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Knowledge and Awareness of Papillomavirus and Cervical Cancer among College Students and Health Care Workers Women in Diyala, Iraq

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Abstract **Background:** Human papillomavirus (HPV) is one of the most common causes of sexually transmitted infection and it's now known to be a risk factors for the development of cervical cancer. Cervical cancer is the second most common cancer in women and it's one of the leading causes of morbidity and mortality amongst the gynecological cancers worldwide, especially in developing countries. **Objectives:** This study sough to evaluate knowledge and awareness about Human Papillomavirus (HPV) and cervical cancer among women. **Subjects and methods:** The present study are cross sectional study was conducted in Diyala, Iraq during the period from 1/ November / 2012 to 30 / September / 2013, this study included 198 women, the mean age was (27.29±9.63) years, the age range was (17-60) years, the participants were divided into two groups, group I, (students group) includes (99) female college students who studies in Diyala university, group II, (health care workers group), includes (99) female physicians and nurses who worked in AL-Batol Maternity and Children Teaching Hospital. Data was collected using questionnaire that was adopted from previous studies. All data were statistically analysis. **Results:** The present results show that the women demonstrated poor levels of knowledge about HPV and cervical cancer, 106(53.54%) of them had heard about HPV, while, only 73(36.87%), 60(30.30%) knew that the cervical cancer and genital warts caused by HPV respectively. This study showed that the participants had very limited knowledge about pap smear, only 57(28.79%) knew that pap smear is the test to detect abnormal cervical cells, the results show highest level of knowledge and awareness about HPV, cervical cancer was among health care workers group, participants who live in urban and married with statistically significant difference ($P<0.05$), ($P<0.01$). Conclusion: This study highlights the need for educational programs regarding HPV infection and it's complications such as cervical cancer. In conclusion, the present study shows inadequate levels of knowledge and awareness about HPV and it's relation to cervical cancer, genital warts as well as transmission of infection and Pap smear test among study groups especially the university students.

Keywords: *human papillomavirus (HPV), cervical cancer, knowledge, women*

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1. Introduction

Human papillomavirus (HPV) is a member of the papillomaviridae family of the viruses that are capable of infecting human and it's one of the most common causes of sexually transmitted diseases in both men and women worldwide [1]. In women, genital HPV types infect primarily the cervix, vagina, vulva and these genital type HPVs are further divided into high and low risk types according to the association with genital tract cancer [2]. High risk HPV types 16 and 18 causes cervical cancer, HPV 16 type is the most often found accounting for about half of the cervical cancer cases in the United State and Europe[3]. Transmission of the HPV occurs primarily by sexual contact or by skin to skin contact [4]. Cervical cancer and premalignant lesions constitute a major problem in women health according to the WHO, cervical cancer is the second most common cancer in women worldwide and is the most frequent cancer in many developing countries, with an estimate of about 493,243 women diagnosed with it and 273,505 dying from it per year, cervical cancer is also the world's second most frequent among women between 15 and 44 years of age [5,6]. The natural history of cervical cancer is a continuous disease process that progress gradually from mild cervical intraepithelial neoplasia (CIN) to more sever degrees of neoplasia (CIN 2 or CIN 3) and finally to invasive cancer [7]. Papanicolaou cytological testing (also called Pap smear) is a screening test used in gynecology to detect premalignant processes in the endocervical cancer, effectively reducing the incidence of the cervical cancer by 75%-90% [8]. In developing countries, only about 5%

of women have been screened for the disease with pap smear compared to 40%-50% in developed countries[9]. In many developing countries, women's knowledge of cervical cancer and pap smear is very limited, in a survey performed in Nigeria, only 15% had ever heard of cervical cancer, the knowledge of cervical cancer in Saudi Arabia is far behind that the developed countries, only 72 (14.4%) of participants had knowledge that HPV is an etiological agent for cervical cancer [10,11,12,13]. Lack of knowledge and awareness about cervical cancer in most and screening programs contribute to high incidence of cervical cancer in most developing countries, and one of the most important tools of prevention is increasing awareness and knowledge among women [14], because there is no previous studies to evaluate the knowledge and awareness about HPV and cervical cancer among women of reproductive age, we conducted this study to assess levels of knowledge and awareness about HPV and cervical cancer among study groups.

2. Method

2.1. Participants

This study included 198 women, the mean age was (27.29±9.63) years, the age range was (17-60) years. these women were divided into two groups; group I, (students group) includes (99) of female students who studies in Diyala university (college of Medicine, college of Education, college of Science, and college of medical department of technical institute), group II, (health care workers group), includes (99) of female physician and nurses who worked in AL-Batool Maternity and Children Teaching Hospital.

2.2. Measures

The knowledge and awareness of HPV and cervical cancer

among participants women was measured using version of self-administered questionnaire (Appendix 1), this questionnaire was adopted from McPartland et al., [15] that created it to assess knowledge of HPV, and other studies [16,23,24]. The validity of the questionnaire was confirmed by two microbiologist professionals from the division of microbiology of the Medicine and Education for Pure Science College. The questionnaire was written in Arabic and then translated back into English. The questionnaire was divided into two sections to collect data on the following : (1) demographic characteristics and (2) seven questions that related to the knowledge of HPV infection and cervical cancer, these questions evaluating knowledge were " Yes / No / Don't know pattrens".

2.3. Procedure

The present study are across sectional study was conducted in Baqubah-Diyala province during the period from 1 November / 2012 to 30 / September / 2013. A face to face interview was performed and all the participants in this study gave prior approval before the interview started, after the interview, the participants received details counseling about HPV infection and cervical cancer. The Diyala university and AL-Batool Maternity and Children Teaching Hospital approved the study.

2.4. Data Analysis

Statistical analysis was performed using SAS version - 11 Ed. (Inst. Inc, Cary, NC, USA) Chi-square test was used to compare between different variables according to the correct answer to the question only and P - value of < 0.05 was considered significance.

3. Results

One hundred and ninety-eight women were included in this study. The quantitative baseline data of the participants which are : mean age, groups, residence and material status are shown in the Table 1 bellow.

Table 1. Baseline data of participants

Variables	Frequency	%
Mean age	(27.29 ± 9.63)	
Groups College tudent group Health care workers group	 99 99	 50% 50%
Residence Urban Rural	 124 74	 62.62% 37.37%
Married status Single Married	 127 71	 64.14% 35.85%
Total	198	100%

The quantitative results of investigating the levels of the knowledge of HPV infection and cervical cancer among participants women are illustrated in Table 2 below:

Table 2. Knowledge of HPV infection and cervical cancer among participants

Questions		Yes No / %	No No / %	Don't know No / %
Q1	Have you heard about Papillomavirus before?	106(53.54%)	59(29.80%)	33(16.66%)
Q2	Is Papillomavirus causes cervical cancer?	73(36.87%)	18(9.09%)	107(54.04%)
Q3	Is Papillomavirus causes genital warts or anal warts?	60(30.30%)	23(11.62%)	115(58.08%)
Q4	Is Papillomavirus transmitted by sexual contact?	70(35.35%)	31(15.66%)	97(48.99%)
Q5	Is the (pap smear) special test to detect abnormal cervical cell?	57(28.79%)	18(9.09%	123(62.12%)
Q6	Is the smoking increases the risk of cervical cancer?	114(57.58%)	10(5.05%)	74(37.37%)
Q7	Is the vaccine for the prevention of the disease available?	46(23.23%)	35(17.68%)	117(59.09%)

The results show higher knowledge about HPV, cervical cancer, genital warts, transmission was noticed among health care workers in comparison with college students with statistically significant difference (P<0.05), (P<0.01), Table 3.

Table 3. Comparison between health care workers group and college students group according to answer of question –yes (percentage)

Question	Percentage (%)		Chi-square value
	Health care workers group	College students group	
Q1	35.86	17.68	6.768 **
Q2	28.28	8.59	6.083 **
Q3	23.74	6.57	4.761 *
Q4	26.77	8.59	5.149 *
Q5	17.68	11.11	NS
Q6	30.80	26.77	NS
Q7	11.62	11.62	NS
* (P<0.05), **(P<0.01)			

Regarding the residency, Table 4, show that the knowledge of HPV, cervical cancer, genital warts, transmission, pap smear test and risk factors (smoking) that increases risk of cervical cancer and vaccine was significantly higher among urban participants in comparison with rural participants (P<0.05), (P<0.01).

Table 4. Effect of residence according to answer of question –yes (percentage)

Question	Percentage (%)		Chi-square value
	Urban	Rural	
Q1	34.85	18.69	6.452 **
Q2	24.75	12.12	4.618 *
Q3	21.72	8.59	4.742 *
Q4	25.25	10.10	3.780 *
Q5	20.20	8.59	4.271 *
Q6	20.20	8.59	4.271 *
Q7	20.20	8.59	4.271 *
* (P<0.05), **(P<0.01)			

The present results show that the knowledge of cervical cancer as a results of HPV infection was significantly higher among married women in comparison with single women (P<0.05), Table 5.

Table 5. Effect of marriage according to answer of question –yes (percentage)

Question	Percentage (%)		Chi-square value
	Married	Single	
Q1	28.28	25.25	NS
Q2	22.22	14.65	3.985 *
Q3	18.69	11.62	NS
Q4	20.71	14.65	NS
Q5	14.65	14.14	NS
Q6	21.72	35.86	4.537 *
Q7	6.57	16.67	3.965 *
(P<0.05)			

4. Discussion

This study is the first study to evaluate the levels of knowledge and awareness about HPV and cervical cancer among female college students and health care workers in Diyala society. The results show, in accordance with Original Bloom's Cut Off Points [16] (Appendix 2), that the participants women, generally, have poor levels of knowledge and awareness about HPV, cervical cancer, transmission of infection, pap smear test that used to detect infection, risk factors (smoking) and vaccine .

The results showed that 106(53.54%) of the respondents had heard about papillomavirus HPV, while, previous study that conducted in California on students females show higher knowledge rate about HPV (75.5%) [17]. Another study conducted in Natal, Brazil, showed that most participants (70.9%) had poor levels of knowledge about HPV [18]. In a study that conducted on Chinese and African undergraduate medical student, Mpemba et al., [19] found that (61.2% and 58.5%) knew about HPV. The majority of participants had a very low knowledge levels about cervical cancer that caused by HPV infection, only 73(36.87%) of them correctly answered, In Qatar, AL-Meer *et al*., [20] found that just over (85%) had heard about cervical cancer. The results showed a deficiency levels of knowledge about genital warts, only 60(30.30%) of the participants knew that HPV infection causes genital warts, a study preformed in Michigan university revealed similar results, only (33.8%) knew that HPV infection causes genital warts [21]. Only 70(35.35%) of the women respondents knew that HPV is a sexually transmitted agent, different studies had yielded different results, for instance, Lima *et al* ., [18] found that (20.0%) of the women knew that HPV transmitted by sexual contact, In Colombia, (80.2%) of respondents didn't knew that HPV was sexually transmitted [22], while in Thailand, Phianmongkhol et al., [23] reported higher levels of knowledge (83.2%) among nurses.

This study showed that the women had very limited knowledge and aware about pap smear test, only (28.79%) correctly answered that pap smear is the test that used to detect abnormal cervical cells (precancerous cells), another studies in Qatar, Saudi Arabia and Kenya, Barazil reported higher levels of knowledge and aware about pap smear test (76%,67.7%,75%,68.9%) respectively [20,24,25,26]. Concerning the smoking, 114(57.58%) of participants correctly answered that the smoking increasing the risk of cervical cancer, the knowledge about smoking as a risk factors was different from one study to another, for instance, Ali et al., [27] found that (7%) of the respondents knew that the smoking increasing the risk of cervical cancer, In Thailand, Phianmongkhol et al., [23] reported higher knowledge level about the smoking.

The highest levels of knowledge about HPV, cervical cancer, genital warts, transmission, pap smear test, smoking, and vaccine was among urban in comparison with rural participants with statistically significant difference (P<0.05), (P<0.01). Regarding the married status, the present study show higher knowledge and awareness about cervical cancer and vaccine was among married women with statistically significant difference (P<0.05), this findings are consistent with the results of AL-Meer *et al*., [20] that found higher knowledge and awareness about cervical cancer was significantly greater among married women. Regarding the levels of knowledge about HPV infection and cervical cancer and probably the general health education among rural women in Diyala society is low compared to that among women in urban areas, which are more civilities. Actually, there are many reasons behind that including limited number of schools, social stigma, religious commitment and poor

access to the media, likewise, and for some reasons, single women have little or poor knowledge about their genital tract and the disease that may have adversity affect on this system. Moreover, because of social traditions, it is a sort of shame for unmarried women to seeking such knowledge.The present study results are consistent with the findings of Sait, [24] that showed highest levels of knowledge and awareness about HPV, cervical cancer, genital warts, transmission of infection was among health care workers in comparison with students with statistically significant difference (P<0.01).

5. Conclusion

The present study shows inadequate levels of knowledge and awareness about (HPV), cervical cancer, genital warts, transmission of infection and Pap smear test among study groups especially the college students. Infection of HPV and it's complications such as cervical cancer have adversity affect on women. Education and screening programs are needed to prevent HPV infection.

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Appendix 1

Questionnaire

Socio-demographic characteristic	Number of questionnaire
AGE	
EDUCATION	
MARRID	
NON MARRIED	
RESIDENCE	
SMOKER	
NON-SMOKER	

Appendix 2

Questions related to the knowledge and awareness

Have you heard about papilloma virus before?	Yes----------	No-----	Don't Know ------ ---------	-1
Is Papilloma virus causes cervical cancer?	Yes----------	No-----	Don't Know ------ ---------	-2
Is Papilloma virus cause genital or anal warts?	Yes----------	No-----	Don't Know ------ ---------	-3
Is Papilloma virus transmitted by sexual?	Yes----------	No-----	Don't Know ------ ---------	-4
Is the (Pap smear) special test to detect abnormal cervical cells?	Yes----------	No-----	Don't Know ------ ---------	-5
Is Smoking is one of the factors affecting the increase of dangerous disease?	Yes----------	No-----	Don't Know ------ ---------	-6
Is the vaccine for the prevention of the disease available?	Yes----------	No-----	Don't Know ------ ---------	-7

Original Bloom's Cut Off Points [16]

80 -100% (Good Knowledge)
60 -79% (Moderate Knowledge)
<60 % (Poor Knowledge)