

# Knowledge and Attitude Related to Cervical Cancer Prevention and Screening among Female Students in the College of Nursing, Kuwait

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DOI: [10.36348/sjnhc.2022.v05i03.002](https://doi.org/10.36348/sjnhc.2022.v05i03.002)

| Received: 29.11.2021 | Accepted: 02.01.2022 | Published: 17.03.2022

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## Abstract

**Objectives:** To assess knowledge and attitude related to cervical cancer prevention, and screening among female students in the college of nursing in Kuwait. **Subjects and Methods:** This was a descriptive cross-sectional questionnaire-based survey in which 250 female students were recruited to answer the questionnaire. **Results:** Mean age of the students was 20.91 ±4.28 years. Ninety percent (n = 227) of them have heard of cervical cancer, but only 25.72 % (n = 65) recognized infection with the human papilloma virus as a risk factor. Only 23.33% (n=58) of the students studied are aware of the human papilloma virus (HPV) vaccination. Seventy-nine percent (n=198) of the students studied were aware of the Papanicolaou cervix smear (Pap smear), and 42% of them gave a positive response when asked about the test's necessity. When students with a history of marriage were compared to those without a history of marriage, they demonstrated a statistically significant increase in their intention to undergo cytological examination (61.5 % vs 38.5 %, p=0.036). Comparing students in years 3 and 4 of a bachelor's program to those in years 1 and 2 revealed that student in years 3 and 4 were more knowledgeable about the relationship between HPV infection and cancer cervix (23.7% Vs 16 %, p=0.003). **Conclusion:** Nursing students have a limited understanding of cervical cancer, HPV vaccination, and Pap smear screening as an early detection practice. Cervical cancer prevention and screening issues must be immediately integrated into nurses' existing teaching and training curricula.

**Keywords:** Cancer cervix, prevention, early detection, public health education, nursing students.

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## INTRODUCTION

Cervical cancer is one of the diseases that can be prevented by encouraging at-risk individuals to undergo routine screening. Raising public awareness of the critical nature of disease screening may encourage people to take an active role in disease prevention initiatives. Cervical cancer is the fourth most common type of cancer in women, accounting for 6.6% of all female cancers worldwide in 2018, according to the World Health Organization [WHO, 2020]. Cervical cancer is the third most common type of cancer in women aged 15 to 44 years in Kuwait, with an annual

case count of 59 and a crude annual incidence rate per 100,000 of 3.3[hpvcentre.net,2019]. Cervical cancer claims approximately 31 lives in Kuwait each year and is the third leading cause of cancer death in women aged 15 to 44 years in Kuwait [Ferlay J *et al.*, 2018]. The etiological role of HPV infection in cervical cancer is well established, and it accounts for nearly 90% of cervical cancer cases [Ahmed SRH *et al.*, 2018]. Cervical cancer, fortunately, is considered a preventable cancer due to its long-term precancerous stage, which allows for prevention, easy access to screening, early detection, and treatment. Typically, the cervix does not exhibit any symptoms during the early stages of cancer;

**Citation:** Nabil Ahmed Badawy, Mona A Al Shammari, Marziyeh S Hosseini, Seham M Mustafa (2022). Knowledge and Attitude Related To Cervical Cancer Prevention and Screening among Female Students in the College of Nursing, Kuwait. *Saudi J Nurs Health Care*, 5(3): 47-57.

later symptoms include bleeding, pelvic pain, and pain during sexual intercourse. Cervical cancer must be diagnosed early to ensure a successful treatment and cure. Treating precancerous changes on the surface of a small part of the cervix is far more likely to be successful than treating invasive cancer that has spread to other tissues. Over a period of 10–20 years, the pathogenesis can progress from precancerous lesions to invasive cancer and ultimately result in death [Ombech EA *et al.*, 2012]. There are emerging primary and secondary preventive strategies that have the potential to further reduce the burden of cervical cancer. Primary prevention is aimed at preventing cancer caused by HPV and at reducing the risk of cervical cancer using the HPV vaccine. Vaccination is the optimal strategy for primary prevention of infection with HPV in the target population; no other preventive strategy for this cancer can be considered a substitute for vaccination. Complete vaccination of females against HPV could prevent up to 90% of cervical cancer cases worldwide. As a primary method of HPV prevention, two prophylactic vaccines against HPV-16 and HPV-18, which were responsible for 70% of cervical cancers, were developed. As a result, HPV vaccination is widely recommended and promoted among women in various countries as a means of preventing HPV and cervical cancer [Nih.gov, 2019]. The vaccine is effective against cervical cancer in women aged 16 to 26. For girls aged 9 to 14, two doses of the HPV vaccine are recommended, separated by at least six months and possibly up to 12 to 15 months. HIV-positive individuals should receive three doses. If girls are over the age of 15 and received their first dose prior to the age of 15, they may complete the series; if no doses were received prior to the age of 15, three doses should be administered; in either case, vaccination may continue until age 26 years [Finocchiaro S *et al.*, 2016].

Apart from HPV infection, the risk of developing cervical cancer is associated with several additional risk factors that can alter the natural history of HPV and cervical carcinogenesis. These factors include an early age of first sexual contact or marriage, a high parity, long-term hormonal contraceptive use, multiple sexual partners, tobacco use, and certain nutritional deficiencies. Primary prevention entails educating adolescents about health and self-protection against causes and risk factors.

The lengthy process of carcinogenic transformation from HPV infection to invasive cancer provides ample opportunities for routine screening to detect disease at its earliest cytological manifestations, such as dysplasia, a stage at which treatment is highly effective prior to the development of cervical cancer. When it comes to secondary prevention strategies, the most frequently used method for cervical cancer screening is the cytology Pap smear, which is a simple, cost-effective, and efficient method for detecting cytological changes in the uterine cervix. It is critical in

screening programs because it helps reduce both the incidence and mortality of invasive cancer. It is established that well-organized cervical screening programs or widespread good quality cytology, can reduce cervical cancer incidence and mortality.

Most women diagnosed with cervical cancer have either not had Pap tests or have not been followed up after an abnormal smear was detected. Failure to undergo routine Pap tests is the single most important risk factor for a poor outcome in women diagnosed with cervical cancer [Zutshi V *et al.*, 2017]. Other screening methods include HPV DNA tests and visual inspection with acetic acid (VIA). In low-resource settings, VIA is an alternative to cytology-based screening. In some countries, HPV DNA testing is being introduced as a supplement to cytology screening (co-testing) or as the primary screening test to be followed by a more specific test, such as cytology. For women aged 21–29 years, a Pap smear alone is recommended every three years. These recommendations apply to all women who are free of cervical cancer signs or symptoms, regardless of their sexual history or HPV vaccination status. Cervical cytology alone every three years, high-risk HPV testing alone every five years, or co-testing (high-risk HPV testing plus cervical cytology) every five years is advised for women aged 30–65 years. There is no recommendation for screening women over the age of 65 who have had adequate prior screening [acog.org, 2021]. Screening strategies vary by country, so certain countries have population-based screening programs, in which women from the target population are identified and invited to participate in each round of screening, this type of program can be implemented nationwide or only in specific regions of the country. In opportunistic screening, invitations depend on the individual's decision or encounter with health-care providers. Cervical cancer is the only malignant tumor that can be effectively controlled through organized screening programs [Arbyn M *et al.* 2009], but low screening participation is a major issue [Adedimeji A *et al.*, 2021], in part because women lack the necessary knowledge and awareness about cervical cancer, as well as how to use and conduct Pap smear tests.

A comprehensive approach that incorporates prevention by immunization, early detection, and effective screening and treatment programs is mandatory to reduce cervical cancer's high mortality rate [Golemis E *et al.*, 2018]. This comprehensive approach will be ineffective without effective health education programs, which are planned and implemented with sophistication and thoroughness, considering the target groups' level of knowledge, beliefs, attitudes, and behavior [WHO, 2012]. More precisely, education interventions that increase awareness improve access to services, increase individual efficacy, and inspire future choices, all of which contribute to the efficiency of preventive health services [Golemis E *et al.*, 2018].

In the future nursing students will have a say in the community that is why their knowledge, attitudes and practices about cervical cancer and HPV vaccination are very important both in terms of their own health and community health. So, to have a successful cancer control program, nursing students must be aware of facts about cervical cancer and screening tests themselves. Furthermore, negative attitude toward and inaccurate knowledge of cervical cancer and screening methods among health care providers especially among nurses can pose substantial barriers to cervical control program in Kuwait. Moreover, if nurses themselves undergo screening tests regularly, they can be role models for other females in carrying out cervical cancer screening tests. It is with this in mind, the aim of this study was to assess knowledge and attitude related to cervical cancer, prevention, and screening among female students in the college of nursing in Kuwait. The study hypothesis assumes that there is lack of enough knowledge about cervical cancer.

## MATERIAL AND METHODS

### Study design

A descriptive cross-sectional questionnaire-based survey

### Inclusion criteria

Female students in the college of nursing (Paaet, Kuwait), who agreed to participate in the study.

### Study sample

Potential participants were recruited from lecture rooms, cafeterias, or library. The sample size is 250 female students. The number of recruited students from each program (BSN and ADN) was according to the ratio of the number of students in each program to the total number of female's students.

### Data collection

Data was collected over 3 months, from September 2020 to January 2021. The data collection instrument was a questionnaire based on similar studies published in the literature [Jaglarz K *et al.*, 2014]. The instrument was validated in a pilot test with 30 respondents. All students answered the questionnaire after signing informed consent documents to participate in the study.

### Survey development

- The questionnaire included six sections with 44 questions
- 1. The first section included 5 items covering the following demographic data: nationality, age, and education program, level of education, marital status, and parity.
- 2. The second section included questions verifying general knowledge about cervical cancer so have you ever heard of cervical cancer? can cervical cancer lead to death? can cervical cancer be

associated with an infection? Effective method that significantly reduces the risk of this disease, possibility to be affected by the disease in the future?

3. The third section encompassed questions revealing awareness of risk factors, as HPV infection, genetic factors, early pregnancies, HIV infection, early marriage, smoking, obesity, use of contraceptive pills and poor diet.
4. The fourth section tested knowledge about HPV vaccination, so have you heard about a vaccine 'against cervical cancer'? Availability of this vaccine in Kuwait? Cost of vaccination? degree of protection from cervical cancer attained by vaccination? place of vaccination? history of previous HPV vaccination? Intention to be vaccinated in the future? best age for vaccination?
5. The fifth section tested knowledge about screening and Pap smear, so hearing about the Pap smear, its accuracy for early diagnosis of cervical cancer, frequency needed of doing the test?, any complications? , any effect of Pap smear on increasing the susceptibility to cervical cancer in the future? , attitude towards performance of future cytological examination?, recommended age for the test ?and how often should women do the test?

Overcoming information bias occurred by avoiding leading questions in the questionnaire and offering categorized values for subjects to select instead of requesting specific values.

## DATA ANALYSIS

The collected questionnaires were checked for completeness before data entry. SPSS for Windows (release 22; SPSS Inc., Chicago, IL, USA) was used for statistical analysis. Analysis of the calculation of the *p* value was achieved using the ANOVA for continuous variables and chi-squared test for categorical variables. For all significant differences, we calculate the odds ratios and confidence intervals. We considered a *p* value less than 0.05 to be statistically significant. We performed multivariate ordinal logistic regression to estimate odds ratios (ORs) and their 95% confidence intervals (CI).

## RESULTS

A total of 311 questionnaires were distributed during the study period, with 251 students returning completed questionnaires at an 80.4% response rate. The students' ages ranged from 17 to over 26 years, with a mean of  $20.91 \pm 5.28$  years, 50.68 % (n=127) were between the ages of 20 and 22 years. Fifty one percent (n=127) of the students were Kuwaitis, 79.4% (n=199) had no history of marriage, and 84.6 percent (n=212) were childless. Fifty seven percent (n=143) of the students were enrolled in a generic nursing diploma program. Table 1 provides information about the demographic data of the students.

When asked if they had heard of cervical cancer, 89.7 % (n=224) responded affirmatively. Thirty nine percent (n=98) agreed on the link between cervical cancer and infection, and only 19 % (n=48) said yes when asked if they believed this disease would affect them in the future. The details of the responses to the questions assessing students' knowledge of cancer cervix are shown in Table 2.

When students were asked about the relationship between estimated risk factors and disease occurrence, they demonstrated a lack of knowledge about several significant risk factors for the disease, with only a small percentage of students agreeing on the following as risk factors: human papillomavirus infection 25.7 % (n=65), multiple births 29.6 % (n=75), and early marriage 29.7 % (n=75). Table 3 summarizes students' responses to various risk factors.

In terms of knowledge and attitudes toward HPV vaccination, only 23.3 % (n=58) of students had heard of a vaccine against cervical cancer, and only 17% (n=43) are aware that this vaccine is available in Kuwait, while 8.7% (n=22) agreed that vaccination provides a high level of protection against cervical cancer, and only 6% (n=15) of students have received vaccinations. When students were asked about their intention to be vaccinated, 67% (n=168) responded positively, and only 10.8 % (n=27) chose 9-13 years as the optimal age to be vaccinated. Table 4 summarizes the detailed responses to the vaccination question.

Considering the knowledge about Pap smear, 78.8% (n=198) of the students knows about this test,

and 46% (n=115) were positive about its efficiency for early diagnosis of cervical cancer. When asked about their intention to perform a Pap smear in the future, only 42% (n=106) were positive, and only 27% (n=67) were aware that this test should be performed every three years. Table 5 summarizes the detailed responses to questions about the Pap smear.

We compared the responses of two groups of students: those who are married or divorced 20.6 % (n=52) and those who are unmarried 79.4 % (n=199). The only difference that was statistically significant was in the unmarried students' positive intention toward future vaccination ( $p = 0.042$ , OR 0.61). On the other hand, married and divorced students were significantly more likely to undergo Pap smear than unmarried students ( $p=0.036$ , OR 0.63). Table 6 shows the details of this comparison. Comparing students in years 3 and 4 of bachelor's program (BSN) to those in years 1 and 2 (table 7) revealed no statistically significant differences in knowledge or attitudes about cancer cervix, with the exception that students in years 3 and 4 were more knowledgeable about the relationship between HPV infection and cancer cervix (23.7 % vs 16 %,  $p=0.003$ ). Comparing diploma students (AND program) at the entry level (level 1 and 2) to their colleagues at the advanced levels (level 3&4 and 5) revealed a statistically significant difference in knowledge that HPV infection is a major risk factor for cervical cancer (31.3 % vs 19.7 %,  $p = 0.049$ ), as well as in knowledge about cytological examination for early detection (85.1 % vs 31.3 %,  $p = 0.049$ ). The comparison is detailed in Table 8.

**Table-1: Demographic data of students**

Variable	n	%
Nationality:		
Kuwaiti	127	50.8%
Other	124	49.2%
Age:		
17-19	43	17.1%
20-22	127	50.7%
23-25	32	12.7%
>26	49	19.5%
Program:		
BSN	108	42.9%
ADN	143	57.1%
Marital status:		
Not married	199	79.4%
Married	47	18.5%
Divorced	5	2.1%
Having children:		
none	212	84.6%
1	10	3.9%
2-3	22	8.6%
>3	7	2.9%

**Table-2: General knowledge about cervical cancer**

Variable	n	%
Have you ever heard of cervical cancer?		
Yes	224	89.7%
No	22	8.7%
Do not know	5	1.2%
Can cervical cancer lead to death?		
Yes	156	62.4%
No	42	16.1%
Do not know	53	21.5%
Can cervical cancer be associated with an infection?		
Yes	98	39.2%
No	104	41.2%
Do not know	49	19.6%
Is there an effective method that significantly reduces the risk of this disease?		
Yes	183	73.1%
No	12	4.5%
Do not know	55	22.3%
Do you think this disease could affect you in the future?		
Yes	48	19.0%
No	55	21.9%
Do not know	148	59.1%

**Table-3: Relationship between estimated risk factors and occurrence of the disease**

Variable	n	%
Human papillomavirus infection:		
Agree	49	19.5%
Strongly Agree	16	6.2%
large number of pregnancies and childbirths:		
Agree	66	25.9%
Strongly Agree	9	3.7%
Early marriage:		
Agree	61	24.4%
Strongly Agree	14	5.4%
Long-term hormonal contraceptive use		
Agree	8	39.4%
Strongly Agree	35	13.7%
Full-Term Pregnancies Occurring at Age 17 or Younger		
Agree	56	22.2%
Strongly Agree	14	4.9%
Human immunodeficiency virus infection		
Agree	94	37.3%
Strongly Agree	32	12.9%

**Table-4: knowledge and attitude about HPV vaccination**

Variable	n	%
Have you heard about the vaccine 'against cervical cancer'?		
Yes	58	23.3%
No	147	58.3%
Do not know	46	18.3%
If such a vaccine exists, is it available in Kuwait?		
Yes	43	17.0%
No	45	17.8%
Do not know	163	65.1%
Have you ever been vaccinated?		
Yes	15	5.8%



No	189	75.8%
Do not know	47	18.3%
Does it guarantee 100% protection from cervical cancer?		
Yes	22	8.7%
No	104	41.5%
Do not know	125	49.8%
Do you have the intention to take the vaccination that protects you from cervical cancer?		
Yes	168	67.2%
No	31	12.3%
Do not know	52	20.4%

**Table-5: Knowledge about secondary prevention; Cytological examination**

Variable	n	%
Have you ever heard about cytological examination; Pap smear		
Yes	198	78.8%
No	37	14.9%
Do not know	16	6.2%
Is it a test that gives a 100% chance of early diagnosis of cervical cancer?		
Yes	115	45.8%
No	40	15.9%
Do not know	96	38.2%
Do you think you should undergo cytological examination in the future?		
Yes	106	42.2%
No	63	25.1%
Do not know	82	32.6%
How often should women do the test?		
Every year	138	55.0%
Every 3 years	67	26.7%
Every 5 years	46	18.3%

**Table-6: Responses of married and divorced students in comparison to unmarried students**

	Married & divorced n=52	Do not married n=199	p-value	OR (95% CI)
Have you heard about the vaccine 'against cervical cancer'?				
Yes	12 (22.9%)	47 (23.5%)	0.362	0.86(0.55-1.44)
If such a vaccine exists, is it available in Kuwait?				
Yes	7 (13.9%)	36 (18 %)	0.781	0.65(0.30-01.9)
Have you ever been vaccinated?				
Yes	2 (2.78%)	13 (6.50%)	0.600	0.61(0.38-0.98)
Do you have the intention to take the vaccination that protects you from cervical cancer?				
Yes	28 (55.6%)	139 (70.1%)	0.042	0.61(0.38-0.98)
Have you ever heard about cytological examination Pap smear?				
Yes	43 (82.9%)	156 (78.6%)	0.885	0.61(0.38-0.98)
Is it a test that gives a 100% chance of early diagnosis of cervical cancer?				
Yes	27 (52.8%)	89 (45.2%)	0.631	1.44(0.9-2.29)
Do you think you should undergo cytological examination?				
Yes	32 (61.5%)	76 (38.5%)	0.036	0.6(0.29-1.20)
How often should women do the test?				
Every 3y	9 (17.6%)	50 (25.9%)	0.447	0.7(0.5.-1.10)
OR- Odds Ratio CI- Confidence interval				

Variable	Total students	Year 1&2	Year 3&4	P value
	n=251	n=63	n=45	
<b>Age</b>				
17-19	43 (17.1%)	10 (15.7%)	1 (2.70%)	
20-22	127 (50.7%)	26 (41.2%)	16 (35.1%)	
23-25	32 (12.7%)	10 (15.7%)	12 (27.0%)	
>26	49 (19.5%)	17(27.5%)	16 (35.1%)	
<b>Marital status</b>				
Not married	199(79.4%)	47 (74.0%)	34 (75.7%)	
Married	47(18.5%)	11(18.0%)	10(21.6%)	
Divorced	5 (2.1%)	5 (8.00%)	1 (2.70%)	
<b>Have you heard about cervical cancer?</b>				
Yes	224(89.7%)	56 (88.2%)	40 (89.2%)	1.000
No	22(8.7%)	7 (11.8%)	5(10.8%)	
Do not know	5(1.2%)	0	0	
<b>Human papillomavirus infection:</b>				
Agree	65(19.5%)	10(16.0%)	11(23.8%)	0.003
<b>Have you heard about the vaccine 'against cervical cancer'?</b>				
Yes	58(23.3%)	10 (15.7%)	5 (10.8%)	0.598
No	147(58.3%)	43 (68.6%)	35 (78.4%)	
Do not know	46(18.3%)	10 (15.7%)	5 (10.8%)	
<b>Have you ever been vaccinated?</b>				
Yes	15(5.8%)	6 (9.80%)	2 (5.41%)	0.550
No	189(75.8%)	49 (78.4%)	34 (75.7%)	
Do not know	47(18.3%)	8 (11.8%)	9 (18.9%)	
<b>Do you have the intention to take the vaccination that protects you from cervical cancer?</b>				
Yes	168(67.2%)	36 (56.9%)	33 (73.0%)	0.271
No	31(12.3%)	11 (17.6%)	6 (13.5%)	
Do not know	52(20.4%)	16 (25.5%)	6 (13.5%)	
<b>Have you ever heard about cytological examination?</b>				
Yes	198(78.8%)	52 (82.4%)	40 (88.9%)	0.719
No	37(14.9%)	6 (11.8%)	4 (8.33%)	
Do not know	16(6.2%)	3 (5.88%)	1 (2.78%)	
<b>Do you think you should undergo cytological examination?</b>				
Yes	106(42.2%)	28 (43.1%)	17 (37.8%)	0.358
No	63(25.1%)	13 (21.6%)	16 (35.1%)	
Do not know	82(32.6%)	22 (35.3%)	12 (27.0%)	

**Table-8: Responses of ADN students in levels 1 and 2 compared to students in levels 3&4 and 5**

Variable	Total students	level 1&2	levels 3&4and 5	P value
	n=251	n=76	n=67	
<b>Age</b>				
17-19	43 (17.1%)	21 (27.6%)	9 (13.4%)	
20-22	127 (50.7%)	42 (55.3%)	44 (65.7%)	
23-25	32 (12.7%)	7 (9.2%)	4 (6.0%)	
>26	49 (19.5%)	6 (7.9%)	10 (14.9%)	
<b>Marital status</b>				
Not married	199(79.4%)	67 (88.2%)	57 (85.1%)	
Married	47(18.5%)	9 (11.8%)	9 (13.4%)	
Divorced	5 (2.1%)	0.0 (0.0%)	1 (1.5%)	
<b>Have you heard about cervical cancer?</b>				
Yes	224(89.7%)	67 (88.2%)	62 (92.5%)	0.120
No	22(8.7%)	8 (10.5%)	2 (3.0%)	

Do not know	5(1.2%)	1 (1.3%)	3 (4.5%)	
Infection with the human papillomavirus as a risk factor for cervical cancer:				
Agree	65(19.5%)	15(19.7%)	21(31.3%)	0.049
Have you heard about the vaccine 'against cervical cancer'?				
Yes	58(23.3%)	21 (27.6%)	22 (31.3%)	0.885
No	147(58.3%)	39 (51.3%)	33 (49.3%)	
Do not know	46(18.3%)	16 (21.1%)	13 (19.4%)	
Have you ever been vaccinated?				
Yes	15(5.8%)	4 (5.3%)	3 (4.5%)	0.508
No	189(75.8%)	48 (63.2%)	57 (85.1%)	
Do not know	47(18.3%)	24 (31.6%)	7 (10.4%)	
Do you have the intention to take the vaccination that protects you from cervical cancer?				
Yes	168(67.2%)	51 (67.1%)	50 (74.6%)	0.601
No	31(12.3%)	8 (10.5%)	6 (9.0%)	
Do not know	52(20.4%)	17 (22.4%)	11 (16.4%)	
Have you ever heard about cytological examination?				
Yes	198(78.8%)	52 (68.4%)	57 (85.1%)	0.012
No	37(14.9%)	20 (26.3%)	5 (7.5%)	
Do not know	16(6.2%)	4 (5.3%)	5 (7.5%)	
Do you think you should undergo cytological examination?				
Yes	106(42.2%)	33 (43.4%)	28 (41.8%)	0.113
No	63(25.1%)	23 (30.3%)	12 (17.9%)	
Do not know	82(32.6%)	20 (26.3%)	27 (40.3%)	

## DISCUSSION

Raising awareness of cervical cancer prevention through vaccination and screening is critical in combating the disease's rising incidence, and nurses can make a significant contribution in this area. Regardless of whether medical services and screening tests are provided, increasing people's risk awareness, and encouraging them to take an active role in disease prevention may be the most effective way to control this disease. In the current study although 89.7% (n=227) of students had heard of cervical cancer, their knowledge of HPV was limited, and most students did not recognize HPV infection as a significant risk factor for cervical cancer, with only 25.72 % (n=65) of students agreeing that HPV infection is a risk factor. Similar findings were reported in a study of nursing students in Saudi Arabia, indicating that only 12.3 % (n=16) of the students had a thorough understanding of HPV infection and its relationship to cervical cancer [Eittah HFA *et al.*, 2020]. This lack of knowledge in Kuwait and Saudi Arabia contrasts with the findings of a study conducted in Croatia, where 100% (n=38) of nursing students identified HPV as a primary cause of cervical cancer development [Guljaš Slivečko I *et al.*, 2017].

Regarding vaccination against HPV, 23.33 % (n=58) of the students studied are aware of the vaccine, but the rates of HPV vaccination were low so only 5.83 % (n=15) have received it. These low percentages are comparable to those found in a Turkish study of first-year nursing students, where 82.6 % (n=570) of students had never heard of the HPV vaccine and only 2.8 % (n=19) had received it [Dönmez S *et al.*, 2018].

These percentages are significantly lower than that found in a Hong Kong study, where 65.1 % (n=127) of female university students were aware that "cervical cancer is primarily caused by HPV infections, 82.6% (n=161) believed that HPV vaccines effectively prevent cervical cancer, and 47.2 % (n=92) had received HPV vaccination [Leung, JTC *et al.*, 2018]. Additionally, a Dutch study found that 95% (n=246) of women are aware of the HPV vaccine, while 67 % (n=173) are vaccinated [Blodt S *et al.*, 2011]. In the current study the low percentage of vaccination may be due to inadequate knowledge about the vaccine, so only 17.01% (n=43) knows that this vaccine is available in Kuwait, and only 8.71% (n=22) knows that it guarantees high protection from cervical cancer. These findings suggest that health care workers such as family physicians and nurses should be more proactive in disseminating health information about HPV vaccination in the future. There is a need to emphasize vaccine availability, dose safety, appropriate age of vaccination, and acquired protection when promoting HPV vaccination. Emphasizing the safety of HPV vaccination may help reduce barriers to vaccination among young females. Additionally, these findings may indicate that the current channels of communication for health care workers are insufficient, and that more effective communication strategies between them and the public are required to ensure the dissemination of accurate and precise information.

Fortunately, our students demonstrated a favorable attitude toward HPV vaccination, with 67.2 % (n=168) expressing a positive intention for future HPV vaccination. This positive intention was statistically



significantly higher in students who had not married than in students who were married or divorced (70.1% Vs 55.6 %,  $P= 0.042$ ). These findings may highlight the importance of a more targeted approach to HPV vaccination advocacy, and health promoters should consider achieving an objective of young females receiving HPV vaccination prior to sex marriage to protect themselves from HPV infection.

Cervical cancer is a preventable disease, and one critical component of prevention is early detection of premalignant lesions through screening. Thus, when it comes to cytological screening via Pap smear for early detection of cancer, 78.84 % (n=198) of the students studied were aware of the test, but only 42 % (n=106) expressed a positive intention to do so in the future. Only 21% (n=11) of married and divorced students studied had undergone a single cytological examination. This low rate of screening is statistically comparable to that observed in a 2009 study conducted in Kuwait, where only 22.3 % of studied females underwent cytological screening [Al Sairafi M *et al.*, 2009]. When compared to students without a history of marriage, married and divorced group of students had a statistically significant difference in their positive attitude toward future intention to undergo cytological examination (61.5 % vs 38.5%,  $p= 0.036$ ). It is clear from the current study that all students who underwent Pap smear were married, as sexual relationships outside marriage are not culturally acceptable in Kuwait, and unmarried sexually active females would refuse screening out of fear of social stigma associated with having a test perceived to be used for married women. Most participants in a study conducted in Saudi Arabia lacked knowledge about the Pap smear, its importance, procedures, timing, periodicity, and prior precautions [16]. In a study on cervical cancer screening among female nursing students in a tertiary institution in Nigeria, undergraduate nursing students demonstrated adequate knowledge 93.3% (n=198) of cervical cancer screening, but had a negative attitude toward cervical cancer screening, with only 26.7% (n=57) expressing a favorable attitude and the majority 73.3% (n=155) expressing a negative attitude.

In Kuwait, married and divorced nursing students demonstrated adequate knowledge that cancer screening can detect this cancer at an early stage; however, uptake is low, and there is a reluctance to undergo the screening despite the availability of a free service almost at any time they desired. Cervical screening services may have been hampered by barriers related to health care institutions, nurse perception and fear of the screening technique and the uncomfortable pelvic examination, embarrassment, stigma, or social influence, or may have been hampered because nurses did not perceive themselves to be at risk of the disease. The belief that cervical cancer is a terminal illness, and that death is a foregone conclusion once cancer is detected may also act as a barrier to cancer screening, detection, and treatment participation. It is worrying to

find a low level of awareness about cancer cervix and Pap smear screening among young nursing students, these nurses unlikely to ever motivate or advise others until their doubts are resolved.

The lack of depth on knowledge of cervical cancer in nursing students can be explained by their training curriculum. This also implies that more importance in teaching curriculum and training programs should be incorporated about cancer cervix and screening.

Kuwait has a cervical cancer screening program, with cytology as the primary screening method. However, no quality assurance structure or mandate exists to supervise and monitor the screening process, and no active invitation to screen exists. That is, there are no structured programs that assign national or regional implementation teams or require providers to adhere to guidelines, rules, or standard operating procedures. Active invitation to screening is a population-based program that identifies and personally invites each eligible member of the target population to participate in a particular round of screening. In Kuwait, cervical cancer screening coverage is estimated to be 22.3% [Al Sairafi M *et al.*, 2009]. Additionally, Kuwait lacks a national HPV vaccination program [Bruni L *et al.*, 2016].

An HPV vaccination program and increased awareness about cervical cancer prevention are required if the disease's burden is to be effectively reduced in the coming decades. The strength of the current study in that it is the first to assess nursing students' knowledge and practice regarding cervical cancer screening in Kuwait, where cervical cancer is the third most common female cancer among women aged 15 to 44 years [hpvcentre.net, 2019]. On the other hand, there are some limitations to the study. To begin, some questions were recognition-based, while others were recall-based. Both recall and recognition questions are subject to limitations. Because recall is limited by memory, it underestimates awareness, whereas recognition overestimates awareness because participants find it easy to guess. Second, the method used to estimate Pap smear practice was self-reported history, which may not accurately reflect the true picture due to inaccurate recall or desirability bias.

## CONCLUSION

An important worrying finding is the low level of awareness about cancer cervix prevention and risk factors as well as Pap smear screening among young nursing students. The lack of depth of this knowledge can be explained by their training curriculum, and it implies the importance of its incorporation in teaching curriculum and training programs. If nurses are adequately informed about cervical cancer and screening methods, they can educate and encourage women in their communities to seek health care and undergo routine cervical cancer screening.

Despite the provision of medical services and availability of screening tests, increasing people's risk awareness, and supporting them to be actively engaged in disease prevention could be the best approach to increase screening rate. Most of mortality and morbidity from cancer cervix could be prevented if all adolescent girls received HPV vaccination and all women had access to cervical screening and treatment for pre-cancerous lesions. We recommend a nationwide immunization program against HPV, and vaccination should be officially recommended and reimbursed for young girls aged 12–17 years.

## ACKNOWLEDGMENT

We acknowledge the Public Authority for Applied Education and Training, Kuwait, for funding and making this research project possible, fund grant number (CN-19-02).

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