

Uptake of Two Doses of HPV Vaccines in Nakuru County, Kenya: A Case of Rongai and Nakuru West Sub-Counties

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Abstract

Background: HPV vaccines were introduced globally as one of the most effective strategies to prevent cervical cancer. HPV vaccines were rolled out in Kenya in 2019 targeting girls aged 10 - 14 years, but the uptake has not been satisfactory. **The Purpose of the Study:** The aim of the study was to assess the level of HPV uptake among girls aged 10 - 14 years in Rongai and Nakuru West Sub-Counties in Nakuru County. **Method:** This was a cross-sectional study where data on HPV uptake was retrieved from all the public health facilities located in Rongai and Nakuru West Sub-Counties, Nakuru County, entered into Microsoft Excel then transferred to SPSS version 26 for analysis of HPV vaccine uptake since the year 2019 to June 2022. **Data Analysis:** Descriptive statistics were used where tables and graphs were generated to represent the percentages and trends of HPV vaccine uptake. **Results:** The average percentage of HPV uptake in Nakuru West Sub-County since the rollout of vaccination was 17% while that of Rongai Sub-County was 15%. In 2019, HPV 1 uptake was generally low for both Sub-Counties, the results show no HPV 2 vaccines were administered during that year. In 2020, Nakuru West reported an increase in HPV 1 uptake, while Rongai reported a drop in HPV 1 uptake. Both Sub-Counties reported an increase in HPV 2 in 2020 as compared to the previous year. The highest HPV 1 & 2 uptakes were reported in 2021 in both Sub-Counties. The uptake of both HPV 1 & 2 kept increasing subsequently. **Conclusion:** The overall uptake of HPV vaccines for Doses 1 and 2, in both Rongai and Nakuru West Sub-Counties, is low. However, there has been a consistent increase in uptake of the two doses in the two Sub-Counties since 2019. Therefore, raising public awareness of the importance of HPV vaccination could improve uptake.

Keywords

Cervical Cancer, Human Papilloma Virus, HPV Vaccines, HPV Vaccines Uptake, Girls Aged 10 - 14 Years

1. Introduction

Cervical cancer is a malignancy of the cervix uteri or cervical area. According to GLOBOCAN 2020, cervical cancer is ranked the fourth most common cancer among women globally, with an estimated 604,127 new cases and 341,831 deaths in the year 2020 [1]. Cervical cancer is ranked the second most common cancer in Africa with an incidence of approximately 117,316 and deaths of approximately 76,745 in 2020 [2]. It is estimated that 90% of all cervical cancer deaths occur in Low and Middle-Income Countries (LMICs) [3]. Kenya recorded 5236 new cases of cervical cancer in 2020, ranking second after breast cancer. Almost all cervical cancer cases (99%) are linked to infection with high-risk Human Papilloma Virus (HPV), a common virus that is transmitted through sexual contact. Strategies that have been laid by the WHO for cervical cancer prevention involve the use of HPV vaccines and upholding screening programs. HPV vaccines are safe and effective when given to young girls aged 10 - 14 years to protect against HPV. It is estimated that the HPV vaccine will reduce deaths from cervical cancer by two-thirds if uptake reaches 80% [4].

In Kenya, HPV vaccines were launched and rolled out in 2019 with the support of the Global Alliance for Vaccine and Immunization (GAVI) and are being delivered through a school-based approach and a facility-based approach.

Uptake of the HPV vaccine is defined as having completed two doses of the vaccine by the targeted females and within the recommended schedule [5]. The national HPV coverage target is 80% but Kenya is yet to attain its set target of vaccination rate since the vaccine program was rolled out in 2019 [6]. A low level of awareness regarding the HPV vaccine could be the main reason responsible for the low uptake of the HPV vaccine. It was also noted that rural areas register lower uptake of HPV vaccine compared to urban areas. Therefore, the aim of this study was to assess the level of HPV uptake in Rongai and Nakuru West Sub-Counties in Nakuru County.

2. Materials and Methods

Study Site and Design: A cross-sectional study design was used where data on HPV uptake was retrieved from all the public health facilities located in Rongai and Nakuru West Sub-Counties, Nakuru County in order to capture all the recorded girls who had been vaccinated against HPV from the year 2019 to June 2022. Data for both Doses 1 and 2 for girls aged 10 - 14 years was extracted and the level of uptake was computed.

Data Collection Technique: Data was obtained from the Nakuru District Health Information System (DHIS) which gives the summary of all health-related data. Data

on HPV vaccine Doses 1 and 2 for the period 2019 to June 2022 were extracted.

Data Management and Analysis: The extracted data were entered into Microsoft excel and exported to SPSS version 26 for analysis of HPV vaccine uptake since the year 2019 to June 2022. The descriptive statistics were summarized using tables and graphs.

Ethical Considerations: The research was approved by Kabarak University Research and Ethics Committee (KUREC). The research permit was also obtained from National Commission for Science, Technology and Innovation (NACOSTI). Lastly, permission was sought from hospitals administration to access and extract data from their medical records.

3. Results

3.1. Overall HPV Vaccine Uptake

The average uptake of HPV vaccine was higher in Nakuru West Sub-County (17%) than that of Rongai Sub County at 15%. The table shows that HPV vaccine Dose 1 uptake is higher in Nakuru west with 23% as compared to that of Rongai Sub-County (17%). On the contrary, the uptake of HPV vaccine Dose 2 was higher in Rongai Sub-County (13%) while that of Nakuru west was 11% (Table 1).

3.2. HPV Vaccination Trend

3.2.1. HPV Vaccination Trend for Nakuru West Sub-County

In 2019 which was the first year of the vaccines roll out, the uptake was low at 9%, the following year 2020; there was a significant increase in the uptake to 22%. The highest uptake was reported in 2021 at 30% (Figure 1).

3.2.2. HPV Vaccination Trend for Rongai Sub-County

During the first year of roll out in 2019, the uptake was at 11%, in 2020, there was a drop in the uptake to 4%, but in 2021, there was an increase in the uptake to (26%) and 2022 (20%) subsequently (Figure 2).

3.3. Comparison of HPV Vaccine Uptake

In 2019, HPV vaccine Dose 1 uptake was generally low for both Sub-Counties, the results show no HPV Dose 2 vaccines administered during that year. In 2020, Nakuru West reported an increase in HPV vaccine Dose 1 uptake, while Rongai reported a drop in HPV vaccine Dose 1 uptake. Both Sub-Counties reported an increase in HPV vaccine Dose 2 in 2020 as compared to the previous year. The highest HPV vaccine Doses 1 & 2 uptakes were reported in 2021 in both Sub-Counties. The uptake of both HPV 1 & 2 kept increasing subsequently (Figure 3).

Table 1. Overall HPV vaccine uptake for the period 2019-June 2022 for Rongai and Nakuru West Sub-Counties.

SUB-COUNTY	TARGET	HPV1	HPV2	HPV 1 PERCENTAGE	HPV2 PERCENTAGE	AVERAGE HPV UPTAKE
RONGAI	32,254	5641	4072	17%	13%	15%
NAKURU WEST	35,195	8106	3857	23%	11%	17%

A Graph Showing HPV Vaccination Trend for Nakuru West Sub- County

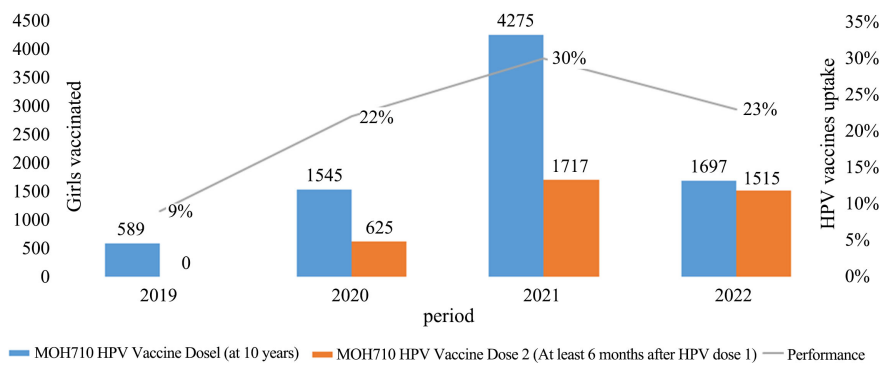


Figure 1. A graph showing HPV vaccination trend for Nakuru West Sub-County.

A graph showing the trend of HPV uptake in Rongai Sub-county, Nakuru Kenya.

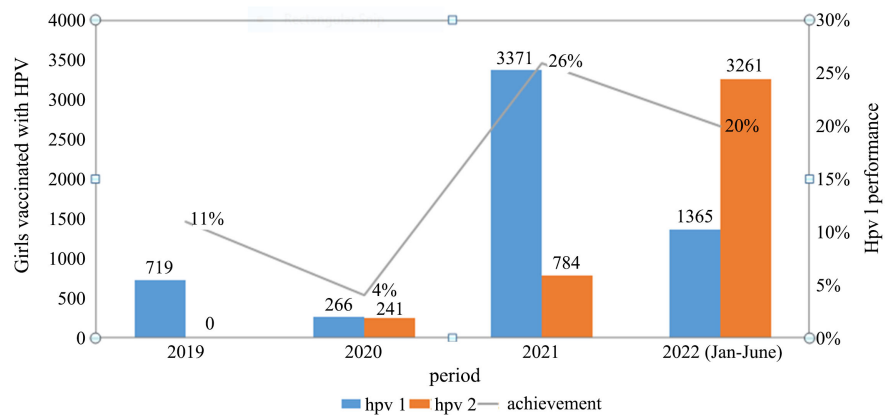


Figure 2. A graph showing HPV vaccination trend for Nakuru West Sub-County.

A graph comparing HPV uptake between Rongai and Nakuru West Sub-Counties

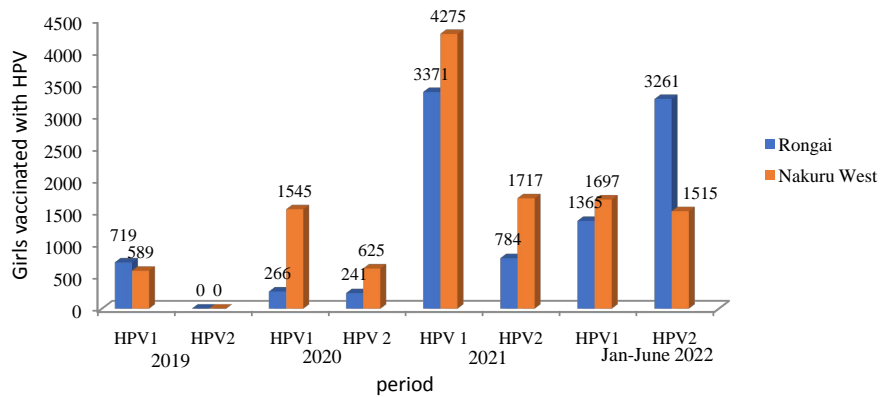


Figure 3. A graph comparing HPV vaccine uptake between Rongai and Nakuru West Sub-Counties.

4. Discussion

HPV Vaccines Uptake

HPV vaccination among girls aged 10 - 14 years was launched in Kenya with a target uptake rate of 80%. The findings showed low HPV vaccines uptake both

in Rongai and Nakuru West Sub-Counties, 15% and 17% respectively. This means the two Sub-Counties are way below the National target (80%). These findings are consistent with that found by Aruho *et al.* (2022) [7] who reported low HPV coverage of 22% in the two doses in Uganda. Another study done by Oluwole *et al.* (2019) [8] reported an uptake of 2.6% in Nigeria. A study done by Karanja (2022) [5] found HPV vaccine uptake to be 33% which showed a slight improvement as compared to the uptake rate of 25% in 2019. Despite a lot of effort by the government since 2019, when the HPV vaccine was officially launched, other influential factors such as religion, culture, vaccine hesitancy, and attitude among others is still derailing the success of this life saving initiative. Interestingly, some Kenyan Medical doctors allied to Catholic Church took to media cautioning parents not to allow their daughters take the vaccines. Such negative sediments from influential leaders could explain the low HPV vaccines uptake in most parts of the country.

Despite many challenges, there has been a positive trend in terms of general uptake levels of the HPV vaccines in both Rongai and Nakuru West Sub-Counties. At the start of the roll out of the vaccine in 2019, the uptake was low 11% and 9% respectively and this is explained by many factors such as: lack of knowledge and awareness on the new vaccine, myths and misconceptions and religious misadvice. Vaccine hesitancy especially during the roll out could be attributed to safety concerns. The findings are consistent with a study by McNutt *et al.* (2016) [9] that found low HPV vaccine uptake during the start of the program and attributed the low uptake to social norm, physician bias and vaccine hesitancy. The second dose uptake was 0% in both Sub-Counties in 2019, because the first dose was given late in the year and therefore no one was expected to get the second dose in the same year. Despite that fact, dose one in the subsequent years kept increasing, dose two uptake remained low and not matching the number transitioning from dose one. This finding is supported by a study done by Meites *et al.* (2016) [10] that found a discrepancy of 48% between first dose and second dose. Another study by Brotherton *et al.* (2019) [11] in Australia reported that a significant number of adolescent girls just got a single dose of the HPV vaccine. This finding should raise concern since a single dose is not effective in preventing cervical cancer. The COVID-19 pandemic greatly affected the uptake of both Doses 1 and 2. Despite a positive trend in the uptake, both the pre-pandemic and post-pandemic eras registered a drastic decline. The results are consistent with a study by Walker *et al.* (2022) [12] that reported the impact of the COVID-19 pandemic as having negatively affected the coverage by 13%, in their study they noted that the decrease in the trend started in May 2021. A study by Chao *et al.* (2022) [13] also reported a drop in the uptake in 2020/2021 from 58% to 54% in California.

5. Conclusion

The overall uptake of HPV vaccines for Doses 1 and 2, in both Rongai and Nakuru West Sub-Counties, is low. There has been a consistent increase in uptake

of the two doses in the two Sub-Counties since 2019. However, there was a significant decline in 2020, attributed to school closures due to the COVID-19 pandemic. It was also observed that the uptake of HPV vaccine Dose 2 is way low, and does not match with the expected number from those who received Dose 1. From the above conclusion, there is a need for improved public awareness of the importance of HPV vaccination as a way of improving the uptake level.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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