

# Knowledge and Attitude Regarding Cervical Cancer Screening and Human Papillomavirus (HPV) Vaccine among Female Students in Jouf University

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## ABSTRACT

**Objectives:** Cancer cervix is the third most prevalent gynecological cancer in Saudi Arabia. Incidence of HPV infection in invasive cervical carcinoma in Saudi Arabian females is 96%. More than 40% of Saudi females with cancer cervix are diagnosed at advanced stage. The lack of effective preventive and screening programs in Saudi Arabia causes delay in diagnosis. This study was designed to investigate the level of knowledge about different aspects of cancer cervix, HPV and HPV vaccine among female students in Jouf University and their attitude towards sharing in screening or vaccination programs.

**Participants and Methods:** This is a descriptive cross-sectional study performed through a self-administered questionnaire distributed to 280 female students.

**Results:** the current study showed that 40% had good knowledge about cancer cervix and 14.6% had good knowledge about risk factors. About 20.4 % had knowledge about HPV vaccine and 24.3% had knowledge about Pap smear. Most respondents (82.1%) and (61.1%) had positive attitude towards screening and HPV vaccination respectively. Regarding sources of knowledge 30.4% of respondents' knowledge were obtained from internet. Most prevalent reason for Pap smear refusal is embarrassment and for HPV vaccination was perception as an unneeded practice.

**Conclusion:** The study concluded low level of knowledge about cancer cervix and HPV vaccine among female students in Jouf University.

## KEY WORDS

cancer cervix, Pap smear test, human papilloma virus, knowledge

## INTRODUCTION

Cancer of cervix is the first cancer that the WHO approved to be mostly associated with infection<sup>1)</sup>. Cancer cervix is the fourth most prevalent cancer and fourth most common cause of death from cancer in females globally. It causes about 270000 deaths every year. Most of these deaths are in nations with low and medium income<sup>2)</sup>. Cancer cervix is the eighth most prevalent cancer in Saudi Arabia and third most prevalent gynecological cancer in women aged between 14 and 44 years<sup>3)</sup>. The incidence of HPV infection in invasive cervical carcinoma in Saudi Arabian females is 96%<sup>4)</sup>. More than 40% of Saudi Arabian females with cancer cervix are diagnosed at advanced stage. The lack of effective preventive and screening programs in Saudi Arabia causes delay in diagnosis<sup>3)</sup>.

Cancer cervix can be prevented by implementation of vaccination and screening programs. More than half of cases of infiltrating cancer cervix are diagnosed in women who did not go through regular screening. Cervical microinvasive carcinomas are treated only by cervical cone excision. However, most invasive cancers are managed by hysterectomy with lymph node excision and additional, radiation and chemotherapy for disseminated lesions. The 5-year survival rate is 100% for microinvasive carcinomas, for stage 1 disease without lymph node involvement 5-year survival is up to 87%. For locally advanced cervical carcinoma, survival is about 70% following a course of concurrent chemoradiotherapy. Survival is less than 50% for tumors that extended

beyond pelvis<sup>5)</sup>.

The main screening methods include Pap smear (most important), visual inspection using acetic acid and HPV tests<sup>6)</sup>. Pap smear screening decreased the incidence and death rates from cancer cervix by 70% in developed countries after 3 years of execution of screening programs<sup>3)</sup>.

The International agency for research on cancer (IARC) HPV Working Group recommended routine HPV vaccination for girls aged 11-12 years. They also recommended HPV vaccination for any female between 13 and 26 who had not taken or did not complete the three doses of the vaccine<sup>7)</sup>. There are three different available vaccines, which vary in the number of HPV strains<sup>8)</sup>.

Saudi Arabian culture is unique. Cultural beliefs and values may affect acceptance of females to screening and immunization. Other factors include lack of education, emotional, cognitive, and environmental factors<sup>4)</sup>.

Studying risk factors for HPV infection and for cancer cervix and searching factors that may influence acceptance of females to screening and vaccination is of great importance. It is also important to educate females at susceptible age about HPV and HPV vaccine so that they can make knowledgeable decision about screening and vaccination.

This study investigated the level of awareness and knowledge about different aspects of cancer cervix, HPV and HPV vaccine among female students in Jouf University. It also explored if they accept to share in screening programs or be vaccinated and factors that may be a barrier for screening or vaccination.

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**Table 1: Sociodemographic features of participant female students, Jouf University, KSA, 2019**

Characteristics	No. (n = 280)	Percent	
Age (x ± SD)	21.08 ± 1.79		
Marital status	Married	11	3.9
	Single	269	96.1
Age of marriage (x ± SD)	20.63 ± 3.90		
Duration of marriage (x ± SD)	3.36 ± 3.32		
Children	Having children	5	14
	No children	275	86
Using contraception	Using	1	2.8
	Not using	279	97.2
Smoking	Yes	2	0.7
	No	278	99.3
Type of college	Medical	139	49.6
	Non-medical	141	50.4

**Table 3: Attitude towards Pap smear test and HPV vaccination among female students, Jouf University, KSA, 2019.**

	Attitude towards Pap smear test		Attitude towards HPV vaccination	
	No. (n = 280)	Percent	No. (n = 280)	Percent
Totally agree	230	82.1	171	61.1
Agree	37	13.2	63	22.5
Neutral	11	3.9	38	13.6
Not agree	2	0.7	4	1.4
Totally not agree	0	0	4	1.4

## PARTICIPANTS AND METHODS

### Setting

Jouf region is situated in the northern part of Kingdom of Saudi Arabia. Jouf University is located in Al- Jouf region. The Jouf University female campus includes eight colleges: Medicine, Pharmacy, Computer Science, Science, Applied Medical Sciences, Administrative Sciences, Education, and Sharia.

### Study design and sampling

The present study is a descriptive cross-sectional study performed among female students of Jouf University during the academic year 2019/20. A self-administered questionnaire was distributed to the female students. The sample size was calculated according to 82.45% prevalence of good cancer cervix knowledge<sup>9</sup>. The calculated sample size was 280 female student.

Female students' names were listed in a numerical order and were arranged alphabetically. Study population was selected randomly from the numerical list by simple random sampling technique using simple random table. Every student had an equal chance to be included in the study.

### Tools of the study

Semi-structured questionnaire designed by the researcher according to the findings from two published studies that were conducted in Saudi Arabia to collect the data pertaining to the study objectives<sup>3,4</sup>. The questionnaire was translated from English to Arabic. Pilot study was done to assess the relevance of the questions to the aim of the work, determine whether the respondents understand them or not and to determine the

**Table 2: Female students' knowledge about cancer cervix signs, risk factors, HPV vaccine and Pap smear test, Jouf University, KSA, 2019.**

	No. (n = 280)	Percent	
Knowledge of cancer cervix signs	Good	112	40
	Poor	168	60
Knowledge of risk factors	Good	41	14.6
	Poor	239	85.4
Knowledge of HPV vaccine	Good	57	20.4
	Poor	223	79.6
Knowledge of PAP smear	Good	68	24.3
	Poor	212	75.7
Total knowledge	Good	45	16.1
	Poor	235	83.9

time needed to complete the interview. Pilot study was done on 10 students who were then excluded from the study.

The questionnaire is divided into three components. The first component included socio-demographic characteristics such as age, educational status, marital status, age at marriage, duration of marriage, number of living children, and use of hormonal contraception, smoking, and family history of cervical cancer.

Second component was Knowledge about cervical cancer, possible signs of cancer cervix (is questioned in 8 items), pap smear test and human papillomavirus (HPV) infection and vaccine. A score of one point was assigned to correct answers for possible signs, while zero points were assigned to the answers "No" or "I don't know." The potential risk factors for cervical cancer were challenged using 8 items (HPV status, smoking, weakened immunity, use of contraceptive pills, history of Chlamydia infections, marriage at a younger age, many children and not regularly Pap smear testing). Knowledge scored  $\geq 60\%$  was considered good knowledge.

Third part was about attitudes and acceptance of the females towards cancer cervix screening and human papilloma virus vaccine. A 5-point Likert-type scale options was used (strongly disagree (1 point) to strongly agree (5 points) for assessment of the attitude. The causes of refusal for Pap smear test and for HPV vaccination were explored.

### Statistical analysis

The Statistical Package for Social Sciences (Spss version-21) was used for data analysis. Quantitative data were expressed as means  $\pm$  standard deviation while qualitative data were expressed as frequencies and percentages. Qualitative categorical variables were compared using chi-square test. Level of  $p < 0.05$  was considered statistically significant.

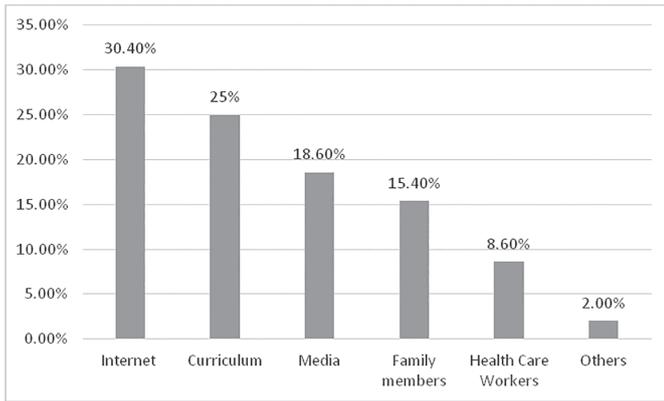
## RESULTS

The study was performed on 280 female students in Jouf University, Saudi Arabia. Table 1 reveals the sociodemographic characteristics of the participants. Their mean age was  $21.08 \pm 1.79$ . Most of the respondents were single (96.1%). The mean age of marriage were  $20.63 \pm 3.90$  and mean duration of marriage  $3.36 \pm 3.32$ . Only 14% have children and 2.8% are using contraception. Regarding the type of college, 49.6% of respondents were studying in medical college and 50.4% in non-medical students.

Table 2 describes the level of knowledge regarding cancer cervix symptoms, about 40% had good knowledge and for risk factors only 14.6% had good knowledge. The table shows also that 20.4% had knowledge about HPV vaccine and 24.3% had knowledge about Pap smear test. Regarding the overall knowledge, the study shows that the majority (83.9%) had poor knowledge.

Table 3 demonstrates that most of the respondents 82.1% and 61.1% had positive attitude towards Pap smear screening test and HPV vaccination respectively.

Figure 1 shows the distribution of information sources that the respondents used for updating their knowledge, 85 (30.4%) of respon-



**Figure 1: Information sources regarding cancer cervix among female students, Jouf University, KSA, 2019.**

**Table 4: Reasons of refusal of Pap smear test and HPV immunization among female students, Jouf University, KSA, 2019.**

	Reason of Pap smear test refusal		Reason of HPV immunization refusal		
	No. (n = 280)	Percent	No. (n =280)	Percent	
Pain	2	3.3	<b>Unsafe</b>	14	18
Embarrassed	20	32.8	<b>Not good</b>	5	6.4
Hard to do	10	16.4	<b>Not needed</b>	31	39.7
Worry of result	5	8.2	<b>Hard</b>	12	15.3
Not necessary	17	27.8	<b>Cost</b>	1	1.3
Cost	0	0	<b>Social</b>	1	1.3
Others	7	11.5	<b>Others</b>	14	18

dents knowledge were obtained from internet followed by college (25%)

Regarding the reasons of refusal of Pap smear screening test and HPV vaccination, table 4 shows that the most prevalent reason for Pap smear refusal is Embarrassment (32.8%) and the most prevalent reasons for HPV vaccination was their perception as an unneeded practice (39.7%).

Table 5 shows the relationship between acceptance of Pap smear and HPV vaccine and the level of Student's total knowledge regarding cancer cervix. Poor knowledge was significantly associated with refusal of Pap smear screening and HPV vaccination (p = 0.058, 0.018, respectively).

**DISCUSSION**

Cancer cervix is a preventable disease. Prevention is accomplished mainly by early diagnosis of the preinvasive lesions through the cervical screening and the anti-HPV vaccination in susceptible age. This study aimed to improve the awareness of female students towards cervical cancer and human papillomavirus (HPV) vaccine.

The current study showed that the students who had good knowledge about cancer cervix regarding to its commonality and its symptoms were 112 (40%) and those with poor knowledge were 168 (60%).

A study conducted by George Koshy et al, revealed that fifty-one percent of students knew what cancer cervix is and how it is common. Forty four percent were aware of its possible symptoms<sup>10</sup>. Another study by Saranva et al, that explored the knowledge and awareness toward cervical cancer screening and prevention among college female students, only 30.61% were aware of cancer cervix<sup>11</sup>. However, a study done in India showed that 82.45% of girls had good knowledge about cancer cervix. This may be due to conduction of the study in one of the

**Table 5: Relationship between acceptance of Pap smear and HPV vaccine and the level of Student's total knowledge regarding cancer cervix among female students, Jouf University, KSA, 2019.**

Acceptance		Knowledge		P value
		Good No (%)	Poor No (%)	
Pap smear test	Yes	40 (18.3)	179 (81.7)	0.058
	No	45 (16.1)	235(83.9)	
HPV vaccine	Yes	39 (19.3)	163(80.7)	0.018
	No	6 (7.7)	72(92.3)	

largest private universities of India where majority of students belong to affluent and educated families<sup>12</sup>.

High-risk HPV infection is the main cause of cancer cervix. Therefore, risk factors associated with HPV infection represent the risk factors for cancer cervix. These include; lowered immunity, early age at 1<sup>st</sup> sexual intercourse, multiple sexual partners, and sexual partner with high risk of HPV infection, tobacco smoking, oral contraception, repeated delivery and non-screening or under screening<sup>9</sup>.

In this study, only 41 students (14.6%) had good knowledge about risk factors of cancer cervix. This is slightly higher than the results of a study by Saranva et al, in which percentage of knowledge about risk factors was only 5.1%<sup>11</sup>. However, the current study is consistent with another study conducted in India, which revealed that only 15.4% of participants knew that HPV is the main cause of cancer cervix, and 36% had information about other risk factors related to sexual activity<sup>13</sup>.

Cancer cervix can be controlled effectively by screening. Detection of cytological abnormalities by microscopic examination of Pap smears, and then treatment of women with high-grade cytological abnormalities, avoids development of cancer. Well-organized cytological screening at the population level, every three to five years, can reduce the incidence up to 80%<sup>14</sup>.

This study revealed that 24.3% of students are knowledgeable about Pap smear while 75.7% of the students had poor knowledge about it. This is consistent with another study revealed that 97.9% were unaware of Pap smear<sup>11</sup>. However, in another study, 91.5% of students were aware of Pap smear. This may be because the study was in Poland where pap smear based screening program is implemented since 2004<sup>15</sup>.

Human papillomavirus (HPV) is a group of very common viruses. There are more than 100 types of HPV, 14 of them cause cancer. HPV is mainly transmitted through sexual contact. Two types of HPV (16 and 18) cause 70% of cervical cancers and pre-cancerous lesions. Routine vaccination is recommended to girls 11 to 12 years old. It can also be given until age of 26 if there is no previous vaccination. For those below 15 years two doses at 0 and at 6 to 12 months are recommended. For those 15 years and older, three doses at zero, 2 and 6 months are recommended<sup>3,8</sup>.

Regarding knowledge of HPV, 20.4% of students had good knowledge and 79.6% had poor knowledge. Saranva et al, also found that only 2.04% of participants are aware of HPV vaccine<sup>11</sup>. And Shazia et al, found that 44% of students were aware of HPV vaccine<sup>12</sup>. Awareness of HPV was 88% in a study that was executed on Belgian students who have unrestricted sexual activity and more knowledge about unsafe sexual practice and sexually transmitted disease. In addition, there is a national free HPV vaccination program<sup>16</sup>. Another study in Malaysia revealed that HPV awareness was even higher. (91.7%). All participants in this study were medical students and there is a free HPV vaccination program in Malaysia<sup>17</sup>.

Jradi et al, concluded low basic knowledge about cancer cervix and its causes in Saudi women and assigned the reason to lack of culture and education<sup>4</sup>. The Saudi HPV Information Centre 2019 declared that there is no public screening program, no active invitation to screening and no public vaccination program<sup>18</sup>.

The most prevalent source of information of respondents in this study was internet (30.4%). A study; conducted in Jouf university 2019 showed that nearly half of female students are moderately to severely internet addicted<sup>19</sup>. This is consistent with 3 studies which stated that internet and social media were the main source of knowledge about HPV and cancer cervix<sup>11,15,16</sup>. However another 2 studies stated that the main source of knowledge was classroom or medical curriculum as all their participants were studying medical sciences<sup>20,21</sup>.

This research found that 83.6% of the study population thought that HPV vaccine is important. While 13.6% were neutral and 2.8% thought it is unuseful. 72% accepted the idea of having the vaccine. Similarly to great extent the results of Shazia *et al* (73.2% vaccine acceptance) and Salman *et al* (70%)<sup>12,21</sup>. However, 28% refused to take vaccine. Most of them thought that they do not need the vaccine (11.1%), it is unsafe (5%), and it is difficult to get (4.3%).

Regular screening for early detection of cervical cancer was thought to be important by 95% of students. Only 0.7% thought it is not important. However, 21.8% of them refused the idea of having Pap smear done for screening. First cause of refusal was embarrassment (7.1%). This is consistent with the results of a study conducted in Riyadh that stated that the first cause of refusing Pap smear is embarrassment or no access to female doctor<sup>3</sup>. Second cause was unnecessary (6.1%). Brian *et al* declared that women who believe that no symptoms no necessity for screening are less likely to screen<sup>22</sup>.

Although the current study showed poor knowledge about cancer cervix, screening, HPV and vaccination. The acceptance of screening and vaccination were high. This may be due to fear of the unknown or feeling of its importance while going through the questionnaire. A study done in Nigeria also found that knowledge of Nigerian women was poor, but most of them agreed to undergo screening<sup>23</sup>.

## LIMITATIONS OF THE STUDY

This study had some limitations. The results could not be generalized to the entire population of Saudi Arabia because our sample was obtained from only one University. This study was conducted using a self-administered questionnaire, and bias cannot be ruled out due to the use of the cross sectional design in this study.

## CONCLUSION AND RECOMMENDATIONS

The study concluded low level of knowledge about cancer cervix and human papilloma virus vaccine among female students in Jouf University. This raise the need for education about this issue for female students and to females in society in general to increase the awareness about the risk and prevention.

## ETHICS APPROVAL

Ethical approval was obtained from Jouf University ethics committee number (03-02/41). The privacy of the participants was protected. The participants in the study signed written consent after clarifying the aim of the study.

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