

Factors Influencing The Uptake Of Human Papillomavirus Vaccine Among Girls Aged 10-14 Years In Maara Sub County, Kenya.

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Abstract

Background: Human Papillomavirus is linked to the etiology of various cancers in humans including oral, pharyngeal, and anal genital (Ortiz et al., 2019). Key among them is cervical cancer which is due to persistent infection with oncogenic human Papillomavirus genotypes. Cervical cancer is the third most common cancer in the global population and the second cause of cancer mortality among women (Castle, et al., 2021). It caused over 300,000 deaths globally in 2018 and this figure is expected to increase by over 45% by the year 2040 with most of these deaths occurring in low-and middle-income countries (Perera et al., 2021). Uptake of HPV vaccine was 15% as at 2019, with Sub-Saharan Africa and Asia region having the lowest uptake at 1.1% and 1.2% respectively. In Kenya, in 2019, only 33% of adolescent girls received the first dose with only 16% receiving the second dose. In 2020, only 33% of the targeted population received the first dose of HPV vaccine with only 16 % receiving the second dose. Tharaka Nithi County has witnessed a drop in the number of adolescents seeking for HPV vaccination over the last five years from 38% in 2019 to 34 % in 2022 (KNBS, 2022)

Methods: This study adopted an analytical cross-sectional survey design with mixed methods of data collection. This design enabled the description of the study variables. A descriptive survey was preferred because of its ease in establishing associations between variables and making comparisons, the possibility of administering many questionnaires to many people, and the anonymous completion of questionnaires (Wang & Cheng, 2020). Multi-stage sampling method was used to sample parents/guardians of girls aged 10–14 years eligible for the HPV vaccine.

Results: One hundred and seventy-six (176) questionnaires were administered to parents/guardians of girls aged 10 years to 14 years. 45%(n=72) had received HPV vaccine. Among the 72 girls who were vaccinated, the majority (55.6%, n=40) had received only one dose with only 9.7%(n=7) having received more than two doses. The most common reason for getting the HPV vaccine was an immunization campaign; (62.5%, n=45) followed by being requested to be vaccinated by a health care provider (31.9%, n=23).

Conclusion and Recommendation: The HPV vaccine uptake was low compared to the WHO recommended level of 90%. Only 40% of girls have received 1st dose of the vaccine. There is need to employ more and convenient strategies to increase the uptake of HPV vaccines.

Keywords: Determinants, Uptake, Human papilloma virus, Vaccine, Girls, Parents/guardians, cervical cancer.

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I. Introduction

Cervical cancer is the third most common cancer affecting women (Wilson, 2021). It accounts for about 7.5 % of cancer related deaths in women globally (KNBS, 2022). More than 99% of cervical cancer is caused by persistent infection with the oncogenic or high risk sexually transmitted types of Human Papillomavirus (Aliabadi, 2024). Cervical cancer affects about 570,000 women with an estimated 311,000 deaths across the global, greater than 85% of the deaths occurring in less developed countries. Many of the patients are young, under educated women living in the world's poorest countries where access to pre-screening and treatment is limited (Wijayanti, 2022).

Cervical cancer is preventable through the prevention of Human Papillomavirus infection. This can be achieved by the highly effective and cost- effective prevention strategy using the HPV vaccine which prevents the commonest strains of high risk and low risk HPV infections (Chege, 2022). Providing the Human Papillomavirus (HPV) vaccine is aimed at primary prevention against cervical cancer so that there is no risk of infection progressing to cervical cancer later in life (Wang, et al., 2020). It is estimated that the HPV vaccine will reduce deaths from cervical cancer by two-thirds if uptake reaches 80%. Two vaccines to prevent HPV infection, the cause of cervical cancer, are now approved for use in over 120 countries (World Health Organization, 2024). This has created an opportunity to greatly enhance the prevention of cervical cancer.

Objective

- i. To determine the level of uptake of human papillomavirus vaccine among girls aged 10-14 years in Maara sub- County, Kenya.

II. Materials & Methods

Study Design

This study adopted an analytical cross-sectional survey design with mixed methods of data collection. This design enabled the description of the study variables. A descriptive survey was preferred because of its ease in establishing associations between variables and making comparisons, the possibility of administering many questionnaires to many people, and the anonymous completion of questionnaires (Wang & Cheng, 2020). Multi-stage sampling method was used to sample parents/guardians of girls aged 10–14 years eligible for the HPV vaccine. The sub-county had five wards. The lottery method was used in the selection process. From each ward, six villages were randomly selected. From each village, nine households were selected. Finally, from each household, one parent or guardian of a girl aged 10–14 years was selected and questionnaire administered.

Study population and Sample Size Determination.

This study targeted parents/guardians of girls aged between 10–14 years in Maara Sub County in Tharaka Nithi County. The sample size was calculated using the Cochran (1977) formula of sample size determination

$$n = \frac{z^2 x p(1 - p)}{d^2}$$

Where,

n : is the desired sample size when the population >10,000

z : standard error at 95% interval

p : is the prevalence of HPV vaccination taken as 50% since the prevalence is unknown

q : 1- p

d : is the level of significance set at 5%

Therefore

$$n = \frac{1.96^2 x 0.5(1 - 0.5)}{0.05^2}$$

$$n = 384.$$

Since the population was less than 10,000, the sample was adjusted using the formulae:

$$nf = \frac{\frac{n}{N} \cdot \frac{n}{N}}{(1 + (\frac{n}{N} - \frac{1}{N}))(1 + (\frac{n}{N} - \frac{1}{N}))}$$

Where:

nf is the desired sample size

n is the calculated sample

N is the estimated population of study

Therefore;

$$\begin{aligned} & \frac{384}{(1 + (\frac{384}{274} - \frac{1}{274}))(1 + (\frac{384}{274} - \frac{1}{274}))} \\ & = 160 \end{aligned}$$

To cater for non-response, 10% of the sample was added, hence the final sample size = 176.

Sampling Method:

Multi-stage sampling method was used to sample parents/guardians of girls aged 10–14 years eligible for the HPV vaccine. The sub-county had three wards. The lottery method was used in the selection process. From each ward, six villages were randomly selected. From each village, nine households were selected. Finally, from each household, one parent or guardian of a girl aged 10–14 years was selected and interviewed. Key informants were purposively selected from each ward. These included a religious leader, a health care worker from a health facility offering the HPV vaccine, and a ward school head teacher.

Data collection tool: Quantitative data was obtained using researcher-developed and administered semi-structured questionnaires. The questionnaire collected data on demographic characteristics, parental and health facility factors related to HPV uptake. Th

Qualitative data was collected from nine key informants using a researcher-developed interview guide. A total of nine KIIs were conducted, a point at which data saturation occurred. The purpose of the key informant interviews was to provide more information on the factors influencing HPV vaccine uptake.

Data Analysis And Presentation

Quantitative data was cleaned manually by checking for consistency, uniformity, accuracy, and validity. Each questionnaire was given a unique identifier. Data entry was carried out in duplicate for validation and cross-checked for entry errors. Range checks were also carried out. Data analysis was carried out using SPSS version 29.0 for Windows. Descriptive statistics, including means, modes, frequencies, and percentages, were used to summarize the data. Inferential statistics, including chi-square and multivariate regression analysis, were used to test relationships at a 95% CI.

Qualitative data was transcribed verbatim from the audio records, translated into English, and analyzed thematically using NVIVO version 12 computer software

Ethical clearance

Ethical approval of the study was sought from Chuka University Ethics and Research Committee. A research permit was also sourced from the National Commission for Science, Technology and Innovation (NACOSTI.REF NO 401618). Additionally, permission to conduct the research was sought from Tharaka Nithi County Government.

The researcher also informed the parents/guardians of their right to take part in the study and their freedom to withdraw at any step of the study or to decline to answer some of the questions if they felt uncomfortable. The participants signed a consent form before participating in the study.

III. Result

One hundred and seventy-six (176) questionnaires were administered to parents/guardians of girls aged 10 years to 14 years. 45%(n=72) had received HPV vaccine. Among the 72 girls who were vaccinated, the majority (55.6%, n=40) had received only one dose with only 9.7%(n=7) having received more than two doses. The most common reason for getting the HPV vaccine was an immunization campaign; (62.5%, n=45) followed by being requested to be vaccinated by a health care provider (31.9%, n=23).

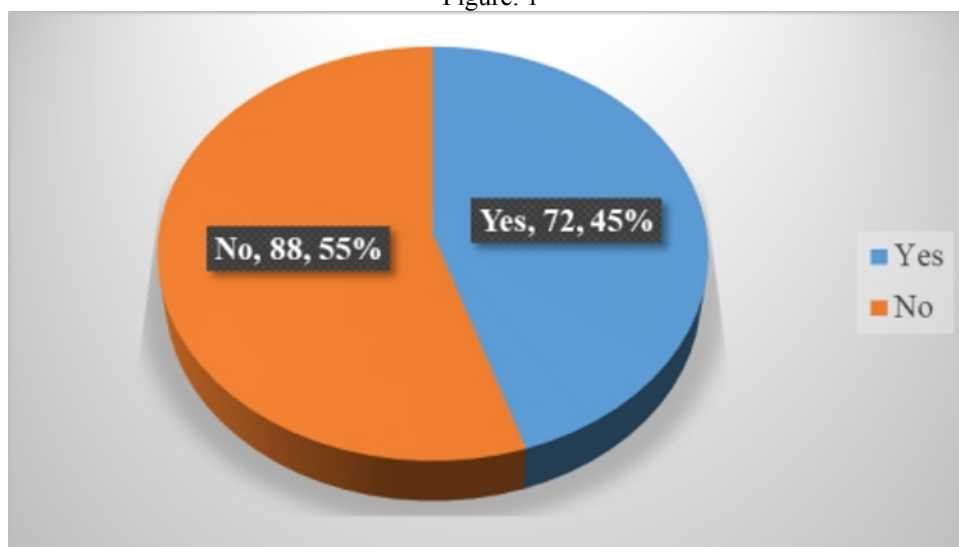
Table 1: Sociodemographic characteristics of the participants(n=160)

Characteristic	Category	Frequency (N=160)	Percent
Gender	Male	15	9.4
	Female	145	90.6
Education Level	None	10	6.3
	Primary	45	28.1
	Secondary	85	53.1
	Tertiary	20	12.5
Marital status	Never Married	30	18.8
	Married	85	53.1
	Divorced	25	15.6
	Widowed	20	12.5
Occupation	Unemployed	28	17.5
	Self-employed	92	57.5
	Formally employed	40	25
Monthly income	Less than 10,000	72	45
	10,000-19,000	40	25
	20,000-29,000	24	15
	30,000-39,000	16	10
	40,000 and above	8	5
Place of Residence	Rural	115	71.9
	Urban	45	28.1
Residence ward	Ganga	36	22.5
	Mwimbi	28	17.5
	Chogoria	40	25
	Mitharu	32	20
	Muthambi	24	15

HPV uptake

The participants were asked whether their girls have received HPV vaccine. As shown in figure below, only 45.0 %(n=72) of the girls had received HPV vaccine.

Figure: 1



Doses Taken

Among the vaccinated girls, the majority (n= 72) received one dose followed by 35 girls who received two doses. The results are shown in the figure below

Figure: 2

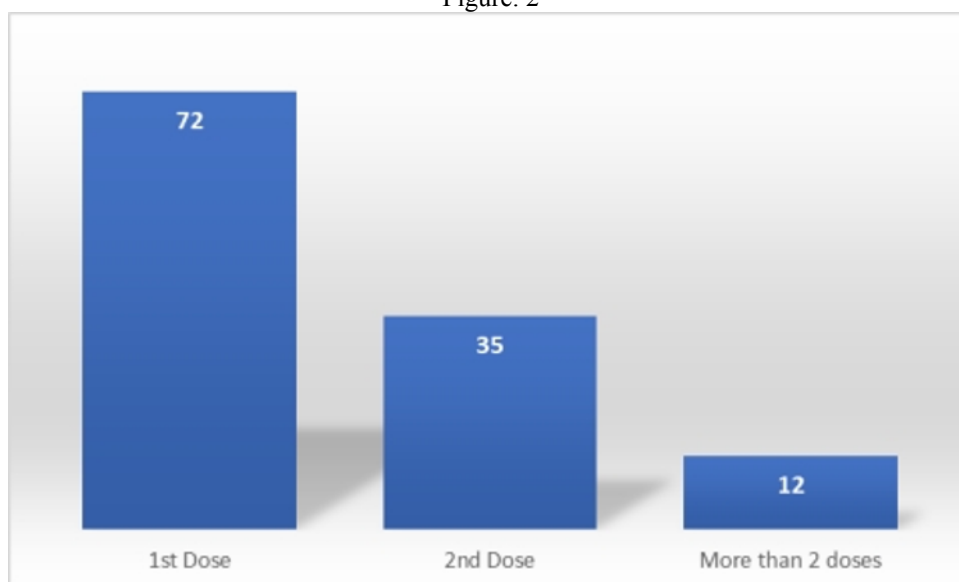


Table 2: Place and Reason for Vaccination

Characteristic	Category	Frequency (N=72)	Percent
Place of Vaccination	Home	2	2.8
	School	54	75
	Private Health Facility	7	9.7
	Public Health Facility	9	12.5
Reason for vaccination	Was requested by the health care provider	23	31.9
	There was an immunization campaign	45	62.5
	Was influenced by my friend	4	5.6

IV. Discussion:

The findings of this study recorded an uptake of 45.0%. The results were also slightly lower compared to a study in Ethiopia's North Shoa Zone, where uptake was 66.5%, and considerably lower than Rwanda's

93.2% reported by. The findings show a higher uptake compared to a study conducted in Kenya that reported a notably lower rate of 9.4% (Attia et al., 2021). The differences might be attributable to varying socio-cultural attitudes. Notably, the World Health Organization recommends a target of 90% of girls fully vaccinated with the HPV vaccine by age 15, indicating that our study's uptake remains well below the recommended benchmark.

V. Conclusion And Recommendations

The HPV vaccine uptake was low compared to the WHO recommended level of 90%. Only 45% of girls have received HPV vaccine. There is need to employ more and convenient strategies to increase the uptake of HPV vaccines.

Declaration by Authors

Ethical Approval: Ethical approval of the study was sought from Chuka University Ethics and Research Committee A research permit was also sourced from the National Commission for Science, Technology and Innovation (NACOSTI). Additionally, permission to conduct the research was sought from Tharaka Nithi County Government.

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Conflict of Interest: none

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