

## ORIGINAL RESEARCH ARTICLE

# Level of awareness, attitude and perception about human papilloma virus vaccine among University of Mauritius students

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## Abstract

The rising number of HPV infections is of global concern. Hence, this study helps to assess awareness, attitude, and perception regarding the HPV vaccine among young people of various fields and both genders as they are equally susceptible to the infection. These are essential to prevent complications like cervical cancer. A cross-sectional quantitative study was carried out, involving online questionnaires in English, French and Kreol Morisien languages distributed on various student platforms. There was randomization of data. Participation was entirely voluntary. 58% of respondents have heard of HPV infection. Female gender and Health Sciences students were more aware of HPV infection. 68.5% of respondents reported that they think the vaccine is safe and 77 % of participants are willing to be vaccinated against HPV post the survey. Awareness about HPV infection and vaccines is relatively high among girls and Health Sciences students. Public health efforts to educate students on HPV and cervical cancer should be strengthened to help curb the rising incidence in Mauritius. Therefore, stakeholders should be proactive to address vaccine hesitancy and increase awareness of vaccine safety. Boys should also be included in the National Immunization Programme to enhance the primary prevention of HPV infection. (*Afr J Reprod Health 2022; 26[12]: 41-48*).

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**Keywords:** Human papilloma virus (HPV), sexually transmitted diseases, male genital cancers, female genital cancers, HPV vaccine

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## Résumé

Le nombre croissant d'infections au VPH est une préoccupation mondiale. Par conséquent, cette étude aide à évaluer la sensibilisation, l'attitude et la perception concernant le vaccin contre le VPH chez les jeunes de divers domaines et des deux sexes, car ils sont également sensibles à l'infection. Ceux-ci sont essentiels pour prévenir les complications comme le cancer du col de l'utérus. Une étude quantitative transversale a été réalisée, impliquant des questionnaires en ligne en langues anglaise, française et créole morisienne distribués sur différentes plateformes étudiantes. Il y a eu une randomisation des données. La participation était entièrement volontaire. 58% des répondants ont entendu parler de l'infection au VPH. Les étudiantes et étudiants en sciences de la santé étaient plus conscients de l'infection au VPH. 68,5 % des répondants ont déclaré qu'ils pensaient que le vaccin était sûr et 77 % des participants étaient disposés à se faire vacciner contre le VPH après l'enquête. La sensibilisation à l'infection au VPH et aux vaccins est relativement élevée chez les filles et les étudiants en sciences de la santé. Les efforts de santé publique pour éduquer les étudiants sur le VPH et le cancer du col de l'utérus devraient être renforcés pour aider à freiner l'augmentation de l'incidence à Maurice. Par conséquent, les parties prenantes doivent être proactives pour lutter contre la réticence à la vaccination et accroître la sensibilisation à la sécurité des vaccins. Les garçons devraient également être inclus dans le programme national de vaccination afin d'améliorer la prévention primaire de l'infection par le VPH. (*Afr J Reprod Health 2022; 26[12]: 41-48*).

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**Mots-clés:** Virus du papillome humain (VPH), maladies sexuellement transmissibles, cancers génitaux masculins, cancers génitaux féminins, vaccin contre le VPH

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## Introduction

As per the National Cancer Registry, in 2018, 3.8% of female cancer cases were attributed to cervical cancer which was ranked as the second leading cause of cancer-related deaths in women in Mauritius<sup>1</sup>.

According to HPV Information Centre 2021 report, statistics in Mauritius show that there are 535,248 women at risk for HPV and cervical cancer aged more than 15 years<sup>2</sup>. The annual number of cervical cancer cases reported is 123 compared to 120 in 2018. 61 deaths were reported in 2021 compared to

56 in 2018. This shows an increase in the numbers reported. The crude incidence rate for cervical cancer per 100,000 population is 19.1. These figures depict the rising damage caused to the Mauritian population by the Human Papilloma Virus<sup>3</sup>.

In Africa, cervical cancer is the most commonly diagnosed type of cancer and the leading cause of cancer-related death among women. In Sub-Saharan Africa, the highest incidence of cervical cancer since 2012 was observed in women aged between 15 and 44 years. In 2013, the incidence was 24%.

The cervical cancer burden in developing countries such as Swaziland is increased due to late diagnosis, advanced stages of HIV (Human Immunodeficiency Virus) and HPV infections at the time of cancer is diagnosed, lack or inaccessibility of treatment, lack of treatment facilities, and logistic and cultural obstacles to treatment, which result in poor prognosis. Cervical cancer accounts for 40% of all cancer cases diagnosed in women in East Africa, whereby a prevalence of more than 30% was reported. Southern Africa has the highest prevalence of HIV (19.9% out of a population of 66,401,000), and the second highest cervical cancer incidence (18.4% out of a total population of 668,319 women with cancer).

The 2014 South African National Cancer Registry statistics for cervical cancer cases and deaths reported that the number of new observed cases in South African women was 5,735 in 2014, accounting for 16.17% of all cancers diagnosed in South African women. South Africa has the highest age-standardized incidence of cervical cancer globally, with 32 cases per 100,000 women. The high prevalence of HIV in South Africa was predicted to lead to a marked increase in the incidence of cervical cancer<sup>4</sup>.

### ***Aims and objectives***

The aim of the study is to reach maximum number of students of various fields of study to assess their level of awareness and attitude regarding rising health issues like cervical cancer caused mainly by the Human Papilloma Virus. Hence, this will provide insight into whether students in the non-Science field are sufficiently informed about the subject beforehand. Furthermore, we can know about the perception of the youth towards the HPV vaccine in general and whether after the survey, they

will be more interested in the topic and become more health conscious. Moreover, the level of awareness of male participants regarding the Human Papilloma Virus and gynaecological disease like cervical cancer and HPV vaccine acceptance among male respondents can be assessed.

Hence, the study helps to spread awareness regarding HPV infection and vaccine in both genders. Furthermore, the researchers, being registered medical practitioners, have a major role in health promotion. So, the aim is to enlighten students about the safety and efficacy of the vaccine and the role of the vaccine in the primary prevention of HPV-related diseases.

## **Methods**

### ***Study design***

The study employed a cross-sectional anonymous survey design to collect data involving online questionnaires distributed across various student platforms to reach out to a maximum number of participants. Participants were asked about HPV infection, the perception of students, acceptance of HPV vaccination and confidence in vaccine safety and efficacy and acceptance of HPV vaccine by their parents and peers.

### ***Study setting***

The study was carried out from May 2021 to June 2021. Participants consisted of students from various fields and years of study. Online questionnaires were circulated on student platforms of the university, via email, on social media like Facebook and Whatsapp. The interviewees were randomly selected through social media tools. The questionnaires were available in English / French and Creole language to avoid any language barriers.

### ***Study subjects***

Students at the University of Mauritius (UOM), are spread around the island, with different socioeconomic profiles.

**Sampling:** Sample of participants consisted of students of all levels and various fields for good randomization of data. The objectives of the research project were explained to the participants on the

participant information sheet prior to the beginning of the online survey and they ascertained the confidentiality of the data collected. Their participation is entirely voluntary and not for any monetary bargains. They can also opt-out of the study in case they feel uncomfortable.

### Sample size

The number of students attending the University of Mauritius is 7000 for the academic year 2020-2021. Using Slovin's Formula for sample size calculation, the sample size derived is 365, assuming a 75% response rate will provide a sample adequate for estimating proportions for which the 95% confidence interval will have a maximum width of 10%. This corresponds to a maximum error of +/- 5% for all estimates of proportions.

### Data collection

A quantitative survey questionnaire was devised in three different languages to assess whether age, gender, and study field had an impact on the awareness, attitudes and perception of HPV infection and vaccine among UOM students. The participant information sheet and the consent form were attached to the questionnaire. The link had the study description, contact information of the researchers and the questionnaire. Data were collected using Google Forms, which helps to collect and store data. Participants were not incentivized and were given the option to skip questions that they did not want to answer. Responses to the questionnaire were anonymous.

### Data processing and statistical analysis

Quantitative data analysis was carried out using SPSS version 23.0. The results were expressed as frequencies and percentages in tables and figures. The association between variables were investigated using statistical analysis. A p-value less than 0.05 was considered significant.

## Results

Figure 1 shows data for HPV, and it can be seen that before taking this survey, 58.4% of respondents have heard of HPV (human papillomavirus). 45.6% of respondents do not know if HPV infections are rare

**Table 1: HPV Vaccine**

<b>Is there is a vaccine that protects against HPV?</b>	<b>Frequency (%)</b>
Yes	76.1
No	.9
Don't Know	22.9
<b>Do you think HPV vaccine is safe?</b>	<b>Frequency (%)</b>
Yes	68.5
No	1.6
I don't know	29.9
<b>As from 2016, all grade 5 girls in Mauritius are being offered the HPV vaccine.</b>	<b>Frequency (%)</b>
True	53.3
False	15.9
I don't know	30.8
<b>Do you know that the HPV vaccine is recommended for females aged 9-26 years old?</b>	<b>Frequency (%)</b>
Yes	56.5
No	43.5
<b>Do you think boys should also be vaccinated?</b>	<b>Frequency (%)</b>
Yes	61.0
No	39.0
<b>Does the HPV vaccine prevent the chances of cervical cancers?</b>	<b>Frequency (%)</b>
Yes	60.6
No	6.7
Don't Know	32.7
<b>Once vaccinated, women must no longer be screened for cervical cancer.</b>	<b>Frequency (%)</b>
Yes	10.9
No	51.6
Don't Know	37.5
<b>The HPV vaccine is only for people who are sexually active</b>	<b>Frequency (%)</b>
True	25.5
False	74.5
<b>Should the HPV vaccine be given before commencing sexual intercourse?</b>	<b>Frequency (%)</b>
Yes	53.3
No	12.4
Don't Know	34.3
<b>Would you like to know more about the HPV vaccine?</b>	<b>Frequency (%)</b>
Yes	95.1
No	4.9
<b>Would you consider getting vaccinated against HPV?</b>	<b>Frequency (%)</b>
Yes	77.2
No	19.7
I have already received the HPV Vaccine	3.1
If no, indicate why.	
<b>If my friends knew about the HPV vaccine, they would approve of me getting vaccinated against HPV.</b>	<b>Frequency (%)</b>
Yes	63.8
No	1.9
Don't Know	34.3
<b>If my parents knew about the HPV vaccine, they would approve of me getting vaccinated against HPV.</b>	<b>Frequency (%)</b>
Yes	67.0
No	5.6
Don't Know	27.4

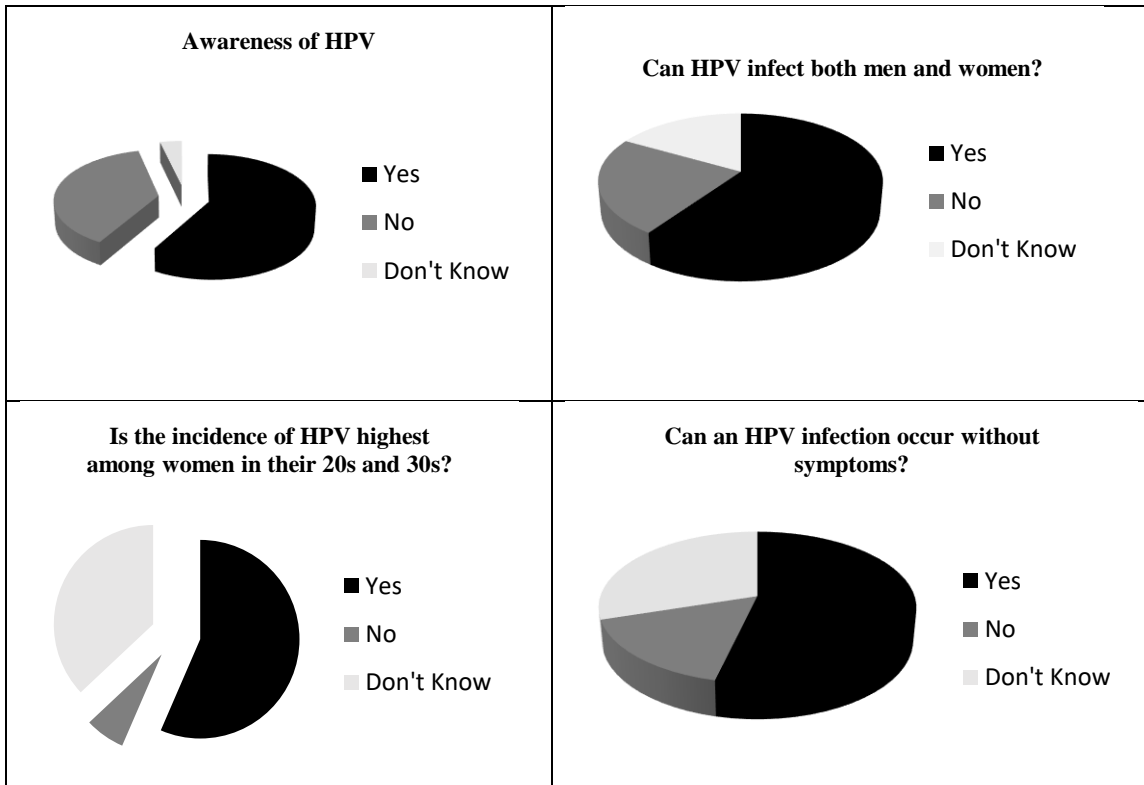


Figure 1: HPV infection

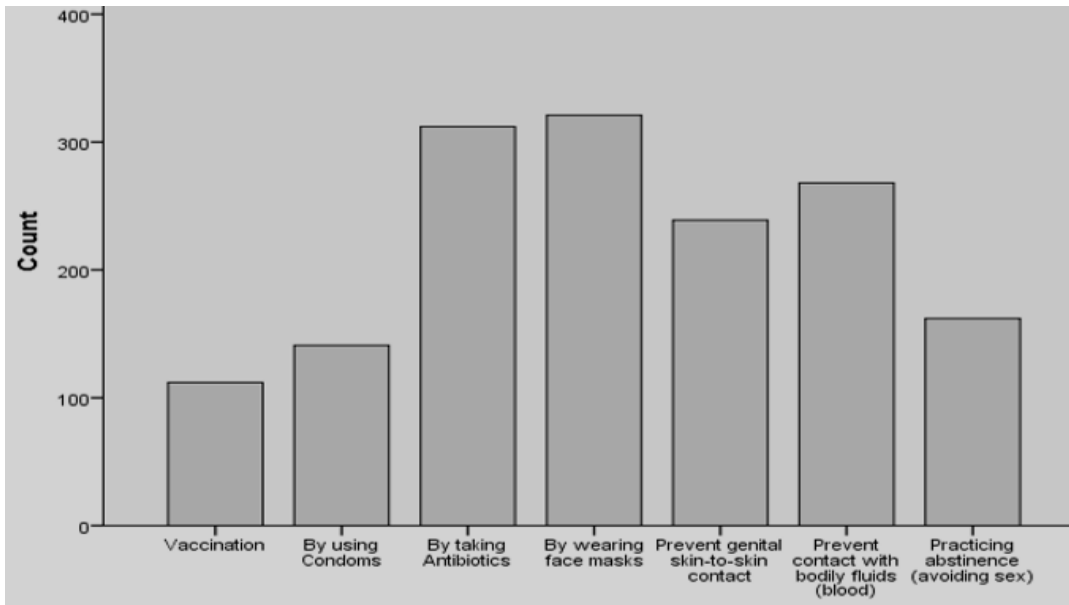
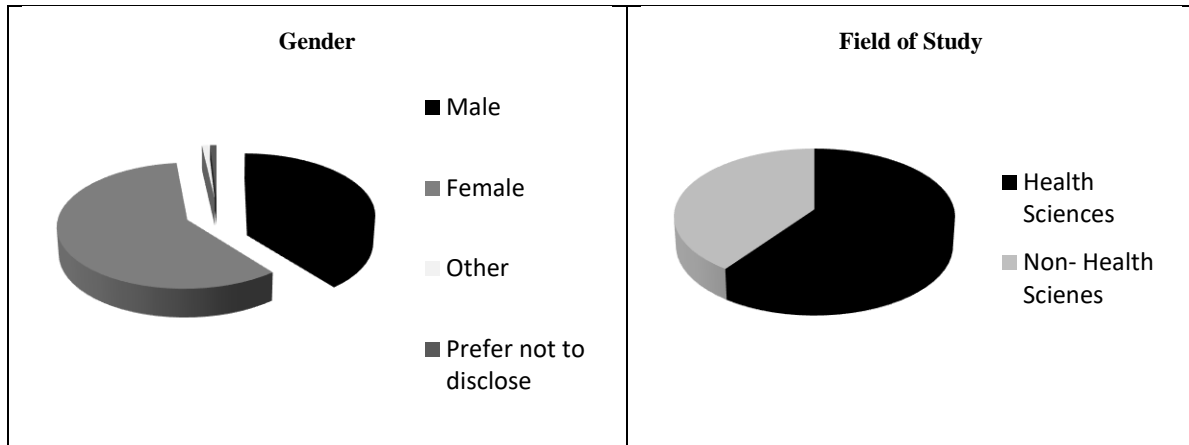


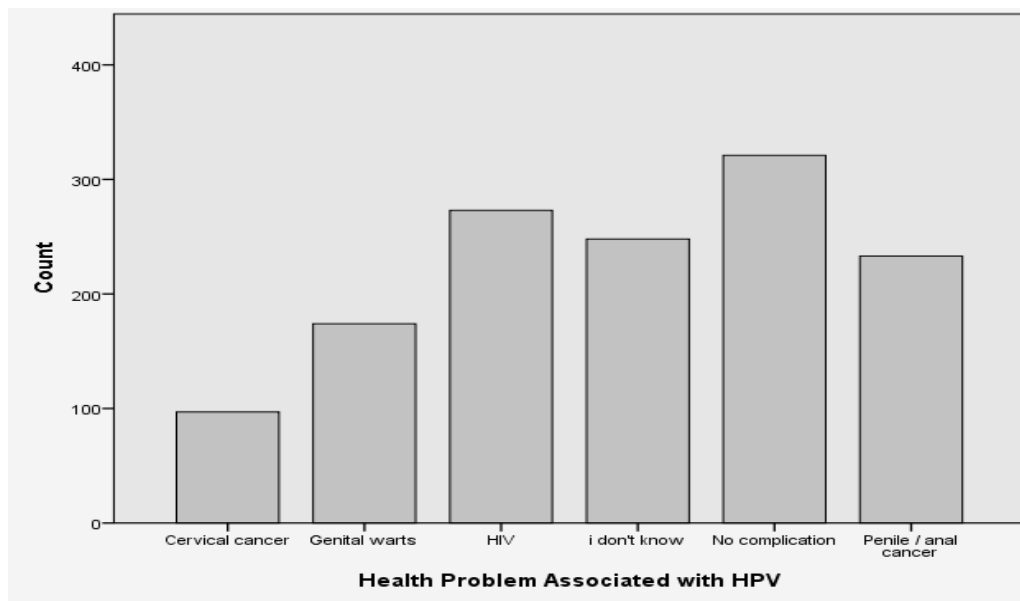
Figure 2: Prevention of HPV infection

in Mauritius. 59.8% of respondents say that HPV can infect both men and women. Moreover, 56.5% of respondents claim that the incidence of HPV is

highest among women in their 20s and 30s. Another 53.7% say that an HPV infection can occur without symptoms. As per the figure above, according to



**Figure 3:** Gender and Field of study



**Figure 4:** Health Problem Associated with HPV

respondents, prevention of HPV can be done mainly by taking antibiotics, wearing face masks and by preventing contact with bodily fluids.

It can be seen in Table 1 concerning HPV Vaccine, that 76.1% of respondents claim that there is a vaccine that protects against HPV. 68.5% of respondents think that HPV vaccine is safe. 53.3% of respondents believe that as from 2016, all grade 5 girls in Mauritius are being offered the HPV vaccine. 56.5% of respondents acknowledge that the HPV vaccine is recommended for females aged 9-26 years old. 61.0% think that boys should also be vaccinated. Moreover, 60.6% of respondents claim that the HPV vaccine prevent the chances of cervical cancers. 37.5% of respondents do not know whether women

must be screened for cervical cancer even if they are vaccinated. 74.5% of respondents do not believe that the HPV vaccine is only for people who are sexually active. 53.3% of respondents agree that the HPV vaccine should be given before commencing sexual intercourse. Furthermore, 95.1% of respondents would like to know more about the HPV vaccine. 77.2% of respondents would consider getting vaccinated against HPV. 63.8% of respondents claim that if their friends knew about the HPV vaccine, they would approve of them getting vaccinated against HPV. Finally, 67.0% say that if their parents knew about the HPV vaccine, they would approve of them getting vaccinated against HPV.

Figure 3 shows males comprise of 39.2% whereas female make up 59.0% of the total distribution. Other genders are represented by 0.9% and another 0.9% prefer not to disclose. Concerning field of study, it can be seen that 59.9% were in health sciences and 40.1% were in non-health sciences. The figure indicates that most respondents believe there are no health problem complication associated with HPV. The least number of respondents say that cervical cancer is a health problem associated with HPV.

### ***Hypothesis testing***

To determine the link between different variables, a Chi-Square analysis was performed on the data. A p-value greater than 0.05 indicates that there is no association between the variables, but a p-value less than 0.05 indicates that there is a relationship between the variables.

## **Discussion**

### ***Awareness of HPV infection***

The survey provides the primary insights into HPV awareness and attitudes regarding HPV vaccine among students at University of Mauritius. A quantitative study was carried out. Out of 327 responses obtained in the survey, 58.4 % of participants had heard of HPV. However, only around 100 participants, that is, around 30.6 % knew the association with cervical cancer.

### ***Awareness of HPV vaccine***

Out of 327 respondents, 76.1% stated that there is a vaccine that protects against HPV. 95.1% said that they would like to know more about HPV vaccines. This shows that there is an interest on behalf of the youth to know more and there is a need for awareness programs. Findings showed that 85.6% of respondents gained information about HPV vaccine from different sources and 76.5% from doctors. Hence, these results help to tailor the approach to sensitize on HPV vaccines to reach a maximum number of people in the target population. It is to be noted that 53.3% participants are aware of the provision of HPV vaccine to grade 5 students and 56.5% know about the recommended age for females to get vaccinated. In order to maintain the

awareness level high, more programs should be conducted at all educational levels to keep the public informed about HPV and the vaccine, especially for the youth, who is at-risk population to get infected with HPV and who did not get the opportunity to get vaccinated in school vaccination campaigns.

This indicates that the population of study has a good awareness of HPV infection and the vaccine. In the era of technology, young people are exposed to various information and are aware of various health issues. Around one-third of the participants knew about the association with cervical cancer. Most of them thought HPV had no complications. However, awareness of the topic did not ensure knowledge of the subject matter. Although most participants were aware of the HPV vaccine, they had little knowledge about the infection, especially about the link between sexual behaviour and HPV-related cancers (*refer Figure 1*), whereby they think antibiotics and face masks help in prevention of HPV infection.

### ***Gender***

Around 58.4% of the respondents have heard about HPV, whereby the ratio was better among female students. There is a link between gender and the HPV vaccine for cervical cancer prevention and a relationship between gender and receiving the HPV vaccine with a p-value of 0.000. However, the results could be due to the higher participation of girls in the survey, representing 59.0 % of the respondents. Moreover, cervical cancer is a gynaecological disease, whereby women feel more concerned about the topic. Sensitization campaigns should aim to raise awareness of HPV and also emphasize the health complications for both genders, like cervical and penile cancer.

### ***Field of study***

Health sciences make up 59.9 % of the course participants. With a p-value of 0.001, the link between the field of study and HPV infection awareness is established. A P-value of 0.000 indicates the relationship between the study domain and the HPV vaccine. Science students were more aware of cervical cancer linked to HPV infection.

However, non –Sciences students should also be aware of various health problems linked to HPV. Therefore, attempts should be made to

eliminate barriers and access to information regarding HPV infection and the HPV vaccine. Health promotion campaigns should have a global approach to the entire target population. Hence, medical terms should be explained in simple terms to gain the attention and interest of students in various fields.

### **Attitude**

The percentage of participants showed a willingness to get vaccinated against HPV was 77.2. Correct attitude towards awareness of the HPV vaccine, the need for vaccination prior to the beginning of sexual activity and acceptance of the HPV vaccine is demonstrated with a p-value of 0.000 each. This shows that young people are conscious of health hazards linked to HPV and the need for vaccination. Furthermore, this indicates the trust they have in the National Vaccination Program carried out by the Ministry of Health and Wellness. However, this should not be used as an excuse to start having sex at an early age or have multiple sexual partners. Preventive measures used should not be confused with easy access to sex.

### **Perception**

19.7% participants were hesitant to get HPV vaccination (refer Table 1). Significant barriers to vaccine acceptance include lack of knowledge on the complications of HPV infection, the mode of transmission and preventive methods. Low perceived risk for cervical and penile cancer, side effects of vaccines and being against vaccinations are reasons behind HPV vaccine hesitancy. Some participants perceive this topic as a taboo to be discussed at home with parents. Mauritius, being a conservative society, has to overcome such barriers to vaccination to prevent rise in cervical cancer and HPV-associated health complications.

### **Strengths of the study**

The sample consists of both genders, so as to promote awareness among the student population, since males are also affected by HPV infection. A quantitative study was carried out, whereby a trilingual questionnaire (*Annex 1*) was used, namely in English, French and Kreol Morisien language to overcome the language barrier on the campus of the University of Mauritius.

The questionnaire helped to assess awareness of HPV infection and vaccine among students at the University of Mauritius, whereby students of various fields are included, and the study is not limited only to students having a medical background. Since university students comprise both local and international students, the answers obtained reflect a global understanding of the youth concerning the research topic.

### **Limitations**

Due to sanitary restrictions amidst the COVID-19 pandemic, face to face interviews could not be carried out. We had to proceed only with online survey, whereby virtual snowball sampling technique was employed. This was a cross-sectional study involving only UOM students. Hence, the survey was not representative of the tertiary education student population in Mauritius, and we were not able to assess the awareness level of tertiary students at a national level.

The data obtained was skewed toward Health Sciences students. Hence, discrepancies in overall results could not be avoided. With the online Google Form questionnaire, some students might not have understood the questions properly. Moreover, students might have searched on the subject online while attempting the questions. This might lead to information bias. The authenticity of the answers obtained cannot be ascertained.

Therefore, the survey might not convey the actual awareness and perception level of the UOM students towards the HPV vaccine. Students working in groups might also have discussed answers while filling out the questionnaire which does not reflect their understanding of the topic, hence leading to participation bias. Since the male population is 39.2 % of the sample obtained, giving a definitive statement on the level of awareness in this subgroup was challenging. A direct causal link between two parameters cannot be justified based only on the results obtained when the statistical analysis method is applied.

The rate of vaccine knowledge and acceptance could be skewed by the desire to report socially and scientifically accepted positions on HPV vaccination. Sensitive issues like the sexual orientation of individuals were not addressed. Individuals of different sexual orientations may have different views about the need to get vaccinated.

Follow-up studies are warranted to determine the vaccination uptake by UOM students. Furthermore, many young people do not have access to tertiary education. They are usually from lower socioeconomic status and have a lower literacy rate. As a result, they are more prone to sexually transmitted diseases. Our study does not reach this particular group of young people.

## Ethical approval

Ethics approval was sought from the Department of Medicine, University of Mauritius Ethics Committee. Ethics clearance was granted on 5<sup>th</sup> May 2021. The project code is DM/MPH/2021/04/015.

## Conclusion

In this study, awareness regarding the HPV vaccine was relatively high among UOM students. However, a deep understanding of the topic was missing, particularly regarding the mode of HPV transmission and associated health diseases with HPV. Nevertheless, 68.5 % of participants think that the HPV vaccine is safe, hereby showing trust in the vaccine and National Vaccination Program. Women and Science students were more aware of the HPV vaccine. A positive attitude towards the HPV vaccine has been detected whereby the HPV vaccine acceptance rate was 67%. According to the responses to the questionnaire, 95.1% of the UOM students are keen to know more about the HPV vaccine and 77% would consider vaccination post the survey. High rates of HPV vaccination will reduce the burden of HPV-related diseases not only in Mauritius but worldwide. According to the Centers for Disease Control and Prevention, among vaccinated young adult women in the USA, HPV infections that cause most HPV cancers and genital warts have reduced by 81 percent and the percentage of cervical pre-cancers caused by the HPV types most often linked to cervical cancer has dropped by 40 percent in vaccinated women. Moreover, people who received HPV vaccines were followed for at least about 12 years, and their protection against HPV has remained high with no evidence of

decreasing over time, thus providing long lasting protection<sup>5</sup>.

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Members of the Student Council and representatives of the Faculty of Medicine and Health Sciences highlighted the importance of the survey to increase the visibility of the study. They also helped with the technical aspects of completing the online survey. While interacting with their peers, they helped us know about the doubts regarding the confidentiality aspect. Moreover, partner students helped us to upload the results on the online platform of the university to allow access to all students.

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## Competing interests

None declared.

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