

Knowledge and awareness of cervical cancer, HPV, and the vaccine among students of a higher education institution in South Africa: A qualitative study

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Background: Commonly contracted sexually transmitted infections, including genital warts and cervical cancer are brought on by the human papillomavirus (HPV). Cervical cancer is still prevalent worldwide, even though screening can prevent it. Immunization against HPV has the potential to lower the incidence of HPV-related diseases in young adolescents who have not yet been exposed to HPV. However, not much of this information is known by higher institution students in South Africa, who are known to be more involved in sexual activities than other categories of students. Therefore, this study sought to determine the knowledge and awareness about cervical cancer, HPV, and the associated vaccine among students in a private higher education institution in South Africa.

Methods: The study was conducted on the campus of one of the private higher education institutions in South Africa over a period of two months in 2024. A qualitative approach and case study design were adopted. Using convenience sampling method, a total of ten students were recruited for the study. Semi-structured face-to-face interviews were conducted to obtain an in-depth understanding of cervical cancer, HPV and HPV vaccine. Data analysis was conducted using thematic data analysis method.

Results: The findings of this study were organized into the following themes- awareness of cervical cancer, HPV and HPV vaccine, knowledge of cervical cancer, HPV and HPV vaccine and Barriers to vaccination. According to this study, most students were not aware of the HPV vaccine and that HPV was a sexually transmitted disease affecting both men and women. While some students were aware of the vaccine's existence, few understood the full range of its benefits, which include preventing various types of cancers associated with the virus, such as cervical cancers. Compared to female students, male students knew less about the HPV vaccine since many believe that HPV was largely a female problem.

Conclusion: The study showed that students did not have awareness and knowledge about cervical cancer, HPV and HPV vaccine. The findings highlight the need for health education programs within higher education institutions to address misconceptions, promote healthier lifestyles, and enhance preventive measures against HPV and cervical cancer. This research provides valuable insights into student perceptions and suggests that more comprehensive interventions are necessary to raise awareness and prevent HPV-related health issues among young adults. A distorted understanding or lack of understanding may negatively impact the uptake and efficacy of HPV vaccination among students. Therefore, clear and population-specific information needs to be provided to students, explaining the importance of HPV vaccination. Targeted educational programs need to be developed to address the knowledge gap among students about cervical cancer, HPV and HPV vaccine.

Keywords: Cervical Cancer, Higher Education Institution, Human Papilloma Virus, Human Papilloma virus vaccine, South Africa

Introduction

Human Papillomavirus (HPV) is a family of viruses that affect human skin and mucous membranes. About 200 different varieties of HPV exist; some are low-risk and cause warts on the skin or in the genitalia, while others are high-risk and linked to several malignancies, including throat, anal, penile, and cervical cancer. (WHO, 2024). The main way that HPV is spread is through sexual contact, which includes oral, anal, and vaginal sex. Even without symptoms, skin-to-skin contact with an infected individual can still spread it. An HPV infection frequently has no outward signs or health issues. (CDC, 2025) and it is the most common sexually transmitted infection (STI) in the United States (US), accounting for 49.5% of STIs in male adolescents and young adults between the ages of 15 and 28. (CDC, 2013).

A major risk factor for developing cervical, vulvar, vaginal, penile, anal, and oropharyngeal cancers is persistent HPV infection. (De Martel et al., 2017). In South Africa, the incidence of non-cervical anogenital cancers is rapidly increasing. According to the national pathology-based registry study which used data from 2011 to 2021, the incidence of anogenital cancer increased rapidly by 3.2% to 9.3% annually for vulvar, vaginal, and anal squamous cell carcinoma among females and for penile and anal squamous cell carcinoma among males. (Shing et al., 2025).

The cervical cancer incidence and mortality rates in South Africa are among the highest in sub-Saharan Africa. In 2022, the incidence of cervical cancer in South Africa was 18.6% (22,883 cases) while the mortality rate was 18.5% (13,090 deaths). (IARC, 2022). The government implemented a national two-dose HPV vaccination programme for girls who are 9 years and older in 2014. (Travill et al., 2024). The two-dose vaccination programme is school-based and 87% of eligible grade four girl learners received the first dose of the vaccine and 68% received both doses in 2014. This went down by 2019 with only 70% and 43% received first and second doses, respectively. (Barnabas et al., 2022).

For non-cervical cancer, the incidence of penile cancer in South Africa went down by 3% annually but the incidence of vaginal squamous cell carcinoma was stable between 1994 and 2012. (Chikandiwa et al., 2019). Meanwhile, a 7% annual increase for penile cancer and 3% annual increase for vaginal squamous cell carcinoma was observed between 2011 and 2021. (Shing et al., 2025). However, there is a lack of substantial data from South Africa on the prevalence of HPV in the mouth and oropharynx. (Wood et al., 2022).

University and higher education institution students in South Africa are more likely to be better educated than the general population of South Africa. Some of them which include medical/health sciences students would have heard about HPV, the vaccine and cervical cancer. In 2013, 58.9% of a South African university female students interviewed were aware of cervical cancer but the rate was lower in an earlier study conducted in 2009 (42.9%) (Hoque and Hoque, 2009; Hoque et al., 2013). Very few of the female students in the 2013 study knew that HPV caused cervical cancer. However, most of them had positive attitudes toward getting vaccinated with the HPV vaccine. (Hoque et al., 2013). Most of the previous studies on cervical cancer, HPV and the vaccine focussed only on females (Ledibane et al., 2023; Khosa et al., 2022). It is important to include males in any research on cervical cancer because HPV is sexually transmitted and this makes men to be crucial in the prevention. Nonetheless, research about men's awareness on cervical cancer is limited. (Kim et al., 2018). Therefore, this study explored the knowledge and awareness of cervical cancer, HPV and HPV vaccine among the female and male students of a higher education institution students in South Africa.

Methods

Study Design

This study utilised a qualitative research approach to understand the knowledge and awareness of cervical cancer, HPV, and the vaccine among the students of a private higher education institution (HEI).

Participants

The study involved ten participants who were students of the HEI. The participants were aged 19-24 years.

Setting

The study took place at the school's campus in Ruimsig, Johannesburg. It has a diverse student population that includes undergraduates, postgraduates, and international students from different cultural and economic backgrounds. Participants were chosen from various courses, and year levels, to gather a wide range of views on HPV vaccination.

The diversity of the student body helped to show different attitudes, beliefs, and experiences about the vaccine.

Sampling

The sampling technique used were purposive and convenience sampling and was adopted in drawing on those participants who could make a meaningful contribution to the study on knowledge and awareness of cervical cancer, HPV and the vaccine among the HEI students.

Data collection

Data were collected through face-to-face interviews conducted between July and August 2020 using a semi-structured guide. Each session lasted between ten to twenty minutes, striking a balance between thorough exploration of topics and respect for the participants' valuable time. To capture the details accurately, the interviews were audio-recorded and, with the participants' consent, subsequently transcribed for comprehensive analysis. (Fisher et al., 2018). All interviews were conducted in English. All participants gave their consent, including audio recording of the sessions.

Ethical considerations

Ethical approval was sought from the Public Health Ethics Committee of IEMSA on the 16th of July 2024 and granted before initiating the study

Data analysis

The audio recordings were transcribed. The first step of the data analysis was familiarization with the data, followed by generating initial codes. In this step, distinct pieces of data were identified and assigned codes. Next, was step 3 which was searching for themes, the generated codes were categorized to unveil underlying patterns and connections within the data. After identifying categories that shared commonalities, these were then grouped into overarching themes and sub-themes. This process of refinement continued in step 4 which was reviewing of themes, where the proposed themes and sub-themes were critically assessed and modified as necessary to enhance clarity and coherence. Finally, in the fifth step, the themes were defined and named.

Results

The 10 study participants were between 19 and 24 years old and only one of them had been vaccinated. Six of them were first year students at the time of data collection and most were Information Technology (IT) students. As mentioned earlier, five male and five female students participated in the study. (Table 1). Three themes were identified from the analysis and these included: awareness of cervical cancer, HPV, and the vaccine, knowledge of cervical cancer, HPV, and the vaccine and

Table 1: Characteristics of the study participants

PARTICIPANTS NO. (P#)	CHARACTERISTICS				
	Gender	Age	Education level	Faculty	Vaccination status
P1	F	22	Honours	Public health	Not vaccinated
P2	F	23	Honours	Public health	Vaccinated
P3	M	24	2 nd year	IT(Computer science)	Not vaccinated
P4	F	20	2 nd year	Education	Not vaccinated
P5	M	21	1 st year	IT(Computer science)	Not vaccinated
P6	F	19	1 st year	IT(Computer science)	Not vaccinated

P7	M	20	1 st year	IT(Computer science)	Not vaccinated
P8	M	21	1 st year	IT(Computer science)	Not vaccinated
P9	M	22	1 st year	IT(Computer science)	Not vaccinated
P10	F	19	1 st year	Accounting	Not vaccinated

Awareness of cervical cancer, HPV, and the vaccine

According to this study, most students were not aware of the HPV vaccine, but some were aware that HPV was a sexually transmitted disease that affected both men and women and might lead to cervical cancer. This can be seen in some of the responses received from the participants.

" well, first of all, you need to tell people about it (HPV vaccine) because I don't even think that most people know about the HPV vaccine and then from that point on, I think if there's more awareness, then people will actually seek it out as opposed to having to have it more available " (Participant 4).

"considering the fact that I don't know about it (HPV vaccine). It's not great for a female not to or for anyone not to be aware. Yeah, I think it just needs to be taught more or be made known more regularly than it is." (Participant 10)

The participants mentioned that awareness of the HPV vaccine existence was poor and not available as it should be.

"Given that I didn't know (about HPV vaccine) before now, I think it's awareness is quite poor. I think I would say that if it was as HIV or any other, a lot of people would be prone to seek help assistance for it. (Participant 9).

" I feel the awareness is not as there as it should be because, as I said just now, I just learned about it now, so it makes it feel like it was kept from us, maybe students. So I feel like it should be taught. It should be taught so that we can have an idea on what it is" (Participant 5).

Knowledge of cervical cancer, HPV, and the vaccine

This study showed that some of the participants had never heard of the HPV and HPV vaccine. One of the female participants knew about it from seeing a close friend dying from cervical cancer. Male participants knew less about the HPV and HPV vaccine. This emphasises how much more gender-inclusive educational programs are required.

" not much it's not my area of expertise so. I don't know anything about it (HPV, HPV vaccine and cervical cancer) I don't know what they are" (Participant 3).

" my mom unfortunately had a friend who passed away from cervical cancer because of HPV..." (Participant 2).

Also, some of the male participants knew about cervical cancer but not an in-depth knowledge of it.

"I know it's (cervical cancer) dangerous but I know that it has something to do with the genitalia of the female. So I'm not quite the basic knowledge of it but I've heard of it but I wasn't really having interest to go further as to what it is about" (Participant 5).

"OK what I know is that it's (cervical cancer) a sexually or sometimes hereditary you know I'm not 100% but I know it is something to do with the private parts of males and females that can either be transmitted" (Participant 7).

Among the participants, there was concern about lack of enough education on the vaccine and the main focus is on HIV and other sexually transmitted infections (STIs).

" I feel very concerned because people are not educated about the vaccine. People do not speak about it, which is concerning because a lot of people are affected by this (HPV) that we don't know of in the society. Often we focus on other things such as HIV and all these other STI's". (Participant 6).

"..... no knowledge of it (HPV vaccine). No awareness being made of it (vaccine). I was lucky enough to see it (HPV vaccine) on Instagram actually. It was like an advert that showed". (Participant 1).

Barriers to Vaccination

One of the barriers mentioned was that people were getting false information from social media, giving example of a different vaccine which some people believed in the past was causing autism. The participants also mentioned conspiracy theories around vaccines in general and the fear of the unknown, not knowing the side effects of the vaccine in the long term.

"It all starts on social media where people spread false information. You still have people quoting, I forgot which vaccine it is that people believed caused autism in kids in the 80s. I think people still talk about it even now." (Participant 2).

"like I said conspiracy theories and not gaining enough knowledge on the information about the HPV infections, hence, people are hesitant to take it. Therefore, it's a matter of I don't take it if I don't trust it" (Participant 5).

"..... the typical fear of the unknown and all the things with human nature but also the whole conspiracy things going on like especially with COVID " (Participant 8)

Another barrier mentioned was inadequate knowledge of HPV and HPV vaccine.

"People are very stubborn when they don't know something they will not entertain it at all. So I think the hesitancy comes with stubbornness and lack of education od HPV and the HPV vaccine." (Participant 6).

Recommendations by participants

The participants made some recommendations about improving the knowledge and awareness of HPV, HPV vaccine and cervical cancer among the students of the higher education institution. One of the recommendations was that education institutions should host seminars and workshops to educate the students.

"yes, I would say they (the institution) could hold seminars, workshops. Actually, during woman's month, you know, emphasis does not only have to be on GBV. HPV infections and cervical cancer are also important....." (Participant 1).

"I think raising awareness like community mobilization and hosting community events in a park. People from the medical services and paramedics should be invited to educate." (Participant 2).

"In terms of school communities like public schools. The best thing is to bring higher education institution students who are currently studying health-related courses to educate learners." (Participant 7).

Discussion

The current study looked at the knowledge and awareness of the HPV vaccine, HPV and cervical cancer by students of a higher education institution in South Africa. The study also looked at the perceived barriers of the HPV vaccine and recommendations by the participants. The findings from this study showed a relatively low awareness of cervical cancer among the participants, few of the participants reported having heard of HPV and the vaccine. These findings were consistent with studies conducted in various settings in South Africa. (Khosa et al., 2022).

Only participants who were studying towards a Bachelor of Public Health honours degree had the knowledge and awareness of cervical cancer, HPV and the vaccine. Other students who were not in any health sciences programs had close to no knowledge of the three, especially, HPV and the vaccine. This is similar to the findings from a study conducted in one of the public universities in Limpopo, South Africa which showed that the schools influenced the knowledge of students regarding the HPV and its vaccines. (Mushasha et al., 2021). Also, a study conducted in Nigeria showed that students from the health sciences were the ones who knew about the HPV and the vaccine but students from non-health science departments such as agriculture, law and environmental sciences had never heard about HPV, and the vaccine.(Akinsoji et al., 2015).

This shows that the campaign against the three (Cervical cancer, HPV and HPV vaccine) by the government may not have covered a wide aspects and area of the country. Also, the lower awareness among the male participants than the female participants confirmed the inadequate coverage of information on cervical cancer, HPV and vaccine across the country.

Previous studies on cervical cancer, HPV and the vaccine focused mostly on females, very few included males in their study. (Mbulawa et al., 2022). HPV does not only affect females, it affects everybody. (CANSAs, 2022). About 80% of people will get an HPV infection at some point in their lives. HPV (which is usually self-limiting) can lead to genital warts, penile, anal and head and neck cancers in men if it does not go away on its own. (CANSAs, n.d). In the current study, the male participants did not have knowledge or awareness of HPV or the vaccine.

Regarding the HPV vaccine, most of the participants were not aware and did not have knowledge of the vaccine. This is probably because of the poor media penetration by the HPV vaccination programme and negative social media posts in South Africa. (Ortiz et al., 2019; Wiyeh et al., 2019). Also, a lack of knowledge and information was associated with vaccine hesitancy and poor vaccine uptake and this is similar to a study conducted by (Ledibane et al., 2023).

This study showed that the South African government would have to introduce more awareness programmes to educate students on cervical cancer, HPV and the vaccine. The participants also made some recommendations such as organisation of seminars by education institutions to educate students about the three and also raise community awareness even outside of the school.

Strengths and limitations

This is one of a few studies which looked at the knowledge and awareness of cervical cancer, HPV and the vaccine among both male and female participants. Although, cervical cancer affects only females, it is important for males to know about it because they can also spread HPV as a result of sexual intercourse. The current study was conducted among higher education institution students, and this has left out people outside of higher education institutions. A large study involving communities, especially, low-income communities is needed to know the extent of the knowledge and awareness in the broader community.

Conclusion

The study showed low awareness and knowledge about cervical cancer, HPV and HPV vaccine among students, especially, male participants, in a higher education institution in South Africa. Interventions which will include males are required. These include the HPV vaccinations for men on the national vaccinations, leading to active participation by men. (Kim et al.,2018).

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