



Knowledge towards human papillomavirus vaccine uptake among girls aged 9–13 years in Kyenjojo Primary School, Kyenjojo district. A cross-sectional study.

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Page | 1 **Abstract.**

Background:

Human papillomavirus (HPV) is a common sexually transmitted infection and the leading cause of cervical cancer, which remains a major public health concern in developing countries such as Uganda. This study assessed knowledge towards HPV vaccine uptake among girls aged 9–13 years at Kyenjojo Primary School in Kyenjojo District.

Methodology:

A cross-sectional study using quantitative methods was conducted among 70 girls aged 9–13 years. Respondents were selected through simple random sampling. Data were collected using a structured, researcher-administered questionnaire translated into Rutooro for better comprehension. Data were analyzed using SPSS to generate descriptive statistics, including frequencies and percentages, and presented in tables and charts. Ethical approval, informed consent, and assent were obtained prior to data collection.

Results:

Nearly half of the respondents (49.3%) were aged 13 years, with the majority being Batoro (53%) and Protestants (40.2%). Findings revealed low levels of knowledge, with 63% of respondents having never heard of cervical cancer. Among those aware, 37% obtained information from peers, while only 8% cited health facilities. More than half (55%) were unaware of preventive measures. Although 47% identified abstinence as a preventive measure, only 33% recognized HPV vaccination. Knowledge gaps were also noted regarding vaccination schedules, as 36% incorrectly reported three doses instead of two, and 55.5% cited a 6-week interval instead of the recommended 6 months.

Conclusion:

Knowledge about cervical cancer and HPV vaccination among girls aged 9–13 years in Kyenjojo Primary School is inadequate, negatively affecting vaccine uptake.

Recommendations:

The MOH should strengthen HPV vaccination programs by integrating comprehensive health education on cervical cancer and HPV vaccination into routine school health programs.

Keywords: Human papillomavirus (HPV), cervical cancer, adolescent girls, immunization, Kyenjojo District.

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Background.

Human papillomavirus (HPV) is a common sexually transmitted infection that can be acquired through vaginal or anal sex, and it is thought to be the major cause of cervical cancer among women, according to the WHO (2016). In high-income countries, cervical cancer ranks in the bottom

half of all new cases below gallbladder, breast, mouth, or brain cancers (CDC, 2014). However, in African countries like Ethiopia, Ghana, Zambia, and 20 more, it is the most commonly diagnosed cancer among women (WHO, 2013). CDC (2012) indicates that cervical cancer is the second leading cause after breast cancer among women in



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developing countries. The report further adds that in 2008, it was estimated that 529,409 new cases occurred globally, with 274,883 (52%) of women dying.

The magnitude of the problem has been underestimated and under-prioritized compared to other health priorities such as HIV/AIDS, Tuberculosis, and malaria in sub-Saharan Africa (Parkin et al, 2008). WHO (2013) report adds that 34.8% new cases of cervical cancer are diagnosed annually per 100,000 women, and 22.5% of these women who die from the disease are from Africa.

The crude incidence rate of cervical cancer is as high as 42,702 in East Africa among women, and this high rate is attributed to poor control strategies, but above all, the inadequate knowledge, poor attitudes, inadequate financial resources, and lack of political will to mitigate the problems (Denny et al, 2006). With adequate investment in prevention and control strategies, a significant percentage of more than 30% of cervical cancer deaths can be prevented (WHO, 2011).

In Uganda, Cervical cancer is the most common cancer affecting women, mostly within the reproductive age group, and it's estimated that 3,915 new cervical cancer cases are diagnosed annually, as per the report (MOH, 2015). According to the district health report from Kyenjojo district, there are 91,486 women in the district aged between 15 and 49 years. Out of the 1056 women that were screened for cancer, 23 turned out positive and were referred to Mulago and Ibanda for management (DHIS report Kyenjojo, 2016). This shows the magnitude of cervical cancer in Kyenjojo district. HPV vaccination was rolled out in Kyenjojo in January 2016 during supplemental child immunization days (CDP) in the district. A total number of 3057 girls in primary 4 were expected to be vaccinated, but only 2564 had been immunized (DHIS report Kyenjojo 2016)

PATH (2014) reported that knowledge gaps among parents, teachers, and adolescent girls were the major possible hindrances to the uptake and utilization of the Human Papillomavirus Vaccine (HPV). Parents, school, and health care workers have a central role in girls' education and choices about HPV vaccination. Girls aged 9-13 years were the primary target of the HPV Vaccination in their pilot study done in Ibanda and Nakasongola. Looking at the conclusions drawn by PATH, knowledge gaps were identified among parents, teachers, and adolescent girls. This study assessed knowledge towards HPV vaccine uptake among girls aged 9–13 years at Kyenjojo Primary School in Kyenjojo District.

Methodology.

Study area

The study was conducted in Kyenjojo Primary School, Kyenjojo district, which is approximately 174km from Mbarara town. It's between Kabarole district, 55km away to the east, and Kyegegwa district, 50 km to the west. The area was chosen because the school has a large number of pupils, which the researcher sampled. Also, the area was chosen because the statistics in the district indicate that there is a low uptake of the HPV vaccine in Kyenjojo primary school, with only 50 out of 86 pupils within the age bracket receiving the vaccine (District records, 2017).

Study design.

The study was a cross-sectional design employing quantitative data collection methods. The study design was preferred because the data were collected at one point in time. This suited the researchers' limited time frame.

Study population.

The study respondents were young females aged 9-13 years and studying at Kyenjojo Primary School.

Sample size determination

The sample size was calculated using Yamane's (1967:886) formula with a 95% confidence level and $P = 0.05$, and it was attained within the selected time of the study.

$$n = \frac{N}{1 + N(e)^2}$$

Where n =sample size, e =expected error (0.05), N will be the total population size

$n = 86 / [1 + 86(0.05)^2]$ $n = 70.7$. For convenience in data collection, a rounded figure of 70 respondents was considered.

Sampling procedure

The study used a simple random method to obtain the respondents until the required number was reached.

Data collection instruments

The research instrument was composed of a questionnaire. The questionnaire was designed by the researcher and translated into the local language, Rutooro, so as to enable those who do not understand English to be able to answer the questions accordingly. The research instrument had 16 questions and took approximately 15 minutes to answer. The



instrument was formulated to obtain data in relation to the study objectives.

Data collection procedure

The data was collected using a researcher-administered questionnaire after obtaining consent from the headmaster and assent from the pupils. After the interview, the researcher thanked the respondent and answered any questions or clarified any issues not understood by the respondent.

Inclusion criteria

Young girls aged 9-13 who were willing to participate in the study had assented, and in primary four, as per the government policy regarding HPV vaccination.

Exclusion criteria

Those who were absent after consenting to participate in the study.

Quality control measures

To improve the validity of the data collected, quality control techniques were ensured. This included training research assistants, pretesting questionnaires, and translation of the research instrument into Rutooro.

Validity.

Pretesting of the research tool was done among randomly selected pupils in the study area, but was not to be among the respondents. Necessary adjustments were made before full data collection was commenced.

Reliability

This was ensured by using a calculated sample size. Also, the researchers administered the same questionnaire to all respondents. The questionnaire was translated into Rutooro to avoid discrepancies.

Data management

The data was sorted out according to the variables. Questionnaires were kept safe under a key and lock to avoid losses and mishandling, as they were to be used for reference purposes. They were only accessed by the principal investigator.

Data analysis

Data was cleaned and entered into SPSS version 2016. Descriptive analysis was generated, and data were presented in the form of tables, graphs, and pie-charts.

Ethical consideration

Ethical approval was sought from the MUST Faculty Research Committee (FRC). Permission to conduct the research in the study area was received through a letter from the Head of Nursing Department, which introduced me to the leadership of the primary school. Informed consent was obtained from the headmaster, and assent from individuals who were willing to participate in the study. Confidentiality was ensured during the interview as no names were used; only codes and the information generated were kept under key and lock, and only accessed by the researcher.

Results.

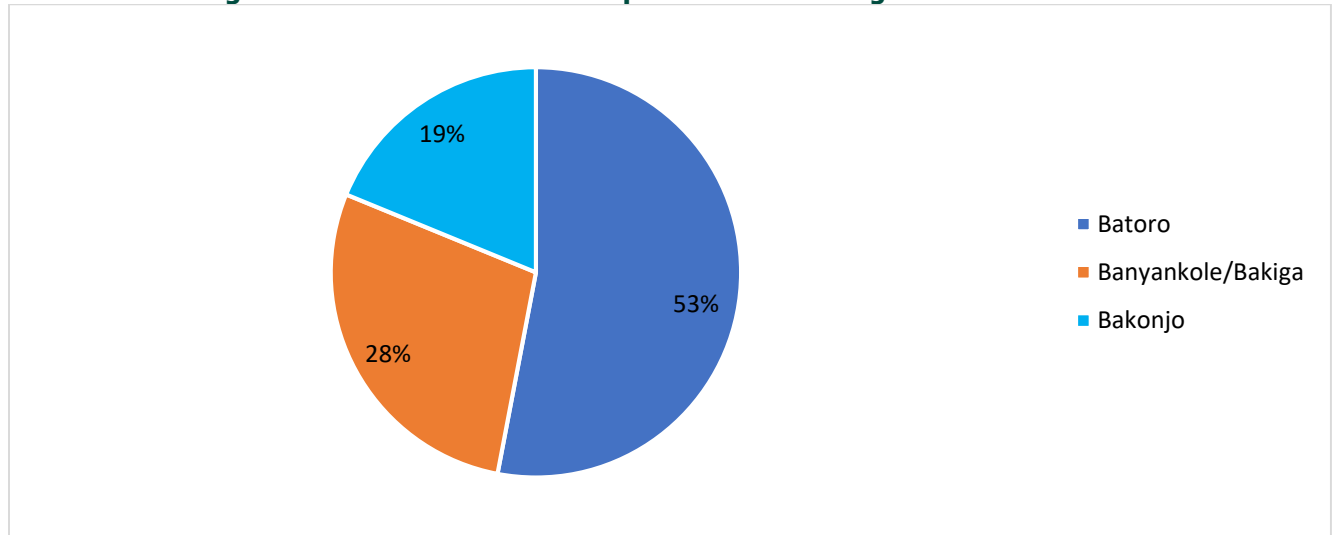
Demographic characteristics of the respondents

Table 1: Distribution of respondents according to their ages (n=70)

Age (year)	Percentage
9	10.3%
10	9.7%
11	9.0%
12	21.7%
13	49.3%

The findings in Table 1 show that the majority of the respondents 49.3% were aged 13 years, and the minority of the respondents were aged 11 years.

Figure 1: Distribution of the respondents according to their tribe



The majority of respondents were Batoro (53%), as shown in the figure above.

Table 2: Distribution of respondents according to their religious affiliation

Religious affiliation	Percentage
Catholic	36.9%
Protestant	40.2%
Moslem	20.1%
Others	2.8%

Table 2 shows that the majority of respondents (40.2%) were affiliated with the protestant faith.

Knowledge of the respondents about cervical cancer and the HPV vaccine
Figure 2: Respondents' Knowledge about cervical cancer

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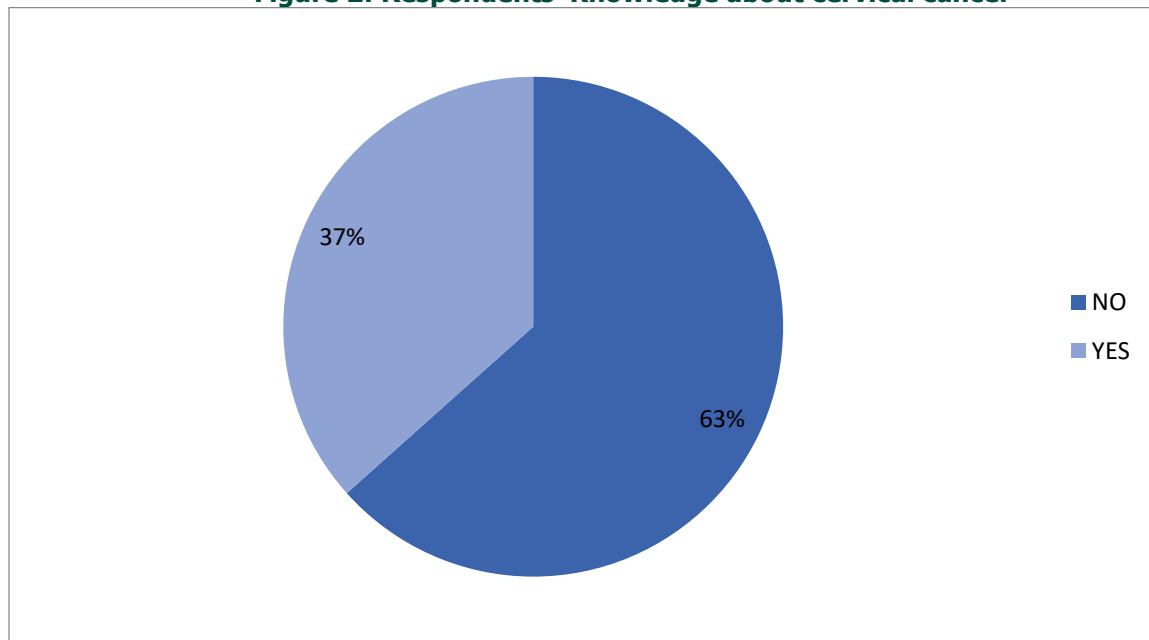


Figure 2 demonstrated that the majority of the respondents (63%) had never heard about cervical cancer.

Figure 3: Respondents' source of knowledge about cervical cancer

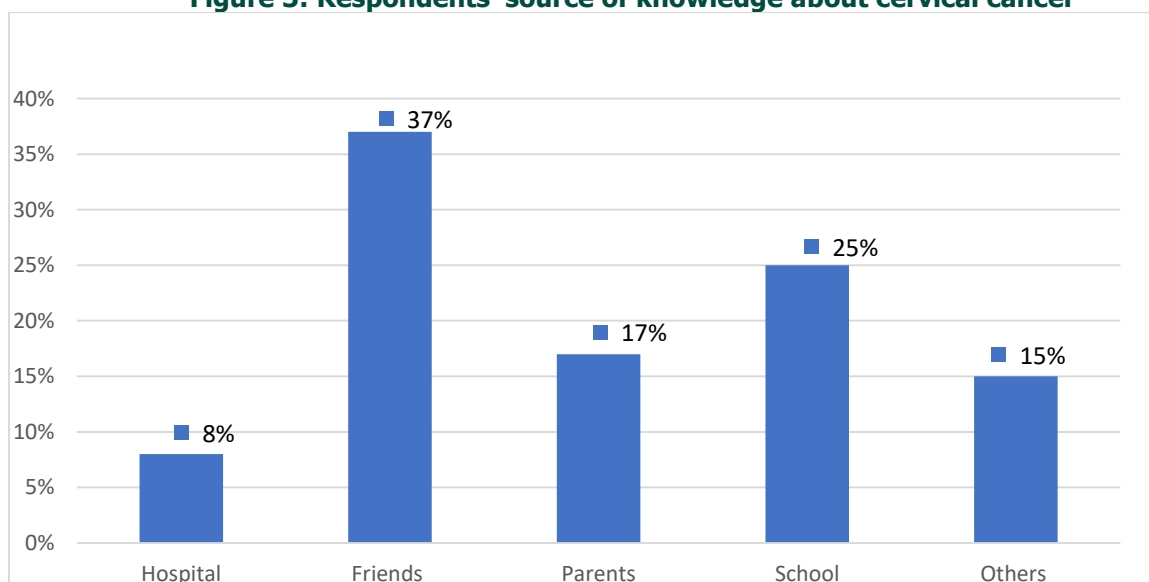
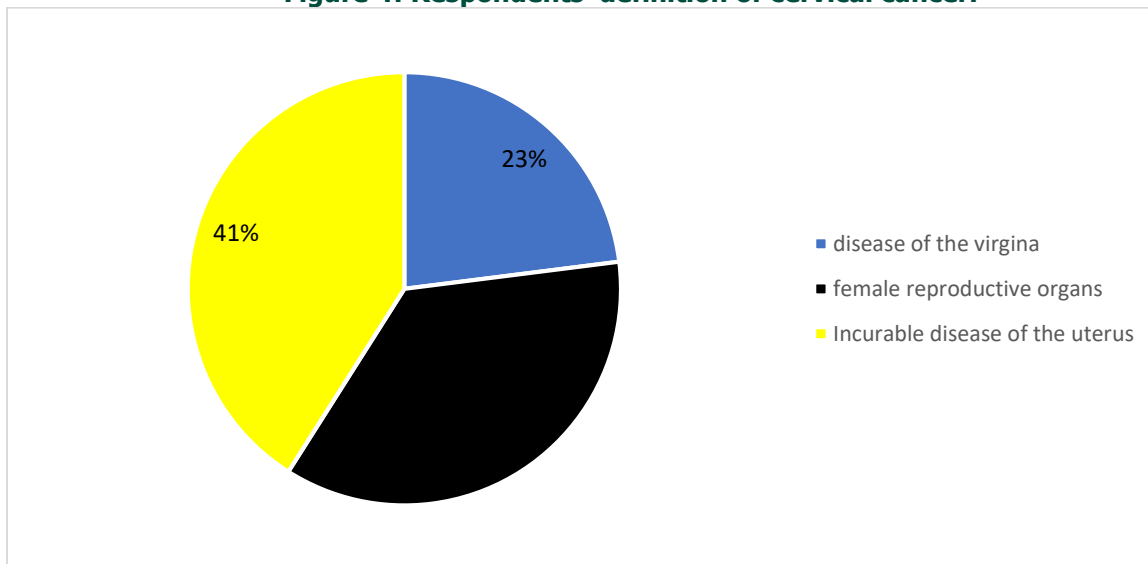


Figure 3 shows that the majority of the respondents (37%) heard about cervical cancer from friends and only 8% from the hospital.

Figure 4: Respondents' definition of cervical cancer.



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Figure 4 shows that the majority of the respondents (41%) defined cervical cancer as an incurable disease of the Uterus.

Figure 5: Distribution of respondents according to awareness of any preventive measures.

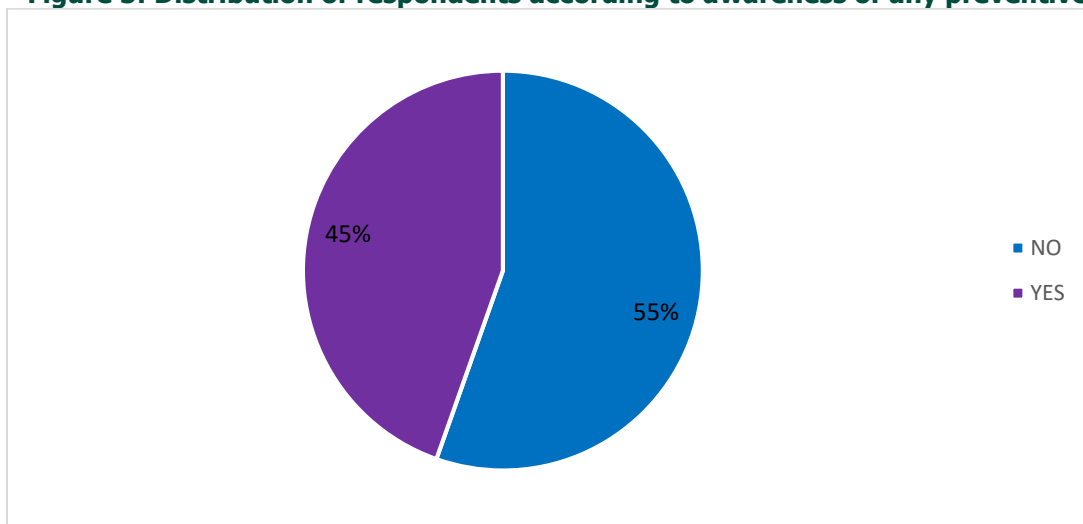




Figure 6 indicated that the majority of the respondents 55% had never heard of any cervical cancer preventive measure.

Table 3: Distribution of respondents according to preventive measures known to them

Method of prevention	Percentage of respondents
Vaccination with HPV	33%
Screening from Hospital	20%
Abstinence	47%

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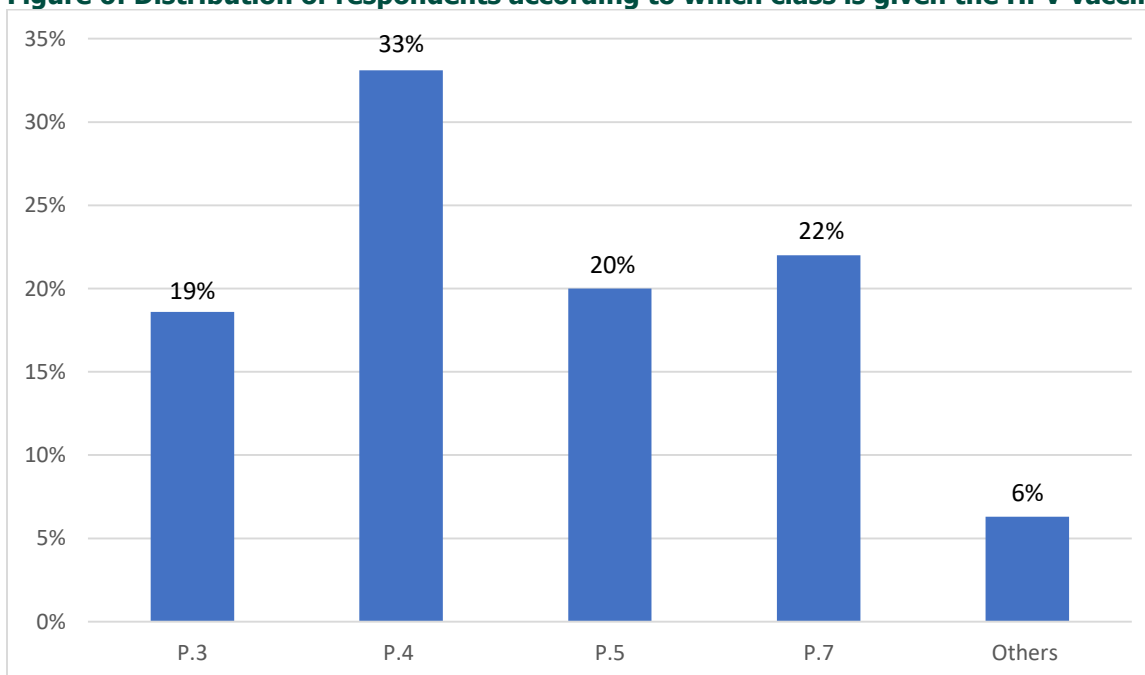
The findings displayed in Table 3 show that 47%, the majority of respondents, know abstinence as a preventive measure of cervical cancer, while 33% of the respondents know that it can be prevented with the new HPV vaccine.

Table 4: Distribution of the respondents according to the knowledge of the age at which the HPV vaccine should be given

Age of vaccination	Percentage of Respondents
Birth to 1 year	16.8%
At 2 to 5 Years	40%
At 6 to 9 years	5%
At 9 to 13 years	38.2%

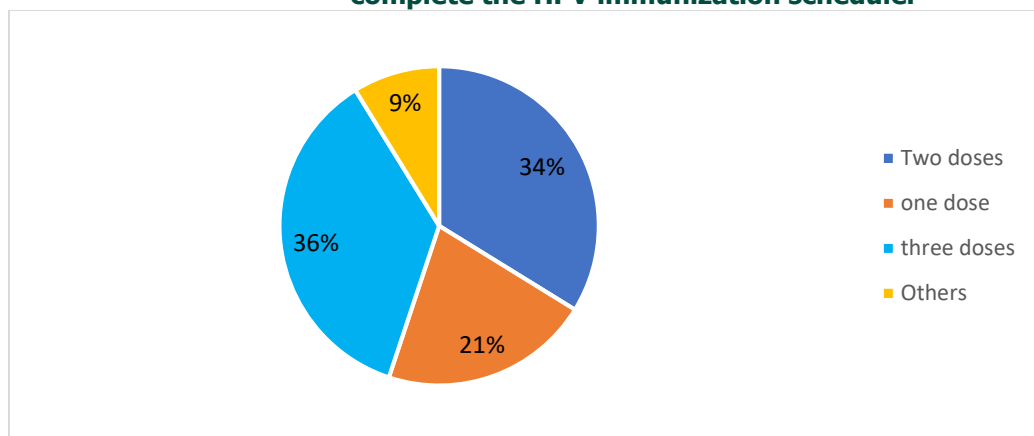
Table 4 indicates that the majority of respondents (40%) thought that the vaccine is given at the age between 2 and 5 years.

Figure 6: Distribution of respondents according to which class is given the HPV vaccine



The majority of the respondents (33%) indicated that the HPV vaccine should be given to girls in primary four.

Figure 7: Distribution of respondents in accordance with the number of doses given to complete the HPV immunization schedule.



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The majority of the respondents (36%) indicated that three doses should be given to complete the immunization schedule for the HPV vaccine.

Table 5: Distribution of respondents according to the knowledge of the interval needed between the HPV vaccine doses.

Duration/Interval	Percentage of Respondents
6 Days	1.8%
6 Weeks	55.5%
6 Months	38.4%
6 Years	4.3%

According to the results in Table 5, the majority of respondents (55.5%) noted that the HPV vaccine is given at an interval of 6 weeks.

Discussion of results.

Knowledge about Cervical cancer and the HPV Vaccine.

According to study findings, the majority of the respondents (63.4%) had not heard about cervical cancer, and yet it is expected that, before administering the vaccine to the young adolescent girls, health education should be given on what the vaccine prevents, so that they get to know the importance of the vaccine. Having some knowledge about cervical cancer can help to cultivate the intention of preventing and

safe guarding one from acquiring the disease. The lack of knowledge contributes directly to the low uptake of the HPV vaccine, as the young adolescents are not fully informed of why they are being given the vaccine. These findings concur with those of (Perkin et al, 2015), which states that low uptake and utilization of the vaccine especially in developing countries is attributed to inadequate knowledge which may not only be addressed by means of education but calls for other dimensions such as individualized feedback among adolescent girls in order to increase and scale up uptake and utilization of the HPV vaccine.

The study further revealed that 37% of the respondents had heard about cervical cancer from their friends, compared to 8% who heard it from the hospital. This has a direct bearing on the knowledge gap in that information from friends may



not be accurate and authentic. It may have been altered, leading to the generation of myths and fears or false beliefs, which can mislead the young adolescent girls, thus contributing to low uptake and utilization of the HPV vaccine. This is in agreement with Perkins et al. (2015), who stated that emphasis on the flow of information about cervical cancer, human papillomavirus, and HPV vaccine should be authentic and from a verified source, with key messages to clarify and dispel myths or false beliefs that many have trickled into the minds of young adolescent girls. A bigger proportion of the respondents, 55.4% (figure 5), had not heard of any prevention measures compared to 44.6% who had heard about preventive measures of cervical cancer. One of the primary key strategies in preventing acquisition of cervical cancer is the utilization of vaccination with the HPV vaccine, measures being implemented, and one of them is vaccination with the HPV vaccine at an early age of about 9-13 years. This age range is given priority because it's assumed that these adolescents have not indulged in sex and therefore are not exposed to the HPV. Emphasizing vaccination with the HPV vaccine as a primary preventive measure will help in increasing uptake of the vaccine, although there are a number of other preventive measures, including access to information and screening, among other services, that are appropriate for the young adolescent girls. These findings are in line with the Uganda government policy (MOH, 2015), which states that all girls aged 9-13 years in primary four should be vaccinated with the HPV vaccine as a primary preventive measure against cervical cancer.

The majority of the respondents (36%) reported that three doses should be given to complete the HPV immunization schedule, while 8.8% mentioned a number of doses greater than 3. These clearly indicate that the young adolescent is not certain of the exact number of doses needed, as indicated by the Ministry of Health schedule, which states that two doses are supposed to be given with an interval of six months. However, this is contradictory in that the majority of the respondents, 55.5% (table 5), got it right that the interval between the doses should be six months, compared to 1.8% who said an interval of 6 days. These contradictory findings depict that more efforts should be invested in making the young adolescent girls master the immunization schedule appropriately in order to enhance uptake and utilization of the HPV vaccine as a primary preventive strategy and minimize the dropouts for those who have been vaccinated with the first dose. These findings concur with the WHO (2011) report, which indicated that adequate

investment in adolescents in ensuring understanding of prevention and control strategies, especially the immunization schedule of HPV, is significant because it can reduce the percentage of cervical cancer deaths by more than 30% if fully adhered to completion of all doses required.

Conclusion

The study demonstrates that knowledge regarding cervical cancer and HPV vaccination among girls aged 9–13 years at Kyenjojo Primary School is markedly inadequate, with many respondents lacking basic awareness of the disease, its prevention, and the correct vaccination schedule. This limited understanding is a critical barrier to effective uptake and completion of the HPV vaccination series. Reliance on informal sources of information, such as peers, further contributes to misconceptions and misinformation, undermining public health efforts.

Limitation of the study

These included financial constraints, for example, money for printing questionnaires while doing the study. Time constraints as it needed balancing a number of activities.

Recommendations.

The MOH should strengthen HPV vaccination programs by integrating comprehensive health education on cervical cancer and HPV vaccination into routine school health programs. It should also ensure a consistent supply of vaccines and develop clear, age-appropriate Information, Education, and Communication (IEC) materials to guide learners on the correct vaccination schedule.

The District Health Office should organize regular outreach programs and school-based sensitization campaigns targeting pupils, parents, and communities. Health workers should be deployed to schools to provide accurate information, address misconceptions, and supervise vaccination activities to improve uptake and completion rates.

School authorities and teachers should incorporate health education sessions into the school timetable, focusing on cervical cancer prevention and HPV vaccination. Teachers should also collaborate with health workers to monitor vaccinated pupils and encourage those who have not completed the required doses.

Healthcare providers should intensify health education efforts within schools and communities, ensuring that information about HPV vaccination is accurate and



understandable. They should clearly explain the correct number of doses and intervals, and provide follow-up support to reduce dropout rates between doses.

Parents should be sensitized to the importance of HPV vaccination and encouraged to support their children in receiving and completing the vaccination schedule. They should also seek information from reliable sources such as health facilities rather than informal sources.

Future researchers should conduct further studies on other factors influencing HPV vaccine uptake, such as attitudes and cultural beliefs, to provide a more comprehensive understanding and inform targeted interventions.

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Thanks to my family, my husband, Dr. David, children, Sheba, Ethan, and Leon.

Lastly, special thanks to my classmates for the teamwork spirit that emerged from the very beginning.

List of abbreviations.

HPV – Human Papillomavirus

MOH – Ministry of Health

WHO – World Health Organization

CDC – Centers for Disease Control and Prevention

DHIS – District Health Information System

PATH – Program for Appropriate Technology in Health

SPSS – Statistical Package for Social Sciences

IEC – Information, Education and Communication

FRC – Faculty Research Committee

MUST – Mbarara University of Science and Technology

HIV/AIDS – Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

TB – Tuberculosis

Informed Consent:

Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

Source of funding.

The study was not funded.

Conflict of interest.

There is no conflict of interest.

Availability of data.

Data used in this study are available upon request from the corresponding author.

Authors contribution.

CA designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript.

JNK supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.

Author's biography.

Carolyn Ahurra is a pediatric clinical nurse with a Master's degree in Paediatric Clinical Nursing. She is passionate about improving child health through quality, evidence-based care, with a focus on managing childhood illnesses and promoting better health outcomes in Uganda.

Jane Namagga Kasozi is a research supervisor at the Faculty of Medicine, Department of Nursing, Mbarara University of Science and Technology.

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