December 2021 to July 2022, aimed to figure out perception, knowledge, and sources of information regarding CC and the utilization of Pap smear as a screening tool among females in Medina, Saudi Arabia.

Study population

The targeted sample was estimated to be around 380 by using Surveymonkey.com with a 5% margin of error and a 95% confidence level. The collected sample was increased to 444 females to better represent the population. We included all females aged between 16 and 65 living nowadays in Medina, Saudi Arabia. All females who work in medical fields were excluded.

Data collection and research tool

The data collection took place in December 2021. The social media platforms were used to invite the participants. Participation was optional and anonymous, and it was accomplished by the completion of a questionnaire. The females whose working in medical fields or living outside Medina unable to complete the questionnaire. The invitation message included an explanation of the study's purpose, the primary investigator's contact information, and a live link to the survey (Typeform.com).

The study tool was an anonymous English and Arabic self-administered electronic questionnaire designed based on a literature review. The first part of the questionnaire includes socio-demographic data. The second part assessed participant awareness; they were asked if they had heard about CC, HPV, or HPV vaccination. Regarding knowledge, we assessed participant knowledge by asking about symptoms, risk factors, mood of transmission, prevention methods, and screening modalities. Then, let participants identify the source of the information used. Finally, the last part of the questionnaire assessed the practice of CC screening (Appendix 1). The questionnaire was translated into Arabic by an expert physician fluent in Arabic and English, and another one revised it.

The questionnaire's validity and reliability were verified in a pilot study done by the researchers in an interview manner with 20 females chosen randomly from security and administrative workers in the College of Medicine, Taibah University. These 20 females were not included in the study sample. In addition, two associate professors from Taibah University assistant reviewed the questionnaire and re-edited some CC symptoms and screening options in the 2nd section of the questionnaire.

Statistical analysis

For data analysis, data collection and entry were performed using Microsoft Excel version 16.0.1. Data was analyzed using Statistical Package for Social Sciences (SPSS) software, version 26 for Windows. Initially, the data was cleaned and screened for mistakes, missing, and outliers. Then, all collected data was evaluated using descriptive statistics. All nominal and ordinal data were reported in frequencies and percentages. Meanwhile, the numerical data (knowledge score) was first examined for distribution by using the Shapiro-Wilk test, and since it was abnormally distributed, the median and interquartile range (IQR) were used for description. The Mann-Whitney test was applied to compare between two groups, whereas Kruskal-Wallis was applied to compare between more than two groups. Furthermore, a Spearman correlation test was used to study the association between continuous variables and a p-value ≤ 0.05 was considered for statistical significance.

Results

A total of 444 women were included in the study. Their socio-demographic characteristics are presented in Table 1. Their age ranged between 16 and 65 years, with an arithmetic mean of 34.2 and a standard deviation (SD) of 12.1 years. More than half (58.6%) were married. Their age at marriage ranged between 12 and 38 years with mean of 22.4±4.8 years. The duration of marriage ranged between one and 40 years, with mean of 16.7±10.8 years. More than half of them (55.8%) were university graduates, and 65.3% were housewives.

Table 1 Socio-demographic characteristics of the participants

	Frequency N=444	Percentage
Age in years		
Range	16-65	
Mean±SD	34.2±12.1	
Marital status		
Single	148	33.3
Married	260	58.6
Divorced	29	6.5
Widowed	7	1.6
Age at marriage* (n=296)		
Range	Dec-38	
Mean±SD	22.4±4.8	
Duration of marriage* (n=296)		
Range	Jan-40	
Mean±SD	16.7±10.8	
Educational level		
Read and write	7	1.6
Primary education	28	6.3
High school	110	24.8
Diploma	27	6.1
University degree	248	55.8
Master`s degree/PhD degree	24	5.4
Occupation		
Unemployed (housewife)	290	65.3
Employed/self-employed	154	34.7
Teacher	87	19.6
Administrative	37	8.3
Others	30	6.8

*For married only

SD: Standard deviation

A. Awareness about cervical cancer and human papilloma virus or its vaccine

As illustrated in Figure 1, most of the participants (79.3%) have heard of CC whereas only 23.6% have heard of HPV or its vaccine.

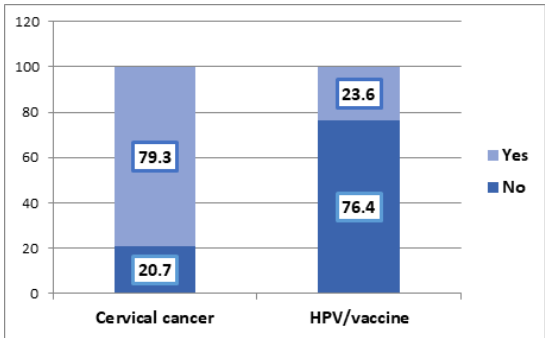

Figure 1 Awareness about cervical cancer and HPV or its vaccine among the participants.

B. Source of information

About (23.6%) of participants had not used any source of information. On the other hand, social media networks (45.5%) were the commonest reported source of information, followed by friends/family (18%), health care worker (HCW) (17.8%) and awareness campaigns (17.8%).

C. Knowledge about cervical cancer, its prevention and screening

Regarding the symptoms of CC, the most frequently known were irregular vaginal bleeding (23.2%), foul offensive vaginal discharge (23%), and pelvic pain (18.5%). While concerning risk factors, the most frequently known were multiple sex partners (23%), history of HPV infection (21.6%) and impaired immunity (13.1%). The correct mode of transmission was recognized by 29.1% of the respondents. Screening and avoiding having multiple partners were recognized as preventive measures by 44.8% and 22.5% of the respondents, respectively. About half of the women (48.9%) knew the Pap smear as a screening modality for CC. Only 22.5% could recognize that any woman over 21 years-old should be screened for CC. Most of the participants (70%) knew that if symptoms were discovered early, the disease is curable.

Overall, as shown in Figure 2, the total knowledge score ranged between 0 and 17 out of a maximum possible of 21, with a mean±SD of 4.6±3.8 and a median IQR of 4 (1-7). It was abnormally distributed as the p-value of the Shapro-Wilk test was <0.001.

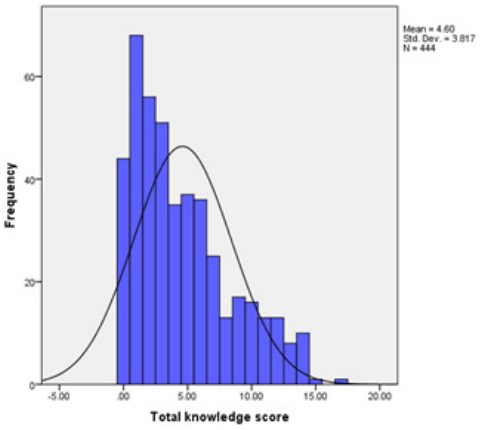

Figure 2 Frequency distribution of the total cervical cancer knowledge score among the participants.

D. Factors affecting knowledge

The highest score was observed among women who had two sources of information or whose main source was family/friends (mean ranks were 242.02 and 238.59), whereas the lowest score was reported among women whose source of information about CC was other sources (mean rank=115.67), p=0.016. Other studied factors (marital status, educational level, occupation) were not significantly associated with the knowledge score, as clear from Table 2.

Table 2 Demographic factors associated with knowledge about cervical cancer among the participants

	Total knowledge score			p-value
	Median	IQR	Mean rank	
Marital status				
Single (n=148)	4	1-6	216.5	
Married (n=260)	3	1-7	223.79	0.802**
Divorced (n=29)	5	2.5-6	241.53	
Widowed (n=7)	5	1-6	222.57	
Educational level				
Read and write (n=7)	3	1-4	165.29	
Primary education (n=28)	3	1-5.75	195.64	
High school (n=110)	3.5	1-7	218.71	
Diploma (n=27)	3	2-6	204.71	0.425*
University degree (n=248)	4	2-7	232.07	
Master`s degree/PhD degree (n=24)	3.5	1.25-6.75	208.9	
Occupation				
Unemployed (housewife) (n=290)	4	1-6.25	222.77	0.951*
Employed/self-employed (n=154)	3.5	2-7	221.99	
Teacher (n=87)	4	2-7	79.93	0.693**
Administrative (n=37)	3	1.5-6	72.54	
Others (n=30)	3.5	0.75-7	73.58	
Source of information				
No (n=105)	4	2-8	230.98	
HCWs (n=36)	3	1-6	202.83	
Family/friends (n=40)	5	2-7	238.59	
Radio (n=1)	3	3-3	194	
TV (n=15)	3	6-Jan	193.3	
Social media (n=117)	4	2-7.5	228.79	0.016**
Awareness campaigns (n=21)	1.5	0-11.25	169.13	
Others (n=4)	1	0-3	115.67	
Two sources (n=76)	5	2-7	242.02	
>two sources (n=29)	4	2-6.5	218.29	

IQR: Interquartile range

*Mann-Whitney test

**Kruskal-Wallis test

An insignificant negative weak correlation was found between women's age and total knowledge score (Spearman's correlation coefficient (r) =-0.064, p=0.179). Similarly, there was an insignificant negative weak correlation between a woman's age at marriage and total knowledge score (Spearman`s correlation coefficient (r) =-0.040, p=0.496).

E. Practice of cervical cancer screening

As displayed in Figure 3, (14.6%) of the participants had a history of having a CC screening or examination. Table 3 illustrated the practice of CC screening among participants. Were a majority of them (80%) claimed that they would do it in the future.

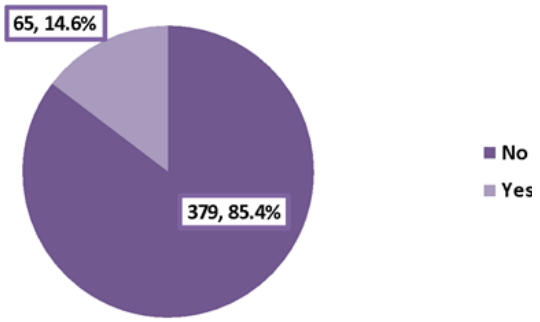

Figure 3 History of having a cervical cancer screening or examination among the participants.

More than one-fourth (27.6%) of women who reported more than two sources of information compared to none of those who reported other sources as their main source of information performed CC screening/examination (p=0.038). Table 3 shows that the other studied factors (age, marital status, age at marriage, duration of marriage, educational level, and occupation) were not significantly associated with the history of performing CC screening/examination.

Among those who did not perform CC screening/examination (n = 379), the commonest reported reasons were not thinking of it (47.2%), having no symptoms (32.2%), and lack of awareness about the test (20.1%).

Table 3 Factors associated with performing cervical cancer screening/examination among the participants

	Cervical cancer screening or examination		p-value
	No N=379 N (%)	Yes N=65 N (%)	
Marital status			
Single (n=148)	126 (85.1)	22 (14.9)	
Married (n=260)	220 (84.6)	40 (15.4)	0.679*
Divorced (n=29)	27 (93.1)	2 (6.9)	
Widowed (n=7)	6 (85.7)	1 (14.3)	
Age (years)			
Mean±SD	34.3±12.2	33.7±11.5	0.701**
Age at marriage (years) (n=296)			
Mean±SD	22.2±4.7	23.6±4.9	0.071**
Duration of marriage (years) (n=296)			
Mean±SD	16.9±11.0	15.9±9.9	0.572**
Educational level			0.525*
Read and write (n=7)	7(100)	0 (0.0)	
Primary education (n=28)	26 (92.9)	2 (7.1)	
High school (n=110)	91 (82.7)	19 (17.3)	
Diploma (n=27)	22 (81.5)	5 (18.5)	
University degree (n=248)	211 (85.1)	37 (14.9)	
Master`s degree/PhD degree (n=24)	22 (91.7)	2 (8.3)	
Occupation			
Unemployed (housewife) (n=290)	246 (84.8)	44 (15.2)	0.663*
Employed/self-employed (n=154)	133 (86.4)	21 (13.6)	
Teacher (n=87)	74 (85.1)	13 (14.9)	0.793**
Administrative (n=37)	32 (86.5)	5 (13.5)	
Others (n=30)	27 (90.0)	3 (10.0)	
Source of information			0.038*
No (n=105)	98 (93.3)	7 (6.7)	
HCWs (n=36)	31 (86.1)	5 (13.9)	
Family/friends (n=40)	32 (80.0)	8 (20.0)	
Radio (n=1)	1 (100)	0 (0.0)	
TV (n=15)	13 (86.7)	2 (13.3)	
Social media (n=117)	101 (86.3)	16 (13.7)	
Awareness campaigns (n=21)	20 (95.2)	1 (4.8)	
Others (n=4)	4 (100)	0 (0.0)	
Two sources (n=76)	58 (76.3)	18 (23.7)	
>two sources (n=29)	21 (72.4)	8 (27.6)	

*Ch-square test

**Student t-test

Discussion

CC is a common gynecological disease that can be prevented with appropriate HPV vaccination and early screening.[16] A high cure rate is associated with early diagnosis and treatment. Screening with a Pap smear is highly sensitive and specific for identifying cervical premalignant lesions.[17] In Saudi Arabia, cases are usually presented to health care with advanced disease.[18] This could be due to a lack of screening programs and formal HPV vaccination actions, which were only recently added to the Saudi immunization schedule.[19,20]

The present study sample includes four hundred and forty-four women. This number is similar to sample sizes used in similar researches done in Riyadh and Qassim.[16,21] The average ages was 34 years, unlike previously mentioned studies where about half of the samples were aged less than 30 years.[16,21] More than half of the participants had a university degree. While in a similar study done in Qassim by Alnafisah et al.,[21] 75% of the sample had university degree.[21] However, Al Khudairi et al.[16] conducted a similar study in Riyadh (the Saudi capital) that included only 45% of women with a university education.[16] The majority of this study sample were unemployed. In Al Khudairi et al.,[16] 64.5% of the participants were unemployed.

HPV is the most frequent sexually transmitted virus and its infection is responsible for nearly 99% of all the cases of CC.[22] However, despite 79% of the study participants knew about CC, less than 23.6% knowing about HPV infection or its vaccination. This is consistent with the results reported by Alnafisah et al.,[21] where 70% heard about CC but only 8.5% heard about HPV or its vaccine.[21] A study done in Ibadan, Nigeria, also showed similar results regarding knowledge of CC. However, the sample consisted of undergraduate university students, including medical students, who had better awareness and knowledge regarding CC and its screening (Pap smear).[22] In comparison to a study done on Ethiopian university students, 59% had never heard about CC, while 79% did not recognize the etiology of CC. This difference can be explained by the younger sample (97.9% less than 24 years old), being single (94%) and 62.5% from rural areas.[15] As these factors were considered by several studies to be associated with a lower level of awareness and knowledge regarding CC.[23,24]

Recent studies identify women with high school or university degrees as being more involved in practicing prophylactic measures (cervical screening and HPV vaccination).[24,25] A correlation between the low level of education and low level of awareness of Pap smear has previously been documented in other countries.[26] However, in the present study, educational level was not associated with either the knowledge of CC or Pap smear testing. This is consistent with the findings noted by Al Khudairi et al.,[16] who concluded that Saudi women's level of awareness of CC is unsatisfactory despite the fact that 45.6% of the sample had university degree.[16] Similarly, employment and marital status appeared to have no association with Medina women's knowledge or practice of CC testing.

Regarding the source of information, 45.5% reported social media as their main source. This is consistent with the results of Alnafisah et al.,[21] where 36.8% of the sample reported the internet as the main source of information.[21] However, the Al Khudairi et al.[16] study found that more than 70% of the sample knew about CC from HCW. Only 10% used the media as a source of information.[16]

Similarly, a study done on Ethiopian university students reported hospital and HCWs as their source of information. However, Internet was the source only in 7.4% and 2% of the sample, respectively.[22] This difference might be explained by the socioeconomic status difference as well as being most of the sample is from rural areas where internet connection is not always available.[23,24]

Unfortunately, women's adequate knowledge about CC was not reflected in the level of practices for CC screening in the present study. Only 14.6% of the participants had Pap smear testing. This is very similar to the results of another study conducted in the Al Hassa region.[5] Internationally, similar results were noted by Yakout et al.[27] in Egypt, where 84% of the women had knowledge of CC and its screening, but only 13.3% had a Pap smear.[27] Additionally, a study conducted in Pakistan found a good level of awareness, with 51.3% knowing about CC. However, 2.1% had received CC screening.[28] In comparison to a study done in the United Arab Emirates that explored women's attitude toward Pap smears, 80% of the participants had poor awareness regarding pre-cancerous lesions and 50% had Pap smear testing before.[29]

The correlation analysis of this study concluded that having multiple sources of information or hearing about it from a friend or family member were both associated with increased utilization of Pap smear testing. However, AL-Hammadi et al.[29] reported that women with higher family income had more adequate screening practice.[29] Whereas Riaz et al.[28] reported that university graduates had a higher awareness of CC and thus engaged in prophylaxis practices.[28]

Poor knowledge and lack of awareness were the leading causes of the decision to not have a Pap smear. Several studies done in Saudi Arabia reported similar causes.[19,21] However, other concerns like cultural and social factors (embarrassment, social stigma, etc.) as well as inaccessibility to health care services were also reported.[5,27]

This study had a few limitations. As this study was e-questionnaire-based, all responses were from computer-literate women. Awareness may therefore be overrepresented, as illiterate women and women who live in rural areas with limited internet access were nearly excluded from the sample. Further studies focusing on this specific group of women are recommended.

Further recommendations include engagement of HCWs in the awareness campaigns to encourage women to have Pap smears as their advice was associated with an increased number of women having Pap testing. Also, this study suggests the use of social media as a platform to reach women and share evidence-based information regarding CC and HPV infection.

Conclusion

Despite the high level of awareness regarding CC and Pap smear testing among women in Medina, only a small percentage undergo Pap smears. Lack of awareness about appropriate timing and frequency of screening and poor knowledge of the disease symptoms were the main barriers. This emphasizes the need to conduct community-based programs to raise awareness regarding the role of Pap smear in CC early detection, which should be considered and implemented by public and private health sectors to reduce the burden of this disease.

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Conflicts of interest

Author declares that there are no conflicts of interest.

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