

Assessment of Implementation of Human Papillomavirus Vaccine and Uptake among adolescent girls in selected health facilities in Kiambu County, Kenya.

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Abstract

Background: Cervical cancer has led to many women succumbing to it globally. In pursuit to curb this ailment whose mortality is highest in sub- Sahara Africa, introduction of HPV vaccine was done in Kenya in 2019 for the adolescent girls through the GAVI project. 3.9 million Lasses aged between 9 and 13 years have been protected against cervical cancer and the demand has never been higher (WHO, 2020). GAVI project aims to safeguard approximately 40 million lasses from cancer of cervix come 2020 and preventing an approximated 900,000 mortalities. This implies that having further research on community participation, the disparities in incidence and mortality rates will be comprehended to steer the strategies into reality.

In the western countries where health care is comprehensive, fewer deaths are reported from cervical cancer. This could feasibly be because of the sustainable programmes on HPV and national guidelines to vaccinate all the girls as routine immunization. A study by PATH (2018) showed that, in 2007 western countries where the vaccine uptake is high with completion rates of over 80% has seen the new cases and deaths decline by 60%. Perhaps in sub- Saharan Africa we need to borrow a leaf from the western countries to save the girl child. Despite the efforts, the uptake has remained low.

Purpose of the Study: The goal of the study was to establish the extent of HPV vaccine uptake in the implementation of adolescent girls GAVI project at Thika sub- County in Kiambu County.

Research Objective: The research aimed to establish the extent of uptake of human papillomavirus vaccine by the adolescent girls in Thika sub- County in Kiambu County, Kenya.

Problem Statement: In Kenya, a project by GAVI was initiated with the intent of administering free HPV vaccine to all lasses aged between 9 and 13 years. HPV vaccine protects against cervical cancer ailment. (WHO, 2020) expanded its mandate by collaborating with the GAVI project. Their report revealed that HPV leads to greater than 95% of cervical cancer disease worldwide, having approximated 604,000 incidence and 342,000 mortality in 2020, many from third world countries. According to (Fesenfeld, 2013) HPV vaccination is approximated to protect up to 90% from cervical cancer.

A study by Abdullahi et al. (2020) on experiences, challenges and lessons learnt during HPV vaccination programmes in 6 African countries indicated that the progress in Africa is extremely slow. The HPV vaccine is the key to a cervical cancer free future for the young girls. A study by PATH (2018) showed that, in 2007 western countries where the vaccine uptake is high with completion rates of over 80% has seen the new cases and deaths decline by 60%. This is the trend also expected in the third world countries from the implementation of this project by GAVI towards a cervical cancer free nation.

Kiambu County in Kenya, initiated the project in 2019 and the study was confined to Thika sub- County. The purpose of the study was to establish the extent of HPV vaccine uptake and the influencing factors in the uptake of HPV vaccine such as information sharing, implementers' capacity building and stakeholders' involvement. The findings will be beneficial in that, in case the uptake is low, recommendations on what to do to up the numbers of the fully immunized girls for a cervical cancer free future will be in place and incase the uptake is good what can be done to keep more girls getting immunized.

Materials and Methods: This was a descriptive study where data was collected for the year 2022 from 80 respondents who were the health care givers in the 16 randomly selected health facilities administering HPV vaccine in Thika sub- County, Kiambu County. Microsoft Excel was used to enter the data collected then transferred to SPSS 26 for analysis.

Results: From the study findings, the majority of the respondents agreed that the number of girls vaccinated with the first dose of HPV vaccine is not achieved (Mean = 3.13) and disagreed that number of girls fully vaccinated with the second dose of HPV vaccine is achieved (Mean = 1.87) with a standard deviation of .578.

Conclusion: *The uptake of HPV vaccine is low in relation to uptake definition of having completed both HPV vaccine doses within the commended schedule as well as from the unachieved set targets.*

Key Words: *Human Papillomavirus, Human Papillomavirus vaccine, Cervical cancer, HPV vaccine uptake, Adolescent girls, Global Alliance for Vaccination and Immunization (GAVI)*

Date of Submission: 01-06-2023

Date of Acceptance: 10-06-2023

I. INTRODUCTION

Human papillomavirus (HPV) is transmitted through sexual contact and causes cervical cancer which is a malignancy that affects the cervix in females. Bruni et al. (2017) stated that cancer of cervix was the number one source of mortalities in females in the United States. (WHO, 2020) expanded its mandate by collaborating with the GAVI project and in their report revealed that HPV leads to greater than 95% of cervical cancer disease worldwide having approximated 604,000 incidence and 342,000 mortality in 2020, many from third world countries. The targeted age group of lasses between 9 and 14 years is to immunize them prior to onset of coitus.

Franco et al. (2016) noted that Nepal, Egypt, Tunisia, Thailand and Peru, mass HPV vaccination of girls between 11-12 years in 2005, saw a 60% vaccination rate of the initial dose and a decline in the follow up dose dropping to 38%. Around 60 countries in sub-Saharan Africa and Asia had vaccine boosters of the HPV jab for lasses between 9-13 age group in 2008 and though the uptake is slow it is progressive. It was notable in a study by Mackroth et al. (2010) that the result of HPV jab at any setting is effective and beneficial. Bosze (2013) noted that the way to declining the mortalities from cancer of cervix will be a commitment to ensuring the young lasses before engaging in sexual activities are vaccinated with HPV vaccine. Further, means and ways to make HPV vaccine a routine vaccine like in the first world countries will come in handy to curb this plight.

In Kenya, a published review by the World Health Organization (2020), estimates that per annum, greater than 50% of 2500 females detected with cancer of cervix succumb from the ailment. Until ways of prevention and containment of the ailment are initiated, the proportion of females succumbing from cancer of cervix is approximated to be twice by 2025. Further, they reported that females continue to be burdened by an ailment that is conceivably avertible and remediable. The most likely to be prone to cervical cancer are those who did not get the HPV vaccine.

World Health Assembly (2012) review approximates annual mortalities greater than twice the confirmed cases. A study by Galagan et al. (2013) addressing HPV jab protection through the world advisory committee on vaccine efficacy is reassuring on HPV vaccine. According to Castellsague et al., (2017) screening many females has led to the mortality statistics declining noticeably.

In Kenya, HPV vaccine project was launched in 2019 through the GAVI initiative to vaccinate all adolescent girls. According to a study by Muia et al. (2015) statistics indicate that by March 2009 more than 60 million HPV jab dosages were dispatched courtesy of GAVI to over 18 countries where Kenya was a recipient. According to (Fesenfeld, 2013) HPV vaccination is approximated to protect up to 90% from cervical cancer. HPV jab is endorsed for lasses as well as lads at 9 or 12 years till 26 years old if missed. Both should be vaccinated and the vaccine series is two doses.

Uptake of HPV vaccine and being fully vaccinated is defined per the set guidelines as having received the first dose immediately and then the second dose after 6 months. The HPV vaccination is implemented through the school programs as well as in health institutions. However, despite the availability of the HPV vaccine, there has been a low uptake. Records indicate lost to follow up for those that attained the first dose and generally low figures of the fully vaccinated compared to set targets. With the national coverage of HPV target being 80%, Kenya has a long way to go. A review by Perlman et al. (2014) observed that through availability of resources for HPV vaccination and capacity building opportunities strengthen cervical cancer awareness and uptake. New approaches to assess HPV vaccine coverage are initiated because the impact cannot be measured in a short time.

Arrossi et al. (2012) found out that in an era where empowerment, technology and things are rapidly changing there should be means to curbing the burden of cancer through more creation of awareness of cervical cancer, information sharing through the health workers who are well trained and undergo capacity building and vaccines as well as knowledge to enhance attitude change, acceptability and better health seeking behaviors. (CDC, 2019) revealed that unceasing discrepancies in the new cases and deaths associated with cervical cancer is from patients who do not make it to the hospitals to make the statistics.

Binagwaho et al. (2012) recommended frequent trainings of the health care providers to revisit the strategies set on data entry, tallying, accurate input, compilation and submission sub-nationally to maintain a robust reporting system. HPV cold chain maintenance, administration of the vaccine and all other required protocols in the management of the HPV vaccine are crucial for efficiency. Awareness creation on HPV, cancer of cervix and its jab contribute to project implementation.

Masika et al. (2015) found out in a study that the main barriers to HPV vaccine uptake included inadequate vaccine knowhow, poor infrastructure, not showing up during jab days and reservations on the reactions from the jab. The study inference stated that in spite of the little and medium extents in insight pertaining HPV jab among educators, uptake is elevated. Diangi et al. (2012) mentions that advocacy for HPV jab addition in the present vaccines available for individual countries is a work in progress but should be a priority through school and community- based programmes.

The low uptake may revolve around misperceptions and myths surrounding ‘vaccines’ which are idealized as ‘harmful’ things hence possibly leading to refusal of guardians to give consent for vaccination of their girls, an indication of a gap in adequate information sharing and awareness creation on HPV vaccine, cervical cancer as well as HPV virus. The goal of the study was hence to establish the extent of HPV vaccine uptake in Thika sub-County in Kiambu County.

Theoretical Review

Social Cognitive Theory: An individual’s health behavior is affected by what one has been through, how other people act and the environment one lives in. According to Bandura (2001), the theory guides towards behavior change and control over one’s thinking, feeling and acting. The choice of picking what is beneficial from other people is crucial as it affects many life aspects. In this study the HPV uptake may be influenced by past experiences such as, allergic reactions from administration of the vaccine, the generalized myths on vaccines, lack of knowledge or misinformation may deter many from accepting the vaccine overlooking the benefit of salvaging the young girls’ future from cervical cancer. The same way a behavior is learned, it can be unlearned especially if it is for the better benefit of an individual. The social cognitive theory thus connects with the study at hand in that, the positivity or negativity in addressing the uptake of HPV vaccine will determine the numbers of girls protected against future cervical cancer in relation to the perception of the HPV vaccine uptake and how knowledge and sensitization of the concept will lead to behavior change and enhance optimism in HPV vaccine uptake for the greater benefit of protection against cervical cancer.

Health Belief Model Theory: This theory is utilized in explanation and prediction of alterations of how one behaves regarding their health. Knowledge, skills and information play a huge role in the personal ideals believed in towards their health. According to Godin (2006), the theory revolves around norms about personal health ailments that foresee their behavior involving perceived threats to getting sick, the seriousness of ailment, advantages of taking an action, understanding the factors that deter the action, being exposed to determinants that evoke action and fortitude in being able to be triumphant. Cervical cancer is among the many types of cancers that have led to many succumbing to death. Information sharing to enhance knowledge on preventive measures, the beliefs about cancer, its seriousness, benefits of taking action to protect against future cervical cancer in the young lasses via administration of the HPV vaccine, understanding consequences of failure to get vaccinated, all these and more relate to the health belief model theory and thus compatible with the study because behavior and belief on the HPV vaccine uptake is influenced by personal ideals and norms about cervical cancer.

Theory of Planned Behavior: This theory relates the way one behaves to what they believe in. Personal ideals, perspective and insight on conduct determine the way one behaves according to (Noar & Zimmerman, 2005). In reference to the study, uptake of the HPV vaccine determinants fit well into the hypothetical system because whatever norms, attitude and perception on the vaccine by the society will foresee the numbers receiving the vaccine. The myths and stereotypes regarding the newly introduced vaccine shape the beliefs about the vaccine and thus determine if there will be high or low or no uptake of the HPV jab. Refusal or acceptance of the HPV jab administration is expected to be affected by the personal beliefs of the individual.

II. MATERIALS AND METHODS

A descriptive research survey design was endorsed where a mixed approach involving both quantitative and qualitative data was used in the study. Data was extracted from the records of 16 randomly selected health facilities that offered the HPV vaccine for the year 2022 in Thika sub- County, Kiambu County. This information was used to indicate the level of HPV vaccine uptake. 80 respondents participated in the study who were the health care workers implementing the HPV vaccine project.

Data Collection Technique: Purposive sampling was used to select the 80 study respondents who facilitated the extraction of the required information who were the implementers of the HPV vaccine project in the health facilities for the year 2022.

Data Management and Analysis: The data collected was first fed into excel sheets in Microsoft Excel then exported to SPSS 26 for analysis of the information picked for the year 2022 from the health facilities which was then summarized in tables.

Ethical Considerations: The study was approved by Mount Kenya University Ethics Committee. License permit to carry out research was obtained from National Commission for Science, Technology and Innovation (License No: NACOSTI /P/23/23388 and Ref No: 932432). Clearance and approval from County Government of Kiambu and Thika Level 5 Hospital Training Research and Ethics Committee respectively was obtained to facilitate seamless process during data collection in the health facilities in Thika sub- County.

III. RESULTS

The study targeted 80 respondents from the 16 randomly selected health institutions administering the HPV vaccine out of which 76 responded to the study contributing to a 95% response rate. The high return rate was attained as the investigator distributed the research instruments herself, and would prior seek the best time and day to collect data from the individual health facilities as well as doing follow up visits and courtesy calls on filling and returning of the research instruments. The 95% response rate was deemed adequate for the analysis as cited by (Mugenda & Mugenda, 2003).

From the study findings, the majority of the respondents agreed that the number of girls vaccinated with the first dose of HPV vaccine is not achieved (Mean = 3.13) and disagreed that number of girls fully vaccinated with the second dose of HPV vaccine is achieved (Mean = 1.87) and standard deviation of 0.578. This information contradicts that of (WHO, 2020) that stated many have been vaccinated. The underlying factors to the low uptake of HPV vaccine calls for the responsible institutions to re-strategize and revisit the processes and policies pertaining the same. (Vermandere et al.,2015) pointed out that masses desire to be vaccinated but they have no knowledge on the vaccine which contradicts the outcome of the data collected which indicates low HPV uptake despite the masses being informed.

Mean and Standard Deviation on Uptake of HPV vaccine

| | Mean | Std. Deviation |
|---|------|----------------|
| Number of Girls vaccinated with the 1st Dose HPV vaccine is Not Achieved | 3.13 | .578 |
| Number of Girls fully Vaccinated with the 2nd Dose of HPV vaccine is achieved | 1.87 | .578 |

Regression Analysis

Model Summary

| R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------------------|----------|-------------------|----------------------------|
| .300 ^a | .090 | .010 | .493 |

a. Predictors: (Constant: Uptake of HPV vaccine)

In this study, the coefficient of determination R squared equals 0.090, explain 90 percent of the variance in implementation of the HPV vaccine uptake. This hence indicates that other factors not researched in this study provide 10 percent of variance in the dependent variable. Thus, further studies should be carried out to establish other factors which influence implementation HPV vaccine uptake in Kenya.

Analysis of Variance

ANOVA^a

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1 | Regression | .818 | 3 | .273 | 1.123 | .354 ^b |
| | Residual | 8.261 | 34 | .243 | | |
| | Total | 9.079 | 37 | | | |

a. Dependent Variable: Uptake of HPV vaccine

In this scenario, the significance value of the F statistic is 0.003 explains a variation in implementation of the HPV vaccine uptake and that the overall model is significant.

IV. DISCUSSION

The study found out that uptake of HPV vaccine is low in relation to the first initial dose which per the set targets was not met neither was the second dose which would be determinant of a fully vaccinated adolescent girl. The initial dose of HPV vaccine is not achieved (Mean = 3.13) and number of girls fully vaccinated with the final dose of HPV vaccine is achieved (Mean = 1.87). This indicates that there are gaps leading to the low

uptake. The extent of HPV vaccine uptake is low, the study findings revealed, thus a major call to the Ministry of Health to implement aggressive sensitization and awareness creation of the HPV vaccine. Negative influence of information sharing in the community with the many myths and misconceptions led to low HPV vaccine uptake which calls for more capacity building of the implementers through more continuous trainings to be better placed at information dispatch and collaborate with the local council to increase the numbers of vaccinated girls. More training and re- training on HPV, cervical cancer and the HPV jab in the communities to increase the acceptance of the jab as well as give feedback to the Ministry of Health on the challenges encountered to find solutions and increase uptake.

V. CONCLUSION

The study concludes that the extent of uptake of HPV vaccine was low compared to the set targets. However, there were factors that left gaps on the actual numbers of girls vaccinated especially after transitioning to other learning institutions giving altered information on the second and final dose of the vaccine. Regardless, the numbers of fully vaccinated girls despite this disparity are still far off from the set targets hence the conclusion being that there is low uptake of the HPV vaccine. The low uptake revolves around misperceptions and myths surrounding the vaccine leading to refusal of guardians to give consent for vaccination of their girls, an indication of a gap in adequate information sharing and awareness creation from the health care givers and through other means of communication such as social media, Chief Barazas, outreaches, learning institutions and religious gatherings. In conclusion, the study indicates how essential correct information sharing and awareness creation/ sensitization is which could have seen higher numbers of fully vaccinated girls.

ACKNOWLEDGEMENTS

We acknowledge all the health facilities in Thika sub- County, Kiambu County, Kenya for allowing us to access and utilize their records on the uptake of HPV vaccine to facilitate the success of this research study.

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