

**Knowledge, Attitude, And Practice On Cervical Cancer And HPV Vaccination Among Active Female Clinical Students In Faculty Of Medicine And In Correlation With Obstetric And Gynecology Rotation**

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**ABSTRACT**

In 2018, the global prevalence of Human Papillomavirus (HPV) infections reached approximately 43 million cases, with cervical cancer attributed to 75% of cases in women. The HPV vaccine has shown efficacy in preventing up to 88% of cervical cancer cases. To address the lack of awareness surrounding HPV and cervical cancer prevention, this study aimed to assess the knowledge, attitude, and practice among active female medical students at the Faculty of Medicine, Universitas Pelita Harapan. In March 2023, this cross-sectional study utilized a questionnaire developed and validated by Winarto et al., covering socio-demographic information and questions related to cervical cancer. Out of 168 participants, 75.6% demonstrated good knowledge about cervical cancer, yet the practice of raising awareness and HPV vaccination was notably low. Interestingly, students who underwent obstetric and gynaecology rotations exhibited similar low practice scores (87.5%) compared to those who had not. Furthermore, only 40% of students had completed their HPV vaccination. The study suggests a disconnect between knowledge, attitude, and practice among students, with no significant influence observed from obstetric and gynaecology rotations.

**Keywords:** Cervical Cancer, HPV, Knowledge, Attitude, Practice, Clinical Students.

**INTRODUCTION**

Cervical cancer is a preventable disease, and the clinical and economic burdens of cervical cancer are still substantial issues in Indonesia (Setiawan et al., 2016). Cervical cancer ranks as the eighth most common cancer affecting women across the country, with an annual incidence of 358 new cases. One preventive measure against this disease involves receiving vaccination against the human papillomavirus (HPV), which is recognized as the primary culprit behind cervical cancer (Alherz et al., 2024). Cervical cancer was the second most common cancer in Indonesia and fourth worldwide among women by 2019, with the

number of cases continuing to increase up to 134.400 cases by 2020 and 834.000 deaths were reported worldwide (WHO INFODATIN) (Bookshelf, 2023).

Cervical cancer is one of the cancers that can be prevented by vaccination. The Human papillomavirus (HPV) was found to cause cervical cancer in 75% of women, and the administration of the HPV vaccine can prevent the incidence of cervical cancer in up to 88% of women. Among Indonesian women who have received HPV vaccination, it is not a given that 1 in 10 have received a full dose of vaccination (Lei et al., 2020).

The World Health Organization (WHO) Director-General announced a global cervical cancer elimination program and launched a global strategy to accelerate elimination in 2020 (Jibat et al., 2024). WHO estimates that if prevention and control measures are not carried out properly, by 2030, at least 800,000 new cases of cervical cancer will be diagnosed every year. The primary cause of pre-cancerous and cancerous cervical lesions is infection with high-risk or oncogenic HPV types. Most cases of cervical cancer occur as a result of infection with HPV16 and 18. High-risk types, especially HPV16, are found to be highly prevalent in human populations (Zhang, Xu, Zhang, & Qiao, 2020).

HPV vaccination was introduced as one of the national immunization programs by WHO in 2009 in terms of cervical cancer prevention measures. WHO's primary prevention measure aims for girls aged 9-14 years to get the HPV vaccination. Secondary prevention aims for adult women to screen and treat precancerous lesions (Organization, 2016).

Persistent Human Papillomavirus (HPV) infection poses a significant risk for the development and progression of cervical cancer and its precancerous conditions (Qiu et al., 2023). In 2018, about 43 million HPV infections were reported around the world. One of the reasons for this high prevalence is due to a lack of knowledge regarding HPV and its potential to cause cervical cancer, and even more, how the HPV vaccine can prevent cervical cancer (Leclair & Stenson, 2022).

Previous studies have shown a low level of knowledge of HPV in some developing countries, including Indonesia, Vietnam, and Turkey (Ver et al., 2021). Indonesia has a program for early detection of cervical cancer to be implemented in primary public health care facilities, in which screening is done through visual inspection with acetic acid (VIA) with easily accessible and affordable tools and materials (Winarto et al., 2022). However, as stated in the Republic of Indonesia Constitutional Law Number 36, 2009, healthcare facilities should perform promotion, prevention, curative, and rehabilitative efforts therefore for that matter HPV vaccination should be carried out nationwide and be easily accessed by various members of the economic level to prevent and suppress the prevalence of cervical cancer (Gizi, 2019).

Medical students were given knowledge and exposure during their pre-clinical and clinical years to various cases seen in daily clinical practices. Medical students were expected to have a better understanding of this matter due to their direct exposure to patients (AkbariRad et al., 2023). Clinical students/co-assistants were also expected to carry out the task of promotion and prevention, to themselves and the community, as they were considered to have higher concerns for health (Ayu & Ramadhani, 2022). This study aims to have a better understanding and assess the knowledge, attitude, and practice of active

female clinical students of the Faculty of Medicine Universitas Pelita Harapan towards cervical cancer and HPV vaccination while also assessing their competence and participation in cervical cancer prevention.

In the previous study, it was concluded that cervical cancer and HPV vaccination were not included enough as important topics in clinical year material, which caused poor awareness among students in the clinical year (Wen et al., 2014). Thus, this study also raises a topic about the correlation between clinical year students who have or have not been through obstetric and gynaecology rotation with their knowledge, attitude, and practice towards cervical cancer and HPV vaccination (Winarto et al., 2022).

## RESEARCHED METHODS

This study utilized an unpaired categorical analysis method within a cross-sectional study design to investigate the knowledge, attitudes, and behaviours related to cervical cancer among active female clinical medical students at the Faculty of Medicine, Universitas Pelita Harapan. Data collection was conducted through the administration of a questionnaire distributed via Google Forms, following a comprehensive explanation of the study's objectives and obtaining informed consent from the respondents. The study population consisted of active female clinical medical students enrolled at the Faculty of Medicine, Universitas Pelita Harapan. The minimum required sample size was determined to be 157 participants. The questionnaire utilized in this study was previously developed and validated by (Winarto et al., 2022), covering socio-demographic information along with inquiries of knowledge, attitudes, and behaviours regarding cervical cancer.

Data collection took place throughout March 2023. Statistical analysis of the collected data was carried out utilizing Pearson's analysis and the Chi-square test facilitated by SPSS 25.0 software. Through this methodological approach, the study aimed to provide insights into the understanding, attitudes, and practices regarding cervical cancer among the targeted population of female medical students, contributing to the body of knowledge in this field.<sup>8</sup>

## RESULTS AND DISCUSSION

**Table 1. Demographic Profile of Participants (N: 168)**

	<i>N</i>	<i>Percentage (%)</i>
<b>Study Year</b>		
First	77	45,8
Second	73	43,5
Third	15	8,9
Fourth	2	1,2
Other	1	0,6

<b>Students Who Have Gone Through Obstetric and Gynecology Rotation</b>		
Yes	51	30,4
No	117	69,6
<b>Knowledge Score</b>		
Good	127	75,6
Poor	41	24,4
<b>Attitude Score</b>		
Good	119	70,8
Poor	49	29,2
<b>Practice Score</b>		
Good	21	12,5
Poor	147	87,5

Students who have gone through the rotation were thought to have better knowledge in this regard. However, the number of students who have passed the rotation was not selected purposefully; thus, there were only 51 (30,4%) students in this category. Most of the respondents were first and second-year students. In an overall scoring, more than 70% of clinical year students' knowledge and attitude scores were good (>60%). However, only 12,5% of students gained a good score in practice. It shows that even though only 30.4% of students have been through obstetric and gynaecology rotations, more than a third quarter of the respondents still manage to get a good score in knowledge regarding these topics. We assume that all active clinical year students are well taught regarding cervical cancer and HPV vaccinations during their pre-clinical year. Nevertheless, from this result, there are some concerns that even though most of them have a good knowledge regarding cervical cancer and HPV vaccination, their practice towards HPV vaccination and raising cervical awareness was poor.

**Table 2. Demographic Characteristics and Knowledge, Attitude, and Practice Score**

<i>Knowledge Score</i>		<i>P-value</i>	<i>Attitude Score</i>		<i>P-value</i>	<i>Practice Score</i>		<i>P-value</i>
<i>Good( %)</i>	<i>Poor(% )</i>	<i>Knowledge</i>	<i>Good( %)</i>	<i>Poor(% )</i>	<i>Attitud</i>	<i>Good( %)</i>	<i>Poor(% )</i>	<i>valu e</i>
		<i>e</i>			<i>e</i>			<i>Prac</i>

<i>-tice</i>									
First Year	66 (85,7)	11 (14,3)	0.714	49 (63,6)	28 (36,7)	0.148	5 (6,5)	72 (93,5)	0
Second Year	67 (91,8)	6 (8,2)		54 (74,0)	19 (26,0)		5 (33,3)	64 (87,7)	
Third Year	14 (93,3)	0 (0)		14 (93,3)	1 (50)		0 (0)	10 (66,7)	
Fourth Year	2 (100)			1 (50)	0 (0)			1 (50)	
Other	1 (100)			1 (100)				1 (100)	

In Table 2, the percentage of overall good knowledge, attitude, and practice scores was lower in first-year students and increased year by year.

**Table 3. Responses to The Knowledge Related to Cervical Cancer and Human Papillomavirus Vaccination**

<i>Knowledge Score</i>		
<i>Questions</i>	<i>Correct Answer, n (%)</i>	<i>Wrong Answer, n (%)</i>
Have you heard about HPV vaccination?	166 (98,8)	2 (1,2)
Is the HPV vaccine intended for cervical cancer prevention?		
Cervical cancer is at the ... place on the most common cancer diagnosed in women	165 (98,2)	3 (1,8)
What is the most common mode of transmission?	35 (20,8)	133 (79,2)
How does the infection of HPV-16 and HPV-18 cause cervical cancer?		
What are the brand names of HPV vaccines in Indonesia?	148 (88,1)	20 (11,9)
How many HPV vaccine doses are needed to be fully vaccinated?	131 (78,0)	37 (22,0)
At what range of age does the HPV vaccine if given work optimally?		
	95 (56,5)	73 (43,5)

How many doses of HPV vaccine are recommended for a person younger than 15 years old?	72 (42,9)	96 (57,1)
How many doses of HPV vaccine are recommended for an adult?	117 (69,6)	51 (30,4)
	123 (73,2)	45 (26,8)
	88 (52.4)	80 (47.6)

In Table 3, more clinical year students answered correctly in 8 out of 10 questions, and more clinical students answered incorrectly in 2 out of 10 questions. Overall, respondents excelled in knowledge questions.

**Table 4. Responses to Attitudinal Statements Related to Cervical Cancer and Human Papillomavirus Vaccination**

<i>Attitude</i>			
<i>Questions</i>	<i>Disagree, n (%)</i>	<i>Don't know, n (%)</i>	<i>Agree, n (%)</i>
I agree to get the HPV vaccination.		1 (0,6)	167 (99,4)
I'd rather get an HPV vaccination rather than a new gadget	30 (17,8)	30 (17,8)	108 (64,2)
I agree with HPV vaccination in men	9 (5,4)	37 (22,0)	122 (72,6)
I am planning to take a cervical cancer early-detection test	10 (6,0)	50 (29,8)	108 (64,2)

In Table 4, about 99,4% of respondents agree with getting an HPV vaccination. About 64,2% of respondents would rather get an HPV vaccination rather than a new gadget. About 72,6% of respondents agree on HPV vaccination in men. A total of 64,2% of respondents planned to take a cervical cancer early detection test.

**Table 5. Responses to Practice Related to Cervical Cancer and Human Papillomavirus Vaccination**

<i>Practice</i>			
<i>Questions</i>	<i>No, n (%)</i>	<i>Maybe, n (%)</i>	<i>Yes, n (%)</i>
I have educated others about the need for cervical cancer screening	22 (13,1)	34 (20,2)	112 (66,7)
I have advised the people closest to me to carry out early detection of cervical cancer on a regular basis	33 (19,6)	22 (13,1)	113 (67,3)

I have watched cervical cancer screening or detection	53 (31,54)	26 (15,47)	89 (52,9)
I have participated in a cervical cancer screening program	113 (67,3)	12 (7,1)	43 (25,6)
I have completed the HPV vaccination	100 (59,5)	-	68 (40,5)

In Table 5, about 66,7% of respondents have educated others about the need for cervical cancer screening, and about 67,3% of respondents have advised people close to them to carry out early detection of cervical cancer on a regular basis. About 52,9% of respondents have watched cervical cancer screening or detection, and about 25,59% of respondents have participated in a cervical cancer screening program. Only 40.5% of respondents have completed HPV vaccination.

**Table 6. Correlation Between Obstetric and Gynecology Rotation and Knowledge Score**

	<i>Knowledge Score</i>			<i>P-Value</i>	<i>Odd Ratio</i>	<i>CI (95%)</i>
	<i>Good</i>	<i>Poor</i>	<i>Total</i>			
<b>Have been through</b>	49	2	51	0.108	0.258	0.057-1.165
<b>Have not been through</b>	101	16	117			
<b>Total</b>	150	18	168			

Table 6-8 shows the number of students who have gone through the Obstetric and Gynecology rotation and its correlation to their knowledge, attitude, and practice on HPV vaccination. A total of 101 students who have not been through the rotation were shown to have good knowledge of HPV vaccination. Meanwhile, 16 students had poor knowledge. 49 of 51 students who went through the rotation were shown to have a good knowledge of HPV vaccination and cervical cancer. Table 6 shows a p-value of 0,108 (OR 0,258, CI: 0,057-1,165), indicating that there was no significant correlation between students who have passed the rotation with their knowledge. However, it must also be kept in mind that the sample selection was not purposefully done to have equal numbers of students in the two categories, which might have caused the insignificant result in this study.

**Table 7. Correlation Between Obstetric and Gynecology Rotation and Attitude Score**

<i>Attitude Score</i>	
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	<i>Good</i>	<i>Poor</i>	<i>Total</i>	<i>P-Value</i>	<i>Odds Ratio</i>	<i>CI (95%)</i>
<b>Have been through</b>	41	10	51	0.106	0.488	0.221-1.076
<b>Have not been through</b>	78	39	117			
<b>Total</b>	119	49	168			

A total of 41 Students who have been through the rotation were shown to have a good attitude towards HPV vaccination, while the other 10 students were shown to have a poor attitude. There were 78 and 39 students who had not been through the rotation who were showing good and poor attitude, respectively. A p-value of 0.106 was obtained with OR 0.488 and CI of 0.221-1.076. These results implied that there was no significant relationship between having been through the rotation with students' positive attitudes towards HPV vaccination.

**Table 8. Correlation Between Obstetric and Gynecology Rotation and Practice Score**

	<i>Practice Score</i>		<i>Total</i>	<i>P-Value</i>	<i>Odds Ratio</i>	<i>CI (95%)</i>
	<i>Good</i>	<i>Poor</i>				
<b>Have been through</b>	10	41	51	0.076	0.383	0.149-0.988
<b>Have not been through</b>	10	107	117			
<b>Total</b>	20	148	168			

Analysis of Table 8 showed a significant correlation between having been through the rotation and students practising HPV vaccination. There were fewer students with good practice in both categories, showing that even if the students have passed the rotation, it does not simply increase students' participation and practice towards HPV vaccination. The p-value was 0,076, which was above 0,05, which shows the correlation between the two topics is not significant.



Poor practice scores might result from a lack of health promotion events. Therefore, students don't have a lot of opportunities to be involved in educating and screening others about cervical cancer. The opportunities that each student gets are also not the same; this could also be due to some students undergoing obstetric and gynaecology rotation when it is a cervical health awareness month, but some others don't. Although most of the students have little practice regarding cervical cancer and HPV vaccination, they have a good attitude related to cervical cancer and HPV vaccination. A study conducted by Winarto in 2022 said that some poor practices regarding cervical cancer and HPV vaccination may be influenced by activities held by universities. Some universities have more variant kinds of activity related to cervical cancer, while others don't.

In this study, we also investigate the Correlation Between Obstetric and Gynecology Rotation and Knowledge Score, attitude score, and practice score. None of them show a significant result. This result isn't in line with the study conducted by Hariyono Winarto in Jakarta in 2021 on the urban communities, which found that there was an inter-association between knowledge, attitude, and practice to push a successful HPV vaccine program. Hariyono Winarto also conducted the same study in 2022 among medical students in Jakarta, which, in line with this study, the result showed that the score of knowledge and attitude did not reflect on the student's practice on cervical cancer and its prevention (HPV Vaccination), the research encourages efforts to raise awareness of the importance of prevention, in this case HPV vaccination, through the university curriculum and public health policy.

The insignificant results in this study can also be influenced by the sample selection method. The sample selection method in this study is purposive sampling, where the sampling is determined or adjusted to the research objective so that the sample may not represent the general population (Winarto et al., 2022). There were several limitations in this study. This study was limited to females only, study year, and university. Further studies should also assess other socio-demographic characteristics. Another limitation of this study was that this study did not investigate the factors that can affect low practice in educating, screening, and vaccination regarding cervical cancer.

## **CONCLUSION**

The knowledge or attitude that students have is not necessarily in line with their practice. Even though most of the clinical year students have a good knowledge and attitude regarding cervical cancer and its prevention, they have poor practice towards this topic. This study also shows that a student's knowledge, attitude, and practice are not influenced by whether or not they have been through obstetric and gynaecology rotations.

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