

KNOWLEDGE, ATTITUDES AND PRACTICES AMONGST FEMALE UNIVERSITY STUDENTS IN VIETNAM: A CROSS-SECTIONAL STUDY ON HUMAN PAPILLOMAVIRUS VACCINATION

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ABSTRACT: *This study was aimed at determining the knowledge, attitudes and practices of female public university students in relation to human papillomavirus (HPV) vaccination. Data were collected through questionnaire administration and face-to-face interviews. On the basis of the findings, most of the students had high knowledge regarding the aetiology of HPV but exhibited a minimal understanding of HPV epidemiology. With regard to the attitudes of the participants towards HPV vaccination, the correlation between HPV infection and the incidence and prevalence of cervical cancer played a leading role in the increasing acceptance of the vaccine. Barriers to HPV vaccination in Vietnam included the lack of adequate education (and, hence, knowledge) about the efficacy of the vaccine, poor communication regarding sexuality, organisational influence and the perception that the HPV vaccine promotes sexual activity. Other obstacles were apprehension over the efficacy and safety of the vaccine (amongst the participants and service providers), problems concerning reimbursement and the perceivably high cost of the vaccine. These results pointed to the following needs in the Vietnamese context: the implementation of educational initiatives, reassurance from healthcare providers and practitioners or community health workers, nurses and doctors regarding the low likelihood of adverse effects from the HPV vaccine and the espousal of a holistic approach by which to eliminate barriers to community discussions of sexually transmitted diseases and sexuality.*

Key words: *Human papillomavirus, knowledge, attitude, practices, students, vaccination, Vietnam.*

INTRODUCTION

Human papillomavirus (HPV) infection is one of the most commonly occurring sexually transmitted diseases around the world [1, 26], with the disease likely afflicting approximately 50% of sexually active individuals in one lifetime. Recent statistics further indicated that the incidence and prevalence of HPV amongst females aged between 26 and 30 stands at 14% [2, 27]. The disease has also been documented as a predictor of cervical cancer, with almost all the latter cases attributed to HPV. This attribution was supported by Asiedu et al.'s [4] study in the Asia-Pacific setting, where the authors found that HPV 18 and 16 account for 75% and 58% of all cervical cancer cases, respectively [4]. A similar trend was discovered by Bansal et al. [5] for Western countries.

Notably, HPV vaccination has been amongst the most effective approaches to minimising the transmission of the infection, whether in male or female populations. The vaccine has also been asserted to prevent cervical cancer in about 78% of cases, as well as other diseases with which HPV 18 and 16 are associated [6]. To reduce the costs of vaccination, most previous systematic reviews advocated for a combination of screening tests and HPV vaccination. This combination saves time and prolongs the effects of the vaccine [7]. Despite these advantages, however, many developing regions or countries exhibit a low uptake of HPV immunisation [8]. In Vietnam, for instance, uptake amongst the youth is as low as 5.7%, whereas uptake amongst their US counterparts reach a rate of 42% [10]. This disparity was ascribed to the fear of side effects, negative attitudes towards HPV vaccination, the lack of knowledge regarding the HPV vaccine and high costs [11, 12, 29, 30]. Empirical evidence indicated that certain factors impede the success of combining preventative strategies with HPV vaccination programmes. Most of these barriers are related to the willingness to pay for the vaccine and the knowledge, attitudes and practices associated with HPV vaccination [13]. These results are insightful because they highlight recent statistical outcomes regarding the incidence and prevalence of HPV, the rate of HPV vaccination in the Vietnamese context (compared with the US and the rest of the Western setting) and some of the factors accounting for disparities. Nevertheless, previous studies are deficient in terms of their disregard of insights from a specific demographic group. The extant literature has also failed to identify factors that account for the low rate of HPV vaccination amongst the Vietnamese youth or provide feasible solutions that are designed to reduce the incidence and prevalence of HPV in Vietnam.

Another issue for consideration as regards inquiries into HPV vaccination is the fact that high uptake rates determine the success of vaccination programmes. According to Ganju et al. [14], the most influential factor affecting the willingness of individuals to receive vaccines is recommendation from a primary care physician for HPV immunisation. This result was confirmed by Gattoc, Nair and Ault [15], who found that the motivation to receive immunisation amongst most adolescent girls and women depends on the attitudes and experiences of physicians with HPV. Other drivers of uptake include the ability to remove barriers to prescription, positive attitudes towards the vaccine and updated knowledge regarding the vaccine. The problem with the majority of these results is that they are largely applicable to the Western context [16], yet Asia accounts for a significant percentage of HPV incidence in the world [17]. HPV trends associated with cervical cancer also indicated that 50% of the global cases of the latter occur in the Asian setting [16, 17]. Some researchers pointed out the scarcity of original research in spite of the alarming incidence and prevalence of HPV in Asia. Furthermore, women are exposed to differences in clinical and cultural environments, yet scholarly investigations into the plight of individuals such as female university students have yet to be comprehensively performed [19]. To fill the above-mentioned gaps in existing scholarship, the present study evaluated the knowledge, attitudes and practices of Vietnamese female university students in relation to HPV vaccination.

MATERIALS AND METHODS

Sampling and Research Setting

This cross-sectional research was conducted from February to August 2017 in a public Vietnamese university, where female participants were recruited via convenience sampling. Some studies evaluated convenience sampling as advantageous because it is useful in pilot studies, saves time and financial resources and facilitates data availability, with information regarding a given subject easily collectible from the context in which a researcher operates [9]. Others criticised its failure to enable the derivation of generalizable results, the possibility of sampling errors with the use of the method and the potential for researcher bias during data collection [3]. In the current work, convenience sampling was selected because its merits outweigh its perceived shortcomings. Specifically, the choice of the approach was informed by its effectiveness in clearing the way for access to all prospective respondents. After informed consent was secured from eligible participants, they were assured of confidentiality during face-to-face interviews in natural settings of their choice. The privacy and autonomy of the participants were ensured through the use of codes in place of their names, the departments to which they belong, their personal contacts and their physical addresses. The participants were likewise informed that opting out of participation will not incur them any penalty, and the purpose of the study was explained to each of them before data collection was initiated. Data privacy and confidentiality were achieved by protecting primary data, especially those presented in electronic form, with strong passwords and barring unauthorised access to this information. For print information obtained from secondary sources, confidentiality was guaranteed by storing the data in secure cabinets of participating university departments. The research adhered to ethical principles also by respecting the intellectual property

rights of scholars through citations and by preventing researcher interference and manipulation of data collection and analysis.

A public university in Vietnam was chosen as the study context for several reasons. First, the location of the institution ensured accessibility. Second, this particular institution and its students were selected because the socio-economic characteristics of the student body were predicted to reflect trends in the HPV vaccination-related knowledge, attitudes and practices of Vietnam's female population. Third, the university was selected because it had a sufficient research population from which an acceptable sample size could be achieved. The inclusion criteria were being cognitively healthy or stable (to avoid recruiting individuals from vulnerable groups), the provision of written informed consent, being 18 years and older and being a vaccine service user. The participants were informed of their freedom to withdraw at any stage of the data collection process, especially if they felt traumatised by the phenomenon being investigated. The inclusion criteria were established in such a way that any withdrawal could be replaced by other eligible individuals until the desired sample size of 150 was achieved.

Instruments and Measurements

Because the collection of self-reported data was also targeted, a structured Likert-type questionnaire was administered to the respondents to supplement the data obtained from the interviews. Given the possibility of social desirability bias, in which the participants could respond to questions on the basis of general trends and not their lived experiences, they were given adequate time to provide their responses. This step helped prevent the underestimation or overestimation of outcomes. Social desirability bias was also avoided by the use of objective (rather than subjective) terms in the design of the questionnaire to add to clarity and prevent misunderstandings and misinterpretations on the part of the participants.

The data collected featured two broad categories of information. The first were demographic data, which covered income (if any), occupation, marital status, educational attainment, gender and age. The second category consisted of data on the examined parameters, namely, the knowledge, attitudes and practices of female university students regarding HPV vaccination in Vietnam. With respect to practice and how it shaped the participants' perspectives on HPV vaccination, they were asked about whether they had been vaccinated for HPV and the reasons that might have hindered them from receiving the vaccine. As regards attitudes, the participants were requested to provide their opinions on the perceived efficacy and safety of the vaccine and discuss their intention to participate in HPV vaccination programmes. Finally, in the matter of knowledge and how it shaped HPV vaccination trends amongst the participants, they were asked to share their sentiments about the most appropriate age for HPV vaccination, the beneficial effects associated with this practice and the group that counts as the most suitable target for HPV vaccination.

Data Analysis

The collected data were organised in statistical tables, graphs and charts. The data analysis involved the use of descriptive and inferential statistical approaches.

RESULTS

Demographic Data

Most of the participants were aged 20 to 24 years old (Table 1). Given the study's objective of collecting data from an experienced population, the current participants could be inferred as being in a position to discern the issues of concern in this work. The composition of the sample contributed to the validity and reliability of the results. Although 150 female university students were recruited for participation, the data provision process was completed by 137 respondents, corresponding to a response rate of 91.33%. Amongst the participants, 39% were enrolled in the physical sciences department of the university, and 61% were pursuing programmes offered by the biological sciences department.

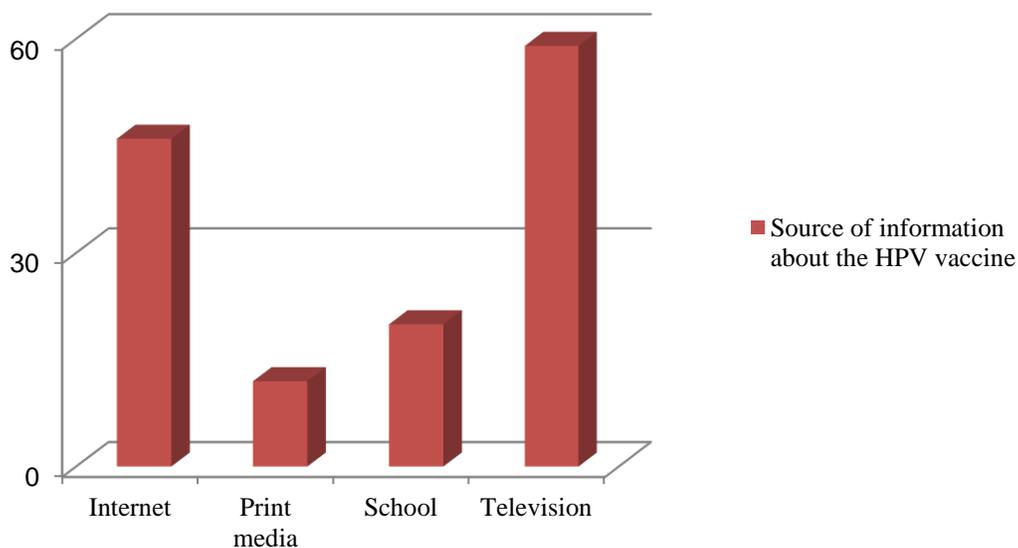
Table 1: Demographic data on the participants

Age range	Frequency	Percentage	Valid percentage	Cumulative percentage
20–24	48	35.04	35.04	35.04
25–29	33	24.09	24.09	59.13
Valid 30–34	27	19.71	19.71	78.84
35–39	29	21.17	21.17	100.0
Total	137	100.0	100.0	

Results Related to Specific Objectives

One of the objectives of this study was to determine the knowledge of female university students regarding the HPV vaccine. Out of the 137 participants, 46 (33.57%) acquired vaccine-related knowledge from the Internet, 12 (8.76%) gained such knowledge from print media, 20 (14.60%) were given information in school and 59 (43.07%) developed an understanding of the vaccine through TV news.

Source of information about the HPV vaccine

**Fig 1:** Sources of information about the HPV vaccine

On the subject of knowledge about the HPV vaccine and its correlation with the incidence and prevalence of cervical cancer and the correlation between HPV infection and the rate of cervical cancer occurrence, 112 participants agreed and strongly agreed with the assertion that an inverse correlation exists between the former and that a direct association transpires between the latter, respectively. Conversely, 25 participants indicated a neutral position regarding such correlations. A notable finding was that the participants aged 20 to 24 and 25 to 29 years obtained higher scores in discerning the roles of the aforementioned variables than did their older counterparts. This result indicates that age moderated the participants' knowledge of the effects of HPV infection on the epidemiology of cervical cancer and the effects of the HPV vaccine on the incidence of such type of cancer.

The results revealed favourable performance amongst the participants in comprehending the relationship between the uptake of HPV vaccination programmes and the prevention of cervical cancer. A considerable number of the female university students exhibited more comprehensive knowledge of this aspect than the prediction of cervical cancer by HPV infection. An imperative issue for consideration is that the responses regarding knowledge on the HPV vaccine and cervical cancer were not predicted by the age of the participants. Correspondingly, the distribution of the participants who agreed and disagreed with statements and expressed a neutral stance was relatively uniform.

The knowledge of the female university students about the uptake of HPV vaccination and its efficacy was determined on the basis of the interviewees' perceptions of themselves as being vulnerable (or otherwise) to HPV infection. Amongst the participants, 29% disagreed and strongly disagreed with the view that they are vulnerable to HPV infection, whereas 51% expressed neutrality regarding this matter given the uncertainty that they felt about whether they are indeed susceptible to contracting the infection. With the majority of the participants (79%, statistically significant) acknowledging the seriousness of HPV infection, the study proceeded to unearth the attitudes of the interviewees towards the uptake of HPV vaccination programmes (or being vaccinated).

Most of the participants agreed and strongly agreed that HPV is a serious disease and that they are vulnerable to the condition, thus perceiving the benefits of the vaccine to a great extent. This result led to the conclusion that knowledge predicted the attitudes of the respondents towards the HPV vaccine; that is, the participants with considerable awareness regarding the seriousness of the diseases (and their susceptibility to it) exhibited positive perspectives on the uptake of HPV vaccination programmes. This positivity supports the suitability of vaccination initiatives. Despite this promising trend, however, over 57% of the respondents lamented that the HPV vaccine was costly. Compounding this obstacle were uncertainties regarding the effectiveness of the vaccine and worries over its adverse effects. Amid these barriers, 8% of the participants indicated that a major driver of potential uptake would be mass media campaigns, and 14% acknowledged the influential role of self-directed decision making on supporting HPV vaccination programmes. Additionally, 16% of the interviewees emphasised how family opinions figure importantly in their engagement with HPV vaccination initiatives. As can be seen, mixed outcomes were observed in respect of barriers to HPV vaccination and factors that shaped or would shape the attitudes of the participants towards supporting HPV vaccination projects.

The findings demonstrated that 27.01% (37 individuals) of the participants were vaccinated against HPV, reflecting a significant increase in the rate of vaccination uptake compared with the results reported by Leung and Law [20], whose research focused on a similar context and sample and uncovered a 2.4% uptake of HPV vaccination amongst the participants. The current work discovered a lower rate of uptake amongst the female university students than that found in studies on Germany and other European countries (52%) [21, 22], as well as China (approximately 48%). For the participants who had been vaccinated against HPV, more queries were presented in relation to the research questions pursued in this work. This additional inquiry was aimed primarily at casting light on the participants' lived experiences and thereby predicting their knowledge, attitudes and practices in relation to the uptake of HPV vaccination programmes.

Participants' Perceptions on the Positive Effects of the HPV Vaccine

Table 2 indicates that nearly all the participants strongly agreed with the statement that the HPV vaccine reduces the likelihood of cancer occurrence—a result that corresponds with the observations made in most previous examinations of this issue. The rest of the participants (43.2%) also agreed with the statement, implying an inverse correlation between HPV vaccination and cancer occurrence.

Table 2: Results on the protective effects of the HPV vaccine against cancer

	Frequency	Percentage	Valid percentage	Cumulative percentage
Strong agreement	21	56.8	56.8	56.8
Valid Agreement	16	43.2	43.2	100.0
Total	37	100.0	100.0	

Table 3. Results on the HPV vaccine as a preventive to the spread of the disease to sexual partners

	Frequency	Percentage	Valid percentage	Cumulative percentage
Agreement	5	13.5	13.5	13.5
Neutral	7	18.9	18.9	32.4
Disagreement	25	67.6	67.6	100.0
Total	37	100.0	100.0	

The findings on the effectiveness of the HPV vaccine in preventing the spread of HPV infection to sexual partners are similar to those on the efficacy of the vaccine in preventing cancer. The majority of the participants (67.6%) disagreed with the asserted correlation between HPV vaccination and the spread of the disease to sexual partners, 13.5% agreed with it and 18.9% manifested a neutral perspective on the matter. On this basis, the study established that most of the female university students, especially those who had been vaccinated, were knowledgeable about the effectiveness of the vaccine in minimising disease proliferation. The reasons why some of the participants exhibited impartiality regarding this issue were unidentified, pointing to the need for further research on the specific motivations behind participant responses.

The attitudes of the respondents towards vaccination were ascertained by delving into their perceptions about the negative consequences or side effects associated with the HPV vaccine.

Table 4: Findings regarding the protective effect of the HPV vaccine against genital warts

	Frequency	Percentage	Valid percentage	Cumulative percentage
Strong agreement	1	2.7	2.7	2.7
Neutral	4	10.8	10.8	13.5
Disagreement	4	10.8	10.8	24.3
Strong disagreement	28	75.7	75.7	100.0
Total	37	100.0	100.0	

The greatest proportion of the sample strongly disagreed with the idea that the HPV vaccine protects individuals against genital warts. Amongst the females who had been vaccinated against HPV, 18.8% disagreed with the aforementioned assertion, and a similar percentage exhibited a neutral position. Only 2.7% of the sample (i.e. one participant) strongly agreed with the existence of an inverse correlation between HPV vaccination and a reduction in genital warts. From these results, we can infer that the bulk of the respondents possessed minimal knowledge of the effectiveness of HPV vaccination against genital warts.

Participants' Perceptions of the Negative Effects of the HPV Vaccine

The final question geared towards illuminating the attitudes and practices of the female university students, especially those who had been vaccinated against the disease (at the time of the study), revolved around the negative effects (if any) with which the vaccine is associated.

Table 5: Findings on the HPV vaccine having side effects

	Frequency	Percentage	Valid percentage	Cumulative percentage
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Valid	Strong agreement	26	70.3	70.3	70.3
	Agreement	6	16.2	16.2	86.5
	Neutral	5	13.5	13.5	100.0
	Total	37	100.0	100.0	

Table 5 shows that most of the participants (70.3%) concurred with the claim that the HPV vaccine reduces cancer occurrence but simultaneously causes side effects. This finding suggests that even amongst the vaccinated group, attitudes towards programme uptake and lived experiences reflected a relatively unfavourable perception. A significant number of the interviewees cited several adverse effects, including vomiting, nausea, fainting, muscle pain, fatigue, headaches and low fever. The other undesirable consequences identified were swelling or pain at the injection site and diarrhoea. These results are consistent with the literature, wherein researchers discovered that a fear of side effects impeded the uptake of HPV vaccination in Vietnam—a situation compounded by the high cost of the vaccine. The role of these factors as obstacles was verified by the fact that only 37 out of the 137 interviewees in the current work had been vaccinated against HPV.

DISCUSSION

This study unravelled some of the challenges confronting the uptake of HPV vaccination programmes in Vietnam, especially amongst female members of the population. The results indicated insufficient vaccination-related knowledge, attitudes and practices amongst the sample. Nonetheless, the majority of the participants expressed a willingness to pay for the HPV vaccine. A remarkable result, however, was that nearly all the participants failed to discern the most appropriate age at which HPV vaccination should be received. Such deficiency in knowledge, as contended by Nguyen et al. [23], can be attributed to the association of HPV with cervical cancer, the targeting of the majority of vaccination programmes towards young adolescent girls and women, the failure to account for the case of men and the inability of researchers and practitioners to predict the age at which individuals require vaccination. The present study pinpointed the need to enhance comprehension of the beneficial effects of undergoing HPV vaccination for both men and women.

To determine the attitudes of the participants towards HPV vaccination, a question was directed particularly towards the amount that they were likely to spend in participating in a vaccination programme. Most of the interviewees expressed a preference for paying 67% of the price offered by clinics and other HPV vaccination initiatives. On the basis of the literature, the current research inferred that Vietnamese individuals' willingness to participate in HPV vaccination programmes is relatively promising but still lagging behind levels of inclination in the US [24]. As reported by Ratanasiripong et al. [25], the HPV vaccine costs about 20% of the average monthly income of a Vietnamese. The authors affirmed that the low willingness to receive vaccination amongst the Vietnamese population is linked to financial burdens and highlighted the necessity of financial support for segments of the population who require the vaccine [25].

Mixed outcomes were derived regarding the roles of vaccine costs and physicians in the elevated uptake of vaccination programmes. In particular, most of the female university students exhibited unlikely participation in such endeavours; these individuals included those who obtained information on HPV vaccination from community health workers, health professionals, nurses and doctors. To understand the factors shaping this reaction from the participants, the issue of cost was explored to establish whether parallels could be drawn between the cost of the vaccine and the willingness to participate in HPV vaccination initiatives, as well as to determine the extent to which costs compromise the potential contributions of physicians to vaccination-related perspectives and the consequent reduction in uptake. The results led to the conclusion that the HPV vaccine was deemed expensive by the participants, thereby acting as a significant barrier to involvement in vaccination programmes. The present study is thus compatible with the literature in terms of the negative correlation between cost and willingness to participate. However, the current research contrasts with previous works with reference to the perceived cruciality of physicians' role in increasing the rate of HPV vaccination uptake; this trend is explained by the high cost of the vaccine. The emerging theme was that for physicians, recommendations on HPV vaccination tended to be compromised by the substantial expense incurred from it.

This situation underscores the necessity of examining feasible solutions for hindrances to the expansion of HPV vaccination, particularly amongst the female population in Vietnam.

CONCLUSION AND RECOMMENDATIONS

As previously indicated, the majority of the sample exhibited strong knowledge of HPV aetiology but a minimal understanding of HPV epidemiology. In relation to the attitude of the participants towards the HPV vaccine, the correlation between HPV infection and the incidence and prevalence of cervical cancer was a key contributor to the increasing acceptance of the vaccine. By contrast, the perception regarding genital warts did not play a statistically significant role in shaping the interviewees' willingness to involve themselves in HPV vaccination—a trend that predicted the low levels of knowledge about these parameters. Concerning the practices of female university students in connection to the HPV vaccine and the barriers to its uptake, many of the participants were unaware of the ideal age at which the HPV vaccine should be administered. Only a few interviewees proffered guesses, with these subjects proposing the age brackets 12 to 14, 10 to 11, 11 to 12 and 10 to 12 years. Drug marketing activities in Vietnam have increased in the recent past, which explains why the majority of the respondents who had been vaccinated against HPV acquired insights from the recommendations of pharmaceutical representatives.

To expand the coverage of this work, some barriers to HPV vaccination in Vietnam were unearthed, and certain general trends were established. In particular, the study's findings agree with those in the literature, especially research conducted in Vietnam and other regions with similar socio-economic, demographic, geographical and cultural characteristics as our case country. The obstacles identified in the present work were the lack of adequate education—and by extension, knowledge—about the efficacy of the HPV vaccine, poor communication regarding sexuality, organisational influence, the belief that the HPV vaccine promotes sexual activity, concerns about the efficacy and safety of the vaccine, problems related to reimbursement and the perceived high cost of the vaccine.

Several implications for clinical practice were drawn from the findings. For instance, the study pointed to the need to implement educational initiatives to ensure that the perceived importance of the HPV vaccine is enhanced. In particular, the findings suggested the necessity of such endeavours in emphasising insights regarding genital warts, the epidemiology of HPV infection and the contribution of HPV to the incidence and prevalence of cervical cancer infection. Given that the aspect of safety emerged as a dominant barrier to the uptake of HPV vaccination, healthcare providers and practitioners or community health workers, nurses and doctors should reassure populations that the potential of the vaccine to cause harmful effects is low and stress that the benefits of vaccination tend to outweigh perceived problems. Healthcare providers in Vietnam should also embrace a holistic approach to addressing hindrances to community discussions of sexually transmitted diseases and sexuality. Although these issues are sensitive, the need for providers to pay these matters focused attention cannot be overemphasised. Because colleges and government recommendations mould the practices of female university students with respect to HPV vaccination, the Vietnamese government should use personnel from these settings as agents who deliver educational messages about the efficacy of the HPV vaccine. Finally, the cost barrier can be addressed by the Vietnamese government through the provision of partial subsidies to eligible community members.

Future research should examine some of the interventions through which knowledge about the efficacy of the HPV vaccine can be enhanced. Scholars can also delve into how socio-economic disparities amongst communities in Vietnam can be addressed whilst efforts to enhance uptake and support for HPV vaccination are carried out.

Study Limitations

Some of the factors that added to the strength of this study included the use of convenience sampling, the high response rate and the choice of a valid data collection instrument—aspects that enabled the establishment of connections between primary and secondary data. These factors therefore also contributed to generalisability. A limitation lay in the cross-sectional design, which presented difficulties in establishing a cause–effect relationship between the use of the HPV vaccine and the knowledge, attitudes and practices of the participants. Another limitation was the focus on female university students, which prevented elucidating the perceptions of females and males outside an academic institution (or in the rest of the community). Overall,

these shortcomings indicate the need for time series cross-sectional analyses to counter the drawbacks of the study.

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CONFLICTS OF INTERESTS

The authors have no conflicts of interests to declare.

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