SJ Insight
Vol. 2 No. 1 (2025): January 2025 Issue
https://doi.org/10.51168/insights.v2i1.9
Original Article

BARRIERS TO INITIATION AND COMPLETION OF THE 2-DOSE HPV VACCINE AMONG GIRLS AGED (9-16) YEARS IN BARAPWO WARD, LIRA CITY IN NORTHERN UGANDA, A CROSS-SECTIONAL STUDY

Sseguya Mathias*, Omute Tom
Lira University

ABSTRACT

Background

Cervical cancer is the principal burden of Human Papillomavirus (HPV) infections and a public health priority. Since 2008, HPV vaccination has been routinely recommended for pre-adolescents and adolescent girls in Uganda as the primary preventive measure for cervical cancer. Therefore, the study aims to identify the barriers to initiating and completing the 2-dose HPV vaccine among girls aged (9-16) years in Barapwo ward, Lira City in northern Uganda.

Methods

An analytical cross-sectional study was conducted among 245 primary school girls aged 9-16 in Barapwo ward, Lira City West Division. A multistage sampling technique was used to select eligible participants, and data was collected using an interviewer-administered questionnaire. The data was analyzed using SPSS version 20, and descriptive statistics were used.

Results

The study group comprised participants aged 9 to 16 years, with a mean age of 12.84. Most participants (33.9%) were in primary six, and the majority (90.2%) were from the Lango tribe. Among the girls, 41.2% identified as Protestants and Catholics, while 73.1% lived in nuclear families and 26.9% in extended families. Factors that were found significantly associated were; having heard about the vaccine, P<0.001], knowledge of where to find the vaccine[OR=(95% CI:0.131-0.438), P<0.001], radio access, P<0.001], being taught about cervical cancer and HPV at school, P<0.001], in-school vaccination[OR=(95%CI:6.621-30.825), P<0.001], distance to the health facility[OR=(95% CI:0.132-0.41), P<0.001], health workers recommendation and exposure to clinical outreaches.

Conclusion

The study identified critical factors influencing HPV vaccination uptake, including awareness, education, and accessibility.

Recommendations

Health policymakers should create multilingual awareness strategies to boost HPV vaccine uptake in Lira City. Future research is needed to examine factors influencing vaccine uptake and effective interventions. The Ministry of Health and religious leaders should educate communities and health workers to promote vaccination.

Keywords: *Uptake of HPV vaccine, Girls aged (9-16) years, Barapwo ward.*
Submitted: *2024-04-12* ***Accepted:*** *2024-11-29*

Corresponding Author: *Sseguya Mathias*
Email: *medicmathias256@gmail.com*
Lira University

BACKGROUND

Cervical cancer ranks as the fourth most prevalent cancer among women worldwide, with an estimated 604,000 new cases reported in 2020 (WHO). Alarmingly, 68% of women diagnosed with cervical cancer succumbed to the disease in 2018, contributing to approximately 342,000 deaths globally, of which about 90% occurred in low- and middle-income countries, including Uganda (Sabeena et al., 2018). Within Eastern Africa, the region exhibits the highest age-standardized mortality and incidence rates for cervical cancer, with Uganda reporting an estimated 6,413 cases and 4,301 deaths annually as of 2018. Projections indicate that by 2025, Uganda will see approximately 6,400 new cervical cancer cases each year (Jackson et al., 2018). Human papillomavirus (HPV) is a critical factor in the development of cervical cancer, responsible for nearly 95% of cases (Kisaakye et al., 2018). Women living with HIV face a sixfold increase in cervical cancer risk, with about 5% of cases attributable to HIV.

In response to this public health crisis, Uganda was among the first Sub-Saharan African nations to implement an HPV vaccination demonstration project, exploring various

vaccine delivery strategies. Following the project, the Ministry of Health adopted a hybrid approach, targeting both school-based and age-based vaccination strategies for girls aged 9-13 years, integrating the 2-dose HPV vaccine into the Uganda National Expanded Program on Immunization (UNEPI) since November 2015. Despite a high uptake of 88.9% during the demonstration project, completion rates for the 2-dose series have remained dismally low, with only 22% of girls completing the vaccination series in 2016 (Nabirye et al., 2019). This discrepancy highlights significant public health concerns, as many adolescents fail to reap the full protective benefits of the HPV vaccine.

Research has identified several barriers to the initiation and completion of the HPV vaccine series. **Individual barriers** include a lack of awareness and knowledge about the HPV vaccine, which significantly affects willingness to vaccinate. For instance, studies indicate that adolescents who receive sexual health education and have a positive attitude toward vaccination are more likely to accept the HPV vaccine (Zhang et al., 2021; Wang et al., 2022). Furthermore, concerns regarding vaccine safety and side effects persist, particularly among caregivers of unvaccinated children, with financial constraints also being a notable barrier (Kepka et al., 2018). In Uganda, factors such as educational attainment, access to information, and peer influence play crucial roles in HPV vaccine uptake (Kisaakye et al., 2018).

Socio-economic barriers also significantly impact HPV vaccination rates including the cost of the vaccine, perceived side effects, and fears of encouraging promiscuity among daughters are major concerns expressed by parents (AMBALI et al., 2021). Studies in various contexts reveal that lower educational levels and income among mothers correlate with reduced vaccination intentions for their daughters (Lin et al., 2020). Moreover, rural residents exhibit significantly lower vaccination uptake compared to their urban counterparts, indicating a need to address disparities related to location and socioeconomic status (A Isabirye et al., 2020).

Studies demonstrate that consistent vaccine availability and comprehensive information provided at vaccination sites are critical for increasing HPV vaccination uptake (Kisaakye et al., 2018; Nabirye et al., 2020). Additionally, healthcare providers play a pivotal role in influencing parents' decisions to vaccinate, with effective communication and recommendations significantly impacting vaccination rates (Smith et al., 2016; Litton et al., 2011). Therefore, the study aims to identify the barriers to initiating and completing the 2-dose HPV vaccine among girls aged (9-16) years in Barapwo ward, Lira City in northern Uganda.

METHODOLOGY

Study design.

This was a descriptive cross-sectional study employing quantitative methods of data collection. The design was cross-sectional because it was the most appropriate for data collection at a single point in time which was the objective of the study. It was descriptive because we used descriptive statistics to explain variables.

Study site and setting.

This study was conducted in Barapwo Ward, Lira city. Lira City is the main, administrative, and commercial center of Lira District. It is located approximately 100 kilometers (62 miles), southeast of Gulu City the largest city in northern Uganda, along the highway of Gulu and Mbale. Lira City lies 124 kilometers northwest of Soroti City. This location lies approximately 337 kilometers (209 miles), by road, north of Kampala. The city has two divisions Lira City East (comprising of Adekwok Ward, Ngetta and Lwal Ward, Lira Central Division and Railways Division) and Lira City West comprising of Ojwina Ward, Adyel Division, Barapwo Ward, Amuca Ward and Lira ward. Lira City West Division comprised 127,100 people by the end of FY 2020/21. Ojwina ward is composed of 8 primary schools, Adyel division contains 7 primary schools and Barapwo ward comprises 5 primary schools of which two are government schools and three are privately owned schools.

Study Population
Target Population

This study was conducted among young adolescent girls in Barapwo Ward in Lira City.

Accessible population.

This study was conducted among girls aged 9-16 years in the selected cells within the Barapwo ward.

Eligibility criteria.
Inclusion criteria.

- All girls aged 9-16 years in the selected cells who assented were included in the study.
- All eligible girls who were available at the time of data collection were included in the study.

Exclusion criteria.

- Girls who were sick and could not participate in the study were excluded.
- Girls who could not give the required information due to various reasons such as speech and hearing impairments, were excluded from the study.

Sample size determination

The sample size was determined using Leslie Kish's formula (1965) n= z2pq/d2 with the assumptions.
Where n sample size
z= confidence interval taken at 95%; hence z= 1.96
p= the level of uptake of HPV vaccine taken; p= 0.1761 (Kisaakye et al., 2018)
q= the level of those not vaccinated given by 1-p= 0.8239
d= margin of error +/-5%= 0.05
Hence n= (1.96 x 1.96) x 0.1761 x 0.8239/ 0.05 x 0.05
n≈ 222.9492382656 participants
Therefore, n=245 participants plus 10% of the non-response.

Sampling technique and procedure.

The study used a simple random sampling method which involved writing the names of the five schools in Barapwo ward on paper and put in a container from which three papers were randomly picked. A total of three schools from where the study participants were accessed were; Barapwo Primary School, Olaka Primary School, and Olaka Annex Primary School, and 81 participants were recruited from each primary school to achieve the desired sample size. This study also employed a convenience random sampling technique given the availability of the study participants who met the inclusion criteria. The first participant was selected randomly then subsequent participants were selected depending on their availability until the desired sample size of 245 was realized. The researcher recruited 81 participants per day and therefore it took 3 working days to recruit the desired sample size of 245.

Study variables

Dependent variable

"Initiation and completion of 2-dose HPV vaccine" was measured by one item. Participants were first asked to indicate whether they had ever taken HPV vaccination, with the variable coded as 1=yes and 2=no. The participants were then asked the number of doses received if option one 'yes' was selected and followed by a question on the injection site and only those who met the whole criteria were regarded as having been vaccinated. However, other questions were included in the questionnaire to cross-check the responses selected for the primary outcome.

Independent variables

Individual factors that determine or influence the health of an individual.
Socio-economic factors which refer to measurements of social standing and financial viability.
Attitude is a set of health beliefs that determine or guide individual behaviors/conduct.
Health system factors which are concerned with the operation of the health facilities.

Data collection procedure

A clearance and introductory letter were obtained from the Lira University Research Review Committee and submitted to the Town clerk of Lira City to request permission to conduct the study in the chosen cells in Lira City West, thereafter permission was sought from the different local council chairpersons of the three randomly selected villages before approaching study participants to conduct the study. Informed consent was sought from the head teachers of the girls and then assent from the study participants and those who assented and met the inclusion criteria were included in the study. Data was collected using an interviewer-administered semi-structured questionnaire and interviews were anticipated to last for 15-20 minutes. Upon completion, participants were thanked for their participation in the study.

Data collection method and tool

A survey method of data collection was used. Ponto (2015), states that survey research is the most commonly used quantitative inquiry where numerical items are collected from a study population with the view of describing human behavior. Findings obtained through surveys can then be generalized to make inferences on the wider population from which the study population was sampled. In this study, the survey method was used to obtain numerical values to quantify attitudes, behaviors, opinions, and other variables. It involved the collection of numerical data by using closed-ended or multiple-choice questions. This approach helped to generate quality information that was used to give meaning to numbers.
Data was collected by using an interviewer-administered semi-structured questionnaire as the data collection tool was developed by the researcher and typed in English. A questionnaire tool was used because it allowed flexibility for respondents over where and when to complete filling it, it provided room to explain some questions to respondents and also observed respondents' anonymity. The questionnaire was developed concerning previous literature on HPV vaccination. Interviews were taking 15-20 minutes. The questionnaire comprised four sections; section a); socio-demographics (age, religion, ethnic group), section b); questions on level of uptake, section c); questions on other individual factors affecting uptake, section d) questions on socio-economic factors, section e) questions on health system factors as projected in the conceptual frame work. To reduce data loss, collected data was double-checked for completeness and accuracy, and incomplete as well as inaccurate data was corrected in real-time.

Data Management

Data entry and cleaning

Data entry screens with checks were created then data was entered in duplicate into EPI-DATA software version 3.0,

cleaned then transferred to analysis software SPSS version 20.

Data analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS) (version 20) to generate univariate and bivariate analyses. Univariate analysis was used to answer objective one which is uptake and to determine the demographic characteristics. Bivariate analysis was used to assess any relationship between each independent variable (socio-demographic characteristics, individual factors, health system factors, and socio-economic factors) and the outcome variable (being vaccinated or not i.e., having received at least one dose of the HPV vaccine). In addition, the level of HPV vaccine uptake was cross-tabulated with independent variables using logistic regression to test if associations existed at a 95% confidence interval. All the independent variables were categorized and reported with p values. All variables with a p-value of less than 0.05 were deemed significant. Results are presented as means, frequencies, Odds ratios, percentages, and standard deviations in tables.

Quality control (Validity and reliability issues)

The researcher consulted the research supervisor for validation of the data that was collected. A pre-study test of the data collection tool was done and necessary corrections were made in the tool to ensure the reliability of the data collected.

Pre-test

Pre-testing of the data collection tool was done to determine its feasibility and validity. In this study, the questionnaire was pre-tested before data collection to enhance its validity. The pretest was done to determine the comprehensibility of the questions, the ability of the questions to elicit the required data and to detect any ambiguity in the questions. The questionnaire was administered to 10 girls aged 9-14 years in Olago cell from whom responses were obtained for one day and the results of the pilot study were used to make adjustments to the research instrument.

Validity

Validity refers to the appropriateness of the instrument. The designed questionnaire was reviewed by an expert in gynecology to ensure it covers all aspects of HPV and HPV vaccination. It was then pre-tested before data collection among 15 girls aged, (9-16years) in the nearby community from whom responses were obtained for one day to determine the comprehensibility of the questions, the ability of the questions to elicit the required data, and to detect any ambiguity in the questions.

Reliability

Reliability was used to measure the degree to which the questionnaire will produce consistent results under similar and different conditions. The questionnaire was pretested among 15 girls aged (9-16 years) but not on the actual study population to ensure that the study instruments would obtain consistent results.

Ethical Considerations

Ethical approval

Ethical approval of the study was obtained from the University ethics and research committee and thereafter from the town clerk of Lira city.

Informed consent

Consent was sought from the headteachers and assent from the children after thoroughly explaining the benefits and purpose of the study and the participants were free to decline to participate or consent with no coercion.

Privacy

The privacy of the participants was observed by conducting interviews in private, quiet, and comfortable places for the participants without recording their names.

Confidentiality

Identifiers such as names, phone numbers, or personal addresses were not included in the questionnaires to protect the participants' privacy. Code numbers were used to identify participants.

COVID-19 mitigation plan.

While in the field, strict standard operating procedures (SOPS) were observed and only participants who adhered to them were interviewed. These SOPS included observing social distancing, washing hands with soap and water, wearing face masks as well as hand sanitizing.

RESULTS

SJ Insight
Vol. 2 No. 1 (2025): January 2025 Issue
https://doi.org/10.51168/insights.v2i1.9
Original Article

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency(n)	Percentage (%)
Age		
(9-12)	99	40.4
(13-16)	146	59.6
Class		
P.1	17	6.9
P.2	19	7.8
P.3	20	8.2
P.4	34	13.9
P.5	66	26.9
P.6	83	33.9
P.7	6	2.4
Tribe		
Acholi	18	7.3
Lango	221	90.2
Alur	6	2.4
Religion		
Catholic	98	40.0
Protestant	101	41.2
Pentecostal	46	18.8
Type of family		
Nuclear family	179	73.1
Extended family	66	26.9

N= 245 Source: Primary data 2023)

The age range of the study group varied between 9 and 16 years old with a mean age of 12.84 ± 1.413 years. The majority of the participants were from the primary six class (33.9%). Almost all of the participants, 221 (90.2%) belonged to the Lango tribe. Three-quarters of the girls 101 (41.2%) were Protestants and Catholics by religion. 179(73.1%) of the girls stayed in nuclear families and 66(26.9%) belonged to extended families.

Table 2: Individual factors on HPV vaccine awareness.

Variable	Frequency(n)	Percentage (%)
Ever heard of the HPV vaccine before this survey?		
Yes	120	49
No	125	51
Know where to find the vaccine.		
Yes	77	31.4
No	168	68.6
HPV can cause cervical cancer		
True	240	98
False	5	2
HPV affects only women and girls		
True	236	96.3
False	9	3.7

HPV is for sexually active people		
Strongly agree	170	69.4
Agree	36	14.7
Not sure	37	15.1
Strongly disagree	2	0.8
HPV causes a lot of side effects		
Strongly agree	21	8.6
Agree	30	12.2
Not sure	39	15.9
Disagree	17	6.9
Strongly disagree	138	56.3

N= 245 Source: Primary data 2023)

The factors that were found statistically associated with the uptake of the HPV vaccine at p-value < 0.05 included; having heard about the HPV vaccine (p<0.001), and knowledge on HPV and cervical cancer (p<0.001).

Table 3: Socio-economic factors on HPV vaccine awareness.

Variable	Frequency(n)	Percentage (%)
Where do you come from		
Town	120	49.0
Village	125	51.0
Who heads family		
Father	202	82.4
Mother	30	12.2
Others	13	5.3
Access to TV		
Yes	159	64.9
No	86	35.1
Access to radio		
Yes	218	89.0
No	27	11.0
Access to smartphone		
Yes	144	58.8
No	101	41.2
Take the sick to the hospital/clinic.		
Yes	179	73.1
No	66	26.9
Recite prayers for the sick.		
Yes	204	83.3
No	41	16.7
Ever been taught about cervical cancer at school?		
Yes	165	67.3

No	80	32.7
Ever received any vaccine at school?		
Yes	176	71.8
No	69	28.2
Times absent from school		
Never	100	40.8
Once	52	21.2
More than 3 times	93	38.0

N= 245 Source: Primary data 2023)

The survey indicates that 51.0% of respondents come from villages, 82.4% of families are headed by fathers, and access to media is high, with 89.0% having access to radio, 64.9% to TV, and 58.8% to smartphones; additionally, 73.1% take the sick to hospitals, 83.3% recite prayers for the sick, 67.3% have learned about cervical cancer in school, 71.8% have received vaccinations at school, and absenteeism is significant, with 40.8% never absent, 21.2% absent once, and 38.0% absent more than three times.

DISCUSSION

This study shows that girls aged 13 years and above were more likely to be vaccinated than the younger ones. This could be attributed to the knowledge acquisition as girls grow older. Another possible reason could be procrastination due to the age gap allowance provided by the MOH of 9-14 years (MOH, 2010) whereby the girls or their parents might think of getting the vaccine later. These findings concord with earlier studies (Isabirye, Mbonye, et al., 2020), (Schülein et al., 2016).

The findings of this study revealed that girls who had ever had the vaccine were likely to get vaccinated against HPV more than those who hadn't. This can be explained in such a way that those who had heard about the vaccine and had knowledge about it could have acknowledged its benefits which provoked them to go for the vaccine. These findings conform with those from a previous study carried out among Chinese adolescents (Zhang et al., 2021).

Furthermore, this study found out that girls who are more knowledgeable about the HPV vaccine and cervical cancer were likely to be vaccinated and these results are similar to those from a school-based study that was carried out among primary female students in Ethiopia (Kassa et al., 2021).

Findings also revealed that most of those who had been recommended by a health worker had received the HPV vaccine these findings are similar to results from a previous study carried out in Mulago Hospital, Central Uganda where health worker recommendation was one of the factors associated with the timely completion of the HPV vaccination among girls aged 9-14 years (Patrick, 2019). This highlights the importance of health workers' efforts in improving the uptake of the HPV vaccine whereby with more recommendations from them, more girls would be vaccinated.

In this study, there was no association found between age, tribe, and religion and uptake of the HPV vaccine which results correspond with those from a study that was conducted in Eldoret, Kenya (Mabeya et al., 2018). In contrast, religious affiliation was found significantly associated with the uptake of the HPV vaccine in a similar study carried out in Central, Uganda (A Isabirye et al., 2020). This could be explained by the impact of information received from religious leaders on the uptake of positive health behaviors since they hold a strong influence in different societies although information is scarce regarding the influence of religious leaders on HPV vaccine uptake especially in Uganda which recreates a need for further research to be done on the impact of religious leaders towards HPV vaccination uptake. However, studies in Nigeria revealed religious leaders had a positive impact on improving the uptake of health services (Adedini et al., 2018) which in turn depicts those religious leaders could also be empowered to disseminate information on HPV vaccination which could improve its uptake.

The current study found out that being taught about cervical cancer and the HPV vaccine at school in addition to having ever received a vaccine at school were positively associated with uptake of the vaccine. This suggests that the intentions of the Ministry of Health to vaccinate the girls at school are effective and more efforts should be made to improve vaccination in school such that more girls are equally vaccinated. These findings are supported by studies elsewhere which indicated that school girls were more likely to be vaccinated compared to non-schooling girls (Isabirye, Asiimwe, Science, et al., 2020), (Garon et al., 2019), (Kisaakye et al., 2018).

Conclusion

The study identified critical factors influencing HPV vaccination uptake, including awareness, education, and accessibility.

Study limitations

The study only employed a quantitative approach and hence missed out on the qualitative data which always complements the quantitative data.

Self-reported information obtained from questionnaires might have been inaccurate or incomplete.

Recommendations

Health policymakers

The results of the study can be used to design future strategies to increase the uptake of the HPV vaccine in Lira City such as through the use of posters in health centers, communities, and schools printed in different languages to improve awareness about the HPV vaccine and cervical cancer.

Future researchers

More research is needed to understand the causal relationship between the uptake of the HPV vaccine with health system and community factors.

Further research is warranted on the effectiveness of interventions to increase demand for HPV vaccine among young girls, through strategies such as client reminder and recall systems, outreach clinics, and addressing concerns about vaccine safety.

Ministry of Health

There is a need to offer ample orientation and training to all health workers about disseminating information on HPV vaccination to all eligible girls and their caretakers while addressing their concerns about the vaccine appropriately such that these girls can receive the vaccine alongside other services or leave with information about it after visiting the health center.

ACKNOWLEDGEMENT

Firstly, I am so grateful to the Almighty God for granting me knowledge and wisdom, good health, and protection up to this moment in my stay at Lira University. I would like to express my sincere gratitude to my academic supervisor Mr. Tom Omute for the support and encouragement he gave me during the development of this research report. In the same way, I would like to extend my appreciation to my family members, relatives, friends in final year classes at the University, and all classmates for their ideas and support throughout this period. May the everlasting good Lord bless you abundantly.

List of abbreviations

HPV: Human Papillomavirus
WHO: World Health Organization
HIV: Human Immunodeficiency Virus
UNEPI: Uganda National Expanded Program on Immunization
SPSS: Statistical Package for the Social Sciences
SOPS: Standard Operating Procedures

Source of funding

The study was not funded

Conflict of interest

No conflict of interest declared

Author Biography

Sseguya Mathias, Ph.D. student, faculty of public health, Lira University
Omute Tom, lecturer, Lira University

References

1. Garon, J., Wuddhika, I. V., Sreenivasan, N., Wannemuehler, K., Vutthikol, Y., Chhorvann, C., & Loharikar, A. (2019). Community-based household assessment of human papillomavirus (HPV) vaccination coverage and acceptability – HPV vaccine demonstration program, Cambodia – 2017. *Vaccine*, *37*(9), 1202–1208. https://doi.org/10.1016/J.VACCINE.2018.12.052
2. Isabirye, Alone, Mbonye, M., Asiimwe, J. B., & Kwagala, B. (2020). Factors associated with HPV vaccination uptake in Uganda: A multi-level analysis. *BMC Women's Health*, *20*(1), 1–11. https://doi.org/10.1186/S12905-020-01014-5
3. Kassa, H. N., Bilchut, A. H., Mekuria, A. D., & Lewetie, E. M. (2021). Practice and Associated Factors of Human Papillomavirus Vaccination Among Primary School Students in Minjar-Shenkora District, North Shoa Zone, Amhara Regional State, Ethiopia, 2020. *Cancer Management and Research*, *13*, 6999. https://doi.org/10.2147/CMAR.S324078
4. Kepka, D., Bodson, J., Lai, D., Sanchez-Birkhead, A., Villalta, J., Mukundente, V., Tavake-Pasi, F., Davis, F. A., Lee, D., Napia, E., Mooney, R., Coulter, H., & Stark, L. A. (2018). Factors Associated with Human Papillomavirus Vaccination among Diverse Adolescents in a Region with Low Human Papillomavirus Vaccination Rates. *Health Equity*, *2*(1), 223–232. https://doi.org/10.1089/HEQ.2018.0028
5. Kisaakye, E., Namakula, J., Kihembo, C., Kisakye, A., Nsubuga, P., & Babirye, J. N. (2018). Level and factors associated with uptake of human papillomavirus infection vaccine among female adolescents in Lira District, Uganda. *Pan African Medical Journal*, *31*. https://doi.org/10.11604/PAMJ.2018.31.184.14801
6. Litton, A. G., Desmond, R. A., Gilliland, J., Huh, W. K., & Franklin, F. A. (2011). Factors Associated with Intention to Vaccinate a Daughter against HPV: A Statewide Survey in Alabama. *Journal of Pediatric and Adolescent Gynecology*, *24*(3), 166–171. https://doi.org/10.1016/J.JPAG.2011.01.004

7. Nabirye, J., Okwi, L. A., Nuwematsiko, R., Kiwanuka, G., Muneza, F., Kamya, C., & Babirye, J. N. (2020). Health system factors influencing uptake of Human Papilloma Virus (HPV) vaccine among adolescent girls 9-15 years in Mbale District, Uganda. *BMC Public Health*, *20*(1), 1–11. https://doi.org/10.1186/S12889-020-8302-Z
8. Sabeena, S., Bhat, P. V., Kamath, V., & Arunkumar, G. (2018). Global human papillomavirus vaccine implementation: An update. *Journal of Obstetrics and Gynaecology Research*, *44*(6), 989–997. https://doi.org/10.1111
9. Smith, P. J., Stokley, S., Bednarczyk, R. A., Orenstein, W. A., & Omer, S. B. (2016). HPV vaccination coverage of teen girls: The influence of health care providers. *Vaccine*, *34*(13), 1604–1610. https://doi.org/10.1016/J.VACCINE.2016.01.061
10. WHO. (2022a). *Cervical cancer*.

PUBLISHER DETAILS:

SJC PUBLISHERS COMPANY LIMITED

SJC Publishers Company Limited

Catergory: Non Government & Non profit Organisation
Contact: +256 775 434 261 (WhatsApp)
Email: info@sjpublisher.org or studentsjournal2020@gmail.com
Website: https://sjpublisher.org
Location: Scholar's Summit Nakigalala, P. O. Box 701432,Entebbe Uganda, East Africa