

Knowledge, attitude, and practice with regard to cervical cancer screening and human papillomavirus vaccination among women attending primary health care centers of King Abdulaziz Medical City in Riyadh, Saudi Arabia

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Abstract

Introduction: This study aims to assess the knowledge, attitude, and practice with regard to cervical cancer screening and human papillomavirus (HPV) vaccine among women attending primary health care (PHC) centers of King Abdulaziz Medical City in Riyadh, Saudi Arabia.

Methods: A cross-sectional study was conducted at PHC centers of King Abdulaziz Medical City in Riyadh. A total of 334 Saudi women were included using a convenience sampling method. Data were collected using a self-administered questionnaire.

Results: The study findings indicated that of the 334 participants, 243 (72.8%) had heard about cervical cancer, but the majority (72.4%) did not know that it is caused by HPV. Subsequently, 79.3% of women did not know that there is a vaccine against this virus. While 77.9% of participants thought that the vaccine is safe, 67.1% of women considered that they needed the vaccine, and only five women (1.5%) received the HPV vaccine.

A total of 167 (50.2%) women knew about Pap smear. Most of them agreed that Pap smear is important (82%) and that doing the test every 3 years is not difficult (72.5%). Furthermore, they did not think that the test is painful or harmful (60.8% and 76.7%), but only 14.4% of women had done it.

Conclusions: Inadequate levels of knowledge regarding the HPV vaccine and screening interval of cervical cancer were detected in our study population. Although the women had a good attitude towards the vaccine and Pap smear, the uptake of the vaccine and screening for cervical cancer were minimal.

Keywords: Human Papillomavirus, Cervical Cancer, Pap Smear, Knowledge

Introduction

Cervical cancer is a major health problem internationally and is one of the leading causes of death in women of reproductive age. It is the most common cancer of the female genital tract,(1) and the fourth most common cancer globally.(2) Although it is a preventable disease, around 270,000 deaths per year worldwide are caused by cervical cancer.(3)

Human papillomavirus (HPV) is the most common sexually transmitted infection in the world.(4) Approximately 50% of the sexually active women have been exposed to at least one HPV type.(5) It is responsible for about 90% of cervical cancer cases, and the relationship between the presence of this virus and the development of precancerous lesions that may cause cervical cancer was clearly established.(6, 7)

It has a long premalignant period, which provides the opportunity for screening and treatment before it becomes an invasive cervical cancer.(8) Approximately 35 types of the HPV can infect the genital tract and 20 of them are associated with cervical cancer.(9) Approximately 90% of invasive cervical cancers are related to HPV 16 and 18.(10) Other risk factors include: having sexual intercourse at a younger age, increased number of pregnancies, increased number of sexual partners, unprotected sex, long-term use of hormonal contraceptive, smoking, and experience of sexual violence.(11)

Cervical Pap smear was introduced in 1943 to detect the precancerous and cancerous changes in the cervix.(9) Pap smear screening programs have shown effectiveness in reducing the mortality due to cervical cancer,(12) with a sensitivity and specificity of 50–75% and 98–99%, respectively.(9) Therefore, Pap smear is considered a

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successful method of detecting cytological changes in the uterine cervix. Systematic screening can reduce the death rates from cervical cancer by 70% or more.(13) In countries like Finland and Sweden with established national screening programs, the lowest incidence and prevalence of cervical cancer-related morbidity and mortality in the world was reported.(14) Developed countries have an average screening coverage of 63%, compared to 19% in developing countries.(15)

A vaccine is available for HPV infection, which proved to be effective and protective against cervical cancer, precancerous cervical lesions, persistent infection, and HPV-related conditions such as genital warts.(13) Three types of HPV vaccines can be used for routine vaccination: bivalent HPV vaccine (HPV2), quadrivalent HPV vaccine (HPV4), and 9-valent HPV vaccine (9vHPV).(16, 17) Despite the availability of HPV vaccine in the healthcare facilities, the number of cervical cancer cases is still increasing because of the lack of nationwide campaigns to vaccinate women.(18)

Many international studies were conducted. Very low levels of knowledge about cervical cancer, Pap smear testing, and HPV were reported in Gabon.(6) Moreover, in Turkey, participants did not have sufficient information on Pap smear, and the frequency of having a test was low.(19) In Estonia and India, a lack of information about cervical cancer risk factors and screening programs was detected.(20, 21) Furthermore, in Bhutan and Malaysia, women showed poor awareness and screening practices.(22, 23)

Regionally, only few studies were performed. In gulf countries, a study in Kuwait assessed the knowledge, attitude, and practice regarding cervical cancer.(24) Two similar studies were performed in Qatar, one of them on healthcare workers.(8, 12) In Sharjah, a study was performed on school teachers,(25) and in Jordan, another study assessed the belief and behavior toward Pap smear.(26, 27)

In Saudi Arabia, cervical cancer ranks as the eleventh most frequent cancer in women, and the eighth female most frequent cancer between the ages of 15 and 44 years.(3) It accounts for 2.6% of all newly diagnosed cancers in Saudi women.(18) Based on the World Health Organization data, 6.51 million women in Saudi Arabia aged 15 years and older are at risk of developing cervical cancer.(3) In Saudi Arabia, most of the studies that assessed the knowledge about cervical cancer signs and screening were performed on medical students, physicians, and general population.(1, 3, 18, 28, 29) Only one study that was performed on female students at Princess Nora Bint Abdul Rahman University assessed the acceptance of HPV vaccine.(30)

By addressing the level of knowledge of patients about cervical cancer screening and HPV vaccine, we can develop policies and guidelines, since no national recommendation about cervical cancer screening and HPV vaccine is currently available in Saudi Arabia. If patients have more knowledge about the disease, the

treatment, and prevention, they are more likely to be compliant and to ask for it.(31)

To our knowledge, there is a paucity of previous studies about knowledge, attitude, and practice with regard to cervical cancer screening (Pap smear) and HPV vaccine among population in Riyadh was performed. Therefore, this study aimed to assess the knowledge, attitude, and practice with regard to cervical cancer screening and HPV vaccine among women attending primary health care (PHC) centers of King Abdulaziz Medical City (KAMC) in Riyadh, Saudi Arabia.

Methodology

Study design and settings

This cross-sectional study was conducted in four PHC centers at KAMC, National Guard Health Affairs (NGHA), which were as follows:

- Health Care Specialty Center (HCSC): serves a population of approximately 200,000
- King Abdulaziz City Housing (Iskan Yarmouk): for officers and soldiers housing, serves a population of approximately 50,000
- National Guard Comprehensive Specialized Clinic (NGCSC): serves approximately 70,000 people
- King Saud City Housing (Dirab PHC): serves approximately 100,000 people

All four PHC centers are offering comprehensive services and health care to eligible National Guard employees and their families, which include women's health, well-baby services, as well as other preventive and curative services.

The sample size was calculated based on 32.4% of response distribution.(1) Using 95% confidence interval and 5% margin of error, the required sample size was 337. The sample size was calculated using OpenEpi epidemiologic calculator (can be accessed freely online at: http://www.openepi.com/Menu/OE_Menu.htm).

Subjects were recruited by convenience sampling proportional to population size: every fifth patient attending PHC centers were included until the sample was complete. The data sampled over a period of 4 months, from June to September 2019. On each week, two random working days were selected for sampling.

The patients were selected as follow:

- Health Care Specialty Center (HCSC): 125 patients
- King Abdulaziz City Housing (Iskan Yarmouk): 74 patients
- National Guard Comprehensive Specialized Clinic (NGCSC): 64 patients
- King Saud City Housing (Dirab PHC): 74 patients

Data Collection Methods and Instruments

A self-administered questionnaire was distributed among All female patients aged 18 years and above visiting PHC centers at KAMC. Illiterate patients were interviewed. The questionnaire was constructed after a thorough search and review of published literature. The questionnaire was reviewed and approved by King Abdullah International Medical Research Center (KAIMRC). It was translated to Arabic language, then from Arabic to English to assess validity and ensure simplicity for practical application and use. The data sheets were distributed by the principal investigator and with the help of the other authors.

The questionnaire contained 37 items divided into four parts. The first part of the questionnaire was about the socio-demographic data (10 items). The second part was about the knowledge about Pap smear and its frequency and the knowledge about HPV vaccine and its doses (10 items). The third part of the questionnaire was about attitude towards Pap smear and HPV vaccine safety (9 items) and the last part was about attitude towards practice of Pap smear and HPV vaccine if Pap smear or the vaccine was previously performed (8 items).

The content validation was conducted by two gynecology consultants. The questionnaire was pre-tested on 20 subjects from the target population to check the tool clarity and accuracy. The time needed to fill this questionnaire was approximately 5–6 minutes.

Data were coded and analyzed using statistical package for social sciences (SPSS) version 23 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as mean and standard deviation. Categorical variables were expressed as frequency and percentages. Proportions were compared using chi-squared test. Statistical significance was set to 0.05 or less.

Ethical approval was obtained from KAIMRC and the Department of Family Medicine research committee, at Ministry of National Guard Health Affairs, Riyadh.

Official permission was obtained from the directors of each PHC center to distribute the questionnaires. Consent form was included in the questionnaire papers during data collection.

An informed consent was obtained from participants after explaining the aim and nature of the study at the time of data collection. Participants were assured that collected data will be kept confidential, will not be disclosed for any reason, and will be used for research purpose only.

Results

A total of 337 questionnaires were distributed to the participants included in the study (women aged between 13 and 65 years, mean age 31.52 ± 10.01 years). A total of 334 questionnaires were filled (response rate, 99.1%).

As shown in Table 1, the respondents were mostly of Saudi nationality (99.1%), highly educated (50.2%), housewives (74.9%), and married (68.6%).

Table1: Socio-demographic data of participants

Socio-demographic data	Number of participants	Percentage (%)
<u>Age</u>		
30 years or less	176	52.7%
31 years and more	158	47.3%
<u>Nationality</u>		
Saudi	328	99.1%
Non Saudi	3	0.9%
<u>Educational level</u>		
Illiterate	15	4.5%
School education	151	45.3%
University	167	50.2%
<u>Occupation</u>		
No	250	74.9%
Yes	84	25.1%
<u>Marital status</u>		
Unmarried	105	31.4%
Married	229	68.6%
<u>Parity</u>		
3 or less	150	59.7%
4 or more	101	38.7%
<u>Contraception use</u>		
No	173	64.8%
Yes	94	35.2%
<u>Contraception type</u>		
Oral contraceptive	67	72.8%
Intrauterine contraceptive device (IUCD) and others	25	27.2%
<u>Smoking</u>		
No	327	98.2%
Yes	6	1.8%
<u>Chronic disease</u>		
No	253	76.7%
Yes	72	21.8%

In assessing the risk factors for cervical cancer, we found that most women had three children or less (59.7%), were not on contraception (64.8%), healthy (76.7%), and only six (1.8%) were smokers.

Knowledge

Most of the women had heard about cervical cancer (72.8%), while the majority (72.4%) did not know that it could be caused by HPV. Moreover, they did not know that there is a vaccine against this virus (79.3%) or about the doses of this vaccine (96.7%), and 297 (88.9%) women did not know when it should be given.

A total of 167 (50.2%) women knew about Pap smear, while 291 (87%) did not know when to start screening. Only 19 (5.7%) women knew when it should be repeated. Table 2 presents the knowledge of participants regarding HPV vaccine and Pap smear.

Table 2: knowledge about cervical cancer prevention and screening

Knowledge	Frequency	Percentage (%)
<u>Knows about cervical cancer</u>	243	72.8%
<u>Knows about HPV*</u>	92	27.6%
<u>Knows about HPV* vaccine</u>	69	20.7%
<u>Knows about doses of vaccine</u>		
1	3	0.9%
3	8	2.4%
I don't know	322	96.7%
<u>Knows about Pap smear</u>	167	50.2%
<u>Knows when to start pap smear</u>	43	13%
<u>Knows about frequency of pap smear</u>	19	5.7%

*HPV: Human Papilloma Virus

Attitude

As shown in Table 3, more than half of women (59.9%) agreed that taking the vaccine is not enough to protect against the virus that causes cervical cancer. While 77.9% of women thought that the vaccine is safe, 67.1% considered that they needed the vaccine.

Table3: Attitude of women toward cervical cancer screening and prevention

Attitude	Agree	Disagree
Taking the vaccine is not enough to protect against the virus that cause cervical cancer	200 (59.9%)	134 (40.1%)
This vaccine may cause harm to the body	74 (22.2%)	260 (77.9%)
I don't think I need to be vaccinated	110 (32.9%)	224 (67.1%)
Pap smear test is important	274 (82%)	60 (18%)
Doing pap smear test every 3 years is difficult	92 (27.6%)	242 (72.5%)
Pap smear test is painful	131 (39.2%)	203 (60.8%)
Pap smear test is harmful	78 (23.4%)	256 (76.7%)
Pap smear test is only for whom having problems in the uterus or cervix	128 (38.3%)	206 (61.7%)
Its important to diagnose cervical cancer at early stage	291(87.2%)	43 (12.9%)

Most of the participants (82%) agreed that Pap smear is important, and that doing the test every 3 years is not difficult (72.5%). Furthermore, they did not think that the test is painful or harmful (60.8% and 76.7%).

Those who thought that Pap test is only for women having uterine or cervical problems were less than half of the participants (38.3%), while 87.2% of women thought that it is important to diagnose cervical cancer at an early stage.

Practice

The results shown in Table 4 revealed that only five women (1.5%) received the HPV vaccine. A total of 42 participants (12.6%) asked their doctor to have Pap smear, and 22 (6.6%) stated that their doctor offered them the test. Accordingly, (85.6%) never had Pap smear before; the reasons for this fact were that they did not know about it (57.2%) or were fearful to do it (14.4%). However, 48 (14.4%) women said they had the test before, and 59.7% were willing to repeat it.

Table 4: Practice of cervical cancer prevention and screening

Practice	Frequency	Percentage (%)
<u>Taken human papillomavirus (HPV) vaccine before</u>	5	1.5%
<u>Asked the doctor to do pap smear</u>	42	12.6%
<u>The doctor recommend pap smear</u>	22	6.6%
<u>Pap smear done before</u>	48	14.4%
<u>Recommend relatives to do pap smear</u>	288	86.2%
<u>Need campaign about it</u>	312	93.4%

Most of the study subjects (85.9%) said that they would recommend to their relatives to perform the Pap smear. Moreover, 93.1% of respondents agreed that there is a need to have a campaign or a conference in order to increase the awareness about the cervical cancer prevention.

As shown in Table 5, working women and those using contraception mostly received the vaccine ($P = 0.004$ and 0.019 compared to women without jobs and not using contraception).

Table 5: Relationship between socio-demographic data and practice

	Patient taken the vaccine before	Patient ask the doctor to do pap smear	The doctor advice the patient to do pap smear	Patient did the pap smear before	will the patient do it again
<u>Age</u> 30 or less 31 and above	3 (1.7%) 2 (1.3%)	10 (5.7%) 32 (20.3%)*	5 (2.8%) 17 (10.8%)*	9 (5.1%) 39 (24.7%)*	10 (37.0%) 36 (72.0%)*
<u>Education</u> Illiterate School education University	0 (0.0%) 1 (0.7%) 4 (2.4%)	1 (6.7%) 19 (12.6%) 21 (12.6%)	0 (0.0%) 9 (6.0%) 13 (7.8%)	1 (6.7%) 21 (14.0%) 25 (15.0%)	1 (25.0%) 20 (58.8%) 24 (63.2%)
<u>Occupation</u> No Yes	1 (0.4%) 4 (4.8%)*	26 (10.4%) 16 (19.0%)*	13 (5.2%) 9 (10.8%)	28 (11.2%) 20 (23.8%)*	26 (55.3%) 20 (66.7%)
<u>Marital status</u> Unmarried Married	2 (1.9%) 3 (1.3%)	5 (4.8%) 37 (16.2%)*	3 (2.9%) 19 (8.3%)	6 (5.8%) 42 (18.3%)*	6 (33.3%) 40 (67.8%)*
<u>Contraception use</u> No Yes	0 (0.0%) 3 (3.2%)*	30 (17.3%) 10 (10.6%)	17 (9.8%) 3 (3.2%)	30 (17.4%) 15 (16.0%)	29 (63.0%) 14 (58.3%)
<u>Contraception type</u> Oral contraceptives (OCP) intrauterine contraceptive device (IUCD) and others	2 (3.0%) 1 (4.0%)	4 (6.0%) 6 (24.0%)	2 (3.0%) 1 (4.2%)	10 (14.9%) 5 (20.0%)	9 (69.2%) 5 (55.6%)
<u>Smoking</u> No Yes	5 (1.5%) 0 (0.0%)	41(12.5%) 1 (16.7%)	21 (6.4%) 1 (20.0%)	45 (13.8%) 2 (33.3%)	43 (58.1%) 2 (100%)
<u>Chronic diseases</u> No Yes	5 (2.0%) 0 (0.0%)	25 (9.9%) 15 (20.8%)*	11 (4.4%) 10 (13.9%)	28 (11.1%) 16 (22.2%)*	27 (52.9%) 15 (75.0%)

*= Statistically significant

Women older than 30 years, with chronic disease, working, and married requested more frequently to have a Pap smear ($P < 0.01$, < 0.01 , 0.039 , and < 0.01 respectively).

Doctors asked women older than 30 years to do Pap smear (10.8%) more frequently than younger women ($P < 0.01$).

The women with previously performed Pap smear were older than 30 years ($P < 0.01$), working ($P = 0.005$), married ($P = 0.002$), and with chronic diseases ($P < 0.01$). Married women and those above 30 years of age (72%) were less likely to object to perform a Pap smear again ($P = 0.009$ and 0.003).

The relationship between the education level and knowledge and attitude was statistically significant ($P = 0.000$). This means that women with higher education have better knowledge and attitude regarding the HPV vaccine and Pap smear (Fig. 1, 2).

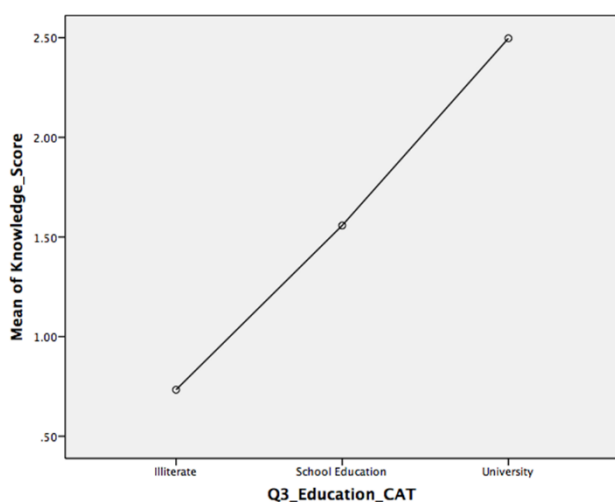


Figure 1: Relationship between knowledge and education

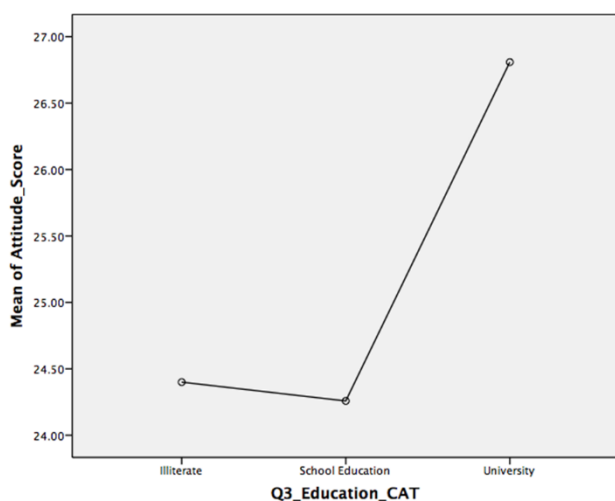


Figure 2: Relationship between attitude and education

The relationships between occupation and knowledge and between occupation and attitude were statistically significant ($P = 0.000$ and 0.010). This means that working women have better knowledge and attitude toward HPV vaccine and screening for cervical cancer (Fig. 3).

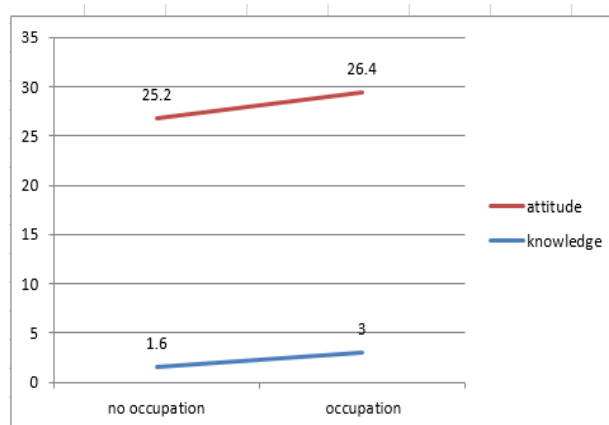


Figure 3: Relationship between occupation with knowledge and attitude

A mild positive correlation was detected between knowledge and attitude, which was statistically significant, showing that women with good knowledge have better attitude toward HPV vaccine and screening for cervical cancer ($r = 0.172$, $P < 0.01$) (Fig. 4).

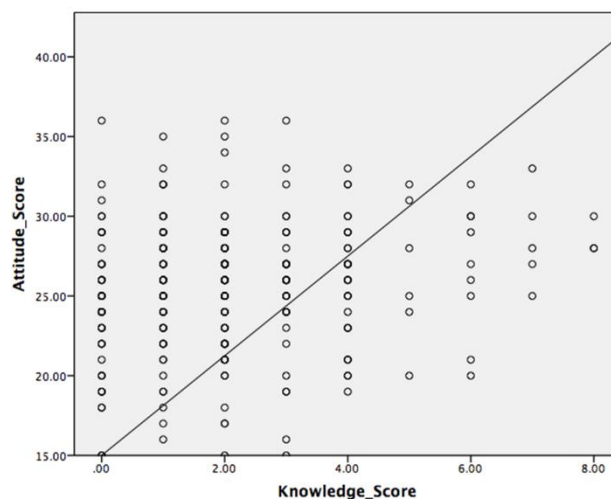


Figure 4 : Correlation between knowledge and attitude

Discussion

This study focused on three major aspects of cervical cancer, namely knowledge, attitude, and practice of cervical cancer screening, the Pap smear, and cervical cancer prevention by HPV vaccine. The study was conducted in a governmental hospital that serves National Guard employees and their families, which explains the fact that almost all participants were Saudi. Only six (1.8%) participants were smokers and this result might be related to the fact that smoking is prohibited from a religious point of view or that the responders denied the information because of the conservative community.

Most respondents in the study had heard about cervical cancer but were not aware of the correlation between HPV and this type of cancer or about the

existence of a vaccine against it, which explain why 96.7% of women knew nothing about the vaccine doses or when it should be administered. This result was similar to those obtained in studies performed in Al Ahsa and China.(11, 28) Other studies have also reported gaps in knowledge among women in various settings. In Jeddah, college students have heard about cervical cancer and that it is a preventable disease.(3) In Riyadh, 10.9% students of health colleges could correctly recognize the HPV vaccine, and 6.1% could positively define that it is protective against genital warts, while 8% recognized the appropriate age for vaccination.(30)

Regarding the Pap smear knowledge, half of the women in this study knew about it; however, most of them did not know when it should be started or performed again. They heard about it from lectures and media or from their physicians. This result is similar to those of recent studies performed in Riyadh (2017) and South Africa.(18) Nevertheless, this proportion is lower than those found in studies performed in Kuwait and Qatar, in which more than three quarters of included women knew about Pap smear either from their physician, friends/relatives, or media.(12, 24) This can suggest that health services and physicians are not taking serious steps to increase the awareness about screening and prevention of cervical cancer through media or campaigns.

Therefore, these results clearly revealed a lack of knowledge about HPV vaccine and cervical cancer screening in Saudi Arabia, which highlights the importance of information dissemination about cervical cancer and its connection to HPV, as this will have a positive impact on the disease prevention in the future. The second aspect this study focused on is the attitude about cervical cancer screening and HPV vaccine. More than half of included women agreed that taking the vaccine is not enough to protect against HPV that cause cervical cancer and that it is safe. This proportion is higher than that in Turkish women (11%), but lower than that found in China (94.9%).(5)

Regarding the Pap smear, the study results suggest that most women did not find it painful or harmful. Additionally, most of the respondents believed that all women should perform Pap smear and agreed that the diagnosis of cervical cancer at an early stage is important. These results were similar to those of studies performed in India, Qatar, and Kuwait.(9, 24)

Although the majority of women agreed that vaccination is safe, only 67.1% thought that they should be vaccinated. This shows that there is an inconsistency in the attitude to the issue and the actual steps the respondents are willing to take. Furthermore, it was found that while the attitude towards Pap smear was mostly positive, few have ever performed it. In other words, while it is recognized as a beneficial medical procedure, it is clear that not many have performed it. Finally, few believed that Pap smear is necessary only for those who are now suffering from health problems,

suggesting that Pap smear can be successfully applied in all women. Low Pap smear performance rates can be related to the fact that people tend to ignore preventive measures because they are asymptomatic or busy. The lack of time and patient interest were generally considered important barriers regarding preventive measurement.(32)

Another aspect that was highlighted by the research is HPV vaccine and Pap smear practice. Previous studies showed poor knowledge regarding HPV vaccine. In Al Ahsa and Jeddah, most women had not heard about the vaccine and therefore, did not receive it.(1, 3, 28) These results were similar to that of our study, showing that only five women out of 334 have received the vaccine.

Furthermore, only a few people asked to have Pap smear and even fewer were advised by their doctor to take the test. Accordingly, 85.6% never had a Pap smear before, which is similar to the results of a study performed in Qatar.(12) The vast majority of women in the present study who had not had a Pap smear never heard about the test and some even were afraid of it, which is similar to the results obtained in Jordanian women.(26, 27) The lack of national guidelines for the vaccination and screening of cervical cancer or the fact that this is not a common cancer in our society can be a contributing factor to this problem.

In the present study, women older than 30 years and married mostly requested the Pap smear, which was similar to women in Kuwait and Bhutan.(22, 24) This could be related to the fact that these women were visiting the gynecological/obstetrician doctors more frequently compared to the young single women.

In addition, most of the women would recommend to their relatives to perform a Pap smear. Moreover, they agreed that there is a need for campaigns or conferences to increase the awareness about cervical cancer screening and prevention, which was similar to the results of a study performed in Jeddah, showing that almost all participants agreed that there is need for public awareness campaigns.(3)

The study revealed that the number of people who actually received the vaccine is extremely low, which implies that there is a great need for education about the HPV vaccination. Furthermore, it appears that the lack of popularity and wide acceptance of Pap smear lies in the fact that doctors are not taking serious steps to address this issue. Thus, patients do not receive it because they are not aware about the test. Finally, it was confirmed that the women are ready to support public campaigns regarding this issue.

Study limitations

1. The study was performed in PHC centers at NGHA in Riyadh and its findings cannot be generalized to all community, because most responders were military personnel and their families, living in the suburban area of Riyadh.

2. This was a cross-sectional study; therefore, we cannot determine the casual relationships.
3. Self-administered questionnaire was used in this research; therefore, the potential for recall bias cannot be excluded.
4. Convenience sampling may not provide a good representation of the entire population.

Conclusions

In Saudi Arabia, public knowledge regarding the HPV vaccine and screening interval of cervical cancer is inadequate. Women had a good attitude towards the vaccine and Pap smear, but the uptake of the vaccine and screening for cervical cancer are minimal.

Recommendations

- 1- Ministry of Health should play a leading role in increasing the awareness about the cervical cancer screening and HPV vaccine among Saudi women.
- 2- A well-designed health education program on cervical cancer and benefits of screening and HPV vaccine would increase the awareness among women.
- 3- Available media resources, such as TV programs, newsletters, magazines, and social media, should be used to promote public knowledge regarding cervical cancer and HPV vaccine.
- 4- Better communication with health professionals and improvement of access to health care services will motivate women and increase the rate of cervical cancer screening and HPV vaccine.

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