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Original Research Article

Socio-cultural factors associated with the uptake of human papilloma virus vaccine among girls aged 9-13 years in Garissa County, Kenya

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ABSTRACT

Background: Cervical cancer remains a major health concern, driven mainly by human papilloma virus (HPV) types 16 and 18. In Kenya, it is the second most common cancer, yet HPV vaccination coverage is still low, with Garissa County at only 2%. Cultural norms, hesitancy, and limited awareness hinder uptake. This study assesses socio-cultural factors shaping vaccination to guide improved interventions.
Methods: The study employed a descriptive cross-sectional design. Using systematic sampling, 437 respondents were recruited from public primary schools. Data were collected via questionnaires with informed consent/assent. Ethical approval was obtained from KUERC, and permits from NACOSTI. Statistical package for the social sciences (SPSS) v26.0 was used for descriptive and Chi-square analyses at a 95% confidence level, with results presented in tables and charts.
Results: The study found HPV vaccine uptake at 5.7% among girls aged 9–13 years in Garissa County. Most guardians were aged 29–38 years, 92.2% Muslim, and 50.8% had no formal education. Further result revealed key factors reducing uptake includes beliefs that the vaccine causes infertility (p=0.002), myths about its effectiveness (p=0.036), fear of side effects (p=0.001), and perceptions that it encourages promiscuity (p=0.001).
Conclusions: HPV vaccine uptake among girls was very low (94.3% unvaccinated). Non-uptake was linked to beliefs about infertility, myths on efficacy, fear of side effects, and concerns about promoting promiscuity. The study recommends targeted education, engagement with religious and cultural leaders, public awareness campaigns, assured vaccine availability, and integration of HPV vaccination into routine services to improve acceptance and reduce the cervical cancer burden.

Keywords: Cervical cancer, HPV vaccination, Vaccine uptake, Socio-cultural factors, Garissa County

INTRODUCTION

Cervical cancer is a malignant tumor arising in the cervix uteri. Globally, it accounts for an estimated 604,127 new cases and 341,831 deaths annually.[1] In 2022, approximately 660,000 new cases and 350,000 deaths were reported worldwide.[2] In Africa, cervical cancer is the second most common cancer after breast cancer, with about 117,316 new cases and 76,745 deaths recorded in 2020.[3] Low- and middle-income countries account for 90% of these deaths.[4] In Kenya, 5,236 new cases are reported annually, making it the second most common cancer after breast cancer.[1]

Persistent infection with high-risk strains of the human papilloma virus (HPV), particularly types 16 and 18, is responsible for nearly 99% of cervical cancer cases.[1] HPV is primarily transmitted through sexual contact. Prevention efforts by the World Health Organization (WHO) include HPV vaccination and screening programs. When administered to girls aged 10–14, HPV vaccines are safe and highly effective in preventing infection. Achieving

80% vaccine coverage could reduce cervical cancer deaths by up to 63%.[5]

In Kenya, the national vaccination target focuses on girls aged 9–13 years, with an expected 80% coverage rate.[6] However, disparities remain. According to the Kenya Demographic and Health Survey (KDHS), Garissa, Wajir, and Mandera counties recorded the lowest HPV vaccination rates at 2%, 2%, and 0.5%, respectively, far below the national target.[7] Nationally, uptake improved slightly from 25% in 2019 to 33% in 2022.[6] Despite the official introduction of the HPV vaccine in 2019—supported by the Global Alliance for Vaccine and Immunization (GAVI) through school- and facility-based delivery—coverage remains low. By June 2023, of the targeted 3.2 million girls, only 1.7 million (53%) had received the first dose, and 876,800 (27.4%) had completed the second dose.[8]

The program initially required two doses, but current recommendations allow one complete dose.[6] Since inception, Kenya has not met its 80% national coverage goal, with rural areas showing lower uptake than urban areas.[9] Multiple barriers contribute to low uptake, including cultural and religious beliefs, vaccine hesitancy, inadequate awareness, and limited grassroots mobilization. Cervical cancer remains the leading cause of cancer-related deaths among Kenyan women, with about nine fatalities daily, a figure projected to rise to 22 by 2040.[1] In Garissa County, HPV vaccine uptake is only 2%.[7] This alarmingly low coverage, combined with socio-cultural and systemic barriers, underscores the urgent need for context-specific strategies. This study aims to determine the socio-cultural factors influencing HPV vaccine uptake among girls aged 9–13 years in Garissa County, Kenya, thereby contributing evidence to improve vaccination strategies and ultimately reduce the cervical cancer burden.

METHODS

The study adopted a descriptive cross-sectional design to assess HPV vaccine uptake and associated factors among girls aged 9–13 years in public primary schools in Garissa County. The study was conducted between November 2024 and May 2025 in Balambala and Garissa Township sub-counties which were randomly selected from the seven sub-counties using folded pieces of paper, with wards and schools randomly chosen. The study recruited a total of 437 participants respondents using systematically sampling method.

Data was collected by the help of trained research assistants. Those who consented or whose caregivers/ guardians assented were included in the study. However, those who were sick and thus unable to participate were excluded from the study. Ethical approval was obtained from Kenyatta University Ethics Review Committee (KUERC), and research permits were granted by NACOSTI and Garissa County authorities. Data were analyzed using statistical package for the social sciences (SPSS) version 26.0 for descriptive and inferential statistics, including Chi-square tests at a 95% confidence level and a 0.05 margin of error. Results were presented in tables, charts, and graphs.

RESULTS

Distribution of socio-demographic characteristics among respondents

The study found that most parents/guardians were aged 29–38 years (38.2%), with children mostly aged 10 years (25.9%). Most girls (62.2%) were in junior secondary, 92.2% were Muslims, 50.8% had no formal education, and 60.8% were unemployed. Additionally, 37.8% earned ≤Ksh. 10,000 monthly, 43.5% had ≥5 children, and 63.4% were married (Table 1).

Uptake of child HPV vaccine

The study sought to determine the proportion of girls vaccinated against HPV vaccine. Majority 397 (94.3%) of them had not been vaccinated against HPV (Figure 1).

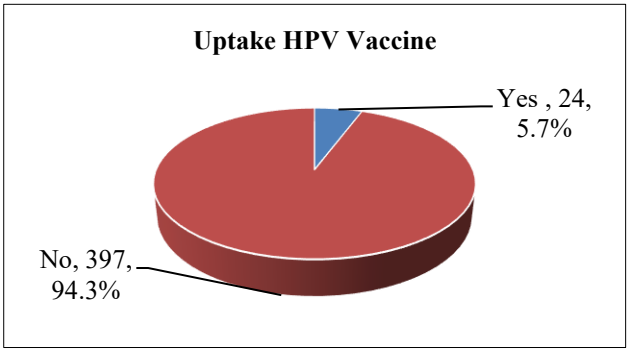

Figure 1: Child vaccination against HPV among respondents (n=421).

Reasons against child HPV vaccination

Slightly below 170 (42.8%) did not take their girls for vaccination due to lack of awareness. Results were presented in Table 2.

Socio-cultural factors influencing HPV vaccination

Responses on socio-cultural factors influencing HPV vaccination

Slightly more than half 211 (50.1%) of the respondents indicated that their religion did not recommend girls to be vaccinated against HPV. Most 270 (64.1%) revealed that in their culture people believed that HPV vaccine could lead to infertility. On myths on efficacy of vaccines creating fear of HPV vaccination, 176 (41.8%) could not tell. On whether parental peer pressure could affect acceptance for HPV vaccination, 135 (32.1%) agreed.

Table 1: Distribution of socio-demographic characteristics among respondents (n=421).

Variables	Frequency (N)	Percentage (%)
Age of parent or guardian in years		
18-28	91	21.6
29-38	161	38.2
39-48	111	26.4
≥49	58	13.8
Age of your child in years		
9	50	11.9
10	109	25.9
11	77	18.3
12	83	19.7
13	102	24.2
Level of education of the child		
Primary	159	37.8
Junior	262	62.2
Religion		
Christians	33	7.8
Muslim	388	92.2
Highest level of education attained by parent/ guardian		
No formal	214	50.8
Primary	115	27.3
Secondary	64	15.2
Tertiary	28	6.7
Occupation of guardian		
Not employed	256	60.8
Self-employed	105	24.9
Employed	60	14.3
Level of monthly family income in KSh		
≤10,000	159	37.8
10,001-20,000	111	26.4
20,001-30,000	86	20.4
≥30,001	65	15.4
Number of children		
1-2	91	21.6
3-4	147	34.9
≥5	183	43.5
Marital status		
Single	92	21.9
Married	267	63.4
Divorced/separated/ widowed	62	14.7

Majority 345 (81.9%) agreed that fear of side effects on HPV vaccine could influence their acceptance of the vaccine. Most 313 (74.3%) of the respondents believed that HPV vaccine could lead to sexual promiscuity. Slightly more than half 218 (51.8%) of the respondents noted that they could discuss HPV vaccination with their girls. Results were presented in Table 3.

Socio-cultural factors influencing HPV uptake

The study sought to determine the association between socio-cultural factors and uptake of HPV vaccine. More than half 200 (50.4%) of the respondents whose girls had not been vaccinated against HPV indicated that their religion did not recommend girls to be vaccinated. There was no significant statistical association between religion recommending HPV vaccination and its uptake (χ^2=0.787, p=0.469). Majority 255 (64.2%) of those whose girls had not been vaccinated believed that HPV vaccine could lead to infertility. There was a significant statistical association between belief that HPV vaccine could lead to infertility and uptake of HPV vaccine (χ^2=10.496, p=0.002).

On myths on the efficacy of vaccines creating fear for HPV uptake, results revealed that 13 (54.2%) of those whose girls were vaccinated believed that the myths could create fear. Statistically, beliefs on myths on the efficacy of vaccines creating fear for HPV uptake was significantly associated with its uptake (χ^2=7.017, p=0.036). About 9 (37.5%) respondents who disagreed that parental peer pressure would affect uptake of HPV vaccine had their girls vaccinated. However, there was no association between parental peer pressure and utilization of HPV vaccination (p=0.133). Majority 326 (82.1%) of those whose girls had not been vaccinated indicated fear of side effects of HPV vaccine affected its acceptance. There was a significant statistical association between fear of side effects on HPV vaccine affecting acceptance and uptake of HPV vaccine (χ^2=25.752, p=0.001).

Most 299 (75.3%) of the respondents whose girls had not been vaccinated believed that HPV vaccine leads to sexual promiscuity. Statistically, belief that HPV vaccine leads to sexual promiscuity was significantly associated with uptake of HPV vaccine (χ^2=15.613, p=0.001). Majority 17 (70.8%) of the respondents whose girls had been vaccinated indicated that they could discuss about HPV vaccination with their girls.

However, there was no significant statistical association between discussing HPV vaccination with the girls and uptake of HPV vaccine (χ^2=3.469, p=0.063). The results were presented in Table 4.

Table 2: Reasons against HPV child immunization among respondents (n=397).

Variables	Respondent response	Frequency (N)	Percentage (%)
Reasons against HPV vaccination, N=397	Fear of side effects	97	24.4
	Against my community culture	79	19.9
	Unavailability and acceptability of the vaccine	51	12.8
	Lack of awareness	170	42.8

Table 3: Distribution of socio-cultural factors among respondents (n=421).

Variables	Respondent response	Frequency (N)	Percentage (%)
In your religion, it is recommended for girls to be vaccinated against HPV	Yes	76	18.1
	No	211	50.1
	Cannot tell	134	31.8
In my culture, people belief that HPV vaccine could lead to infertility	Yes	270	64.1
	No	151	35.9
In my community, myths on efficacy of vaccines creates fear of HPV vaccination	Yes	160	38.0
	No	85	20.2
	Cannot tell	176	41.8
Parental peer pressure could affect acceptance for HPV vaccination	Strongly agree	127	30.2
	Agree	135	32.1
	Disagree	100	23.8
	Strongly disagree	59	14.0
Fear of side effects on HPV vaccine could influence my acceptance for the vaccine	Agree	345	81.9
	Disagree	76	18.1
People belief HPV vaccine leads to sexual promiscuity	Yes	313	74.3
	No	108	25.7
Discuss about HPV vaccination with your child	Yes	203	48.2
	No	218	51.8

Table 4: Socio-cultural factors associated with HPV uptake among respondents (n=421).

Variables	Respondent response	HPV vaccine uptake (%)		Statistical significance
		Yes (N=24)	No (N=397)	
In your religion, it is recommended for girls to be vaccinated against HPV	Yes	7 (29.2)	69 (17.4)	χ^2=0.787, df=1, p=0.469
	No	11 (45.8)	200 (50.4)	
	Cannot tell	6 (25.0)	128 (32.2)	
In my culture, people belief that HPV vaccine could lead to infertility	Yes	15 (62.5)	255 (64.2)	χ^2=10.496, df=1, p=0.002
	No	9 (37.5)	142 (35.8)	
In my community, myths on the efficacy of vaccines creates fear of HPV uptake	Yes	13 (54.2)	147 (37.0)	χ^2=7.017, df=1, p=0.036
	No	6 (25.0)	79 (19.9)	
	Cannot tell	5 (20.8)	171 (43.1)	
Parental peer pressure could affect acceptance for HPV vaccination	Strongly agree	6 (25.0)	121 (30.5)	Fisher's exact test p=0.133
	Agree	4 (16.7)	131 (33.0)	
	Disagree	9 (37.5)	91 (22.9)	
	Strongly disagree	5 (20.8)	54 (13.6)	
Fear of side effects on HPV vaccine affects its acceptance	Agree	19 (79.2)	326 (82.1)	χ^2=25.752, df=2, p=0.001
	Disagree	5 (20.8)	71 (17.9)	
People belief HPV vaccine leads to sexual promiscuity	Yes	14 (58.3)	299 (75.3)	χ^2=15.613, df=2, p=0.001
	No	10 (41.7)	98 (24.7)	
Discuss about HPV vaccination with your child	Yes	7 (29.2)	196 (49.4)	χ^2=3.469, df=1, p=0.063
	No	17 (70.8)	201 (50.6)	

DISCUSSION

Uptake of HPV vaccine

The study sought to determine the proportion of girls who had been vaccinated against the HPV vaccine. Results revealed that a significant majority of the respondents (94.3%) had not received the vaccine. This finding is concerning as it suggests an alarmingly low HPV vaccine coverage, which could have serious public health implications, particularly in relation to the prevention of cervical cancer.

The low vaccination rate could be attributed to various structural, cultural, and informational barriers that prevent parents and guardians from ensuring their children receive the vaccine.[10] Given that HPV is a leading cause of cervical cancer, these findings highlight the urgent need for intensified vaccination campaigns, better public health communication, and improved vaccine accessibility to

increase uptake.[11] The low coverage rate also suggests potential gaps in Kenya's national immunization program, requiring targeted interventions to address underlying barriers to HPV vaccination.[12]

Despite the availability of the HPV vaccine, a majority of the respondents had not vaccinated their daughters, and the study explored the reasons behind this low uptake it was due to a lack of awareness, suggesting that many parents and guardians were either unaware of the vaccine's existence or its importance in preventing cervical cancer. This highlights a major public health gap, emphasizing the need for widespread health education and outreach programs to increase vaccine awareness, particularly in rural and underserved communities.[13] Fear of side effects was another major concern, reflecting vaccine hesitancy fueled by misinformation, misconceptions, or past negative experiences with vaccination. Addressing this concern requires clear, evidence-based communication from healthcare providers to dispel myths and reassure the public about the vaccine's safety and efficacy.[14]

Cultural beliefs also played a role, with 19.9% of respondents citing their community's cultural stance against the vaccine. This suggests that deep-rooted traditional beliefs and misconceptions about HPV vaccination, including fears of promiscuity or infertility, could be major barriers to uptake.[15] Lastly, 12.8% of respondents pointed to issues of vaccine availability and acceptability. Limited access to vaccination sites, vaccine stock-outs, and logistical challenges in reaching healthcare facilities can make it difficult for parents to vaccinate their children, particularly in remote areas.[16]

Socio-cultural factors influencing uptake of HPV vaccination

In terms of religious influence on HPV vaccine uptake, the findings indicated that 50.4% of respondents whose daughters had not been vaccinated reported that their religion did not recommend HPV vaccination. However, statistical analysis showed no significant association between religious beliefs and vaccine uptake. This suggests that while religious perspectives may contribute to vaccine hesitancy, they may not be the primary determining factor in decision-making regarding HPV vaccination. Religious opposition to vaccines is often linked to broader concerns about morality, reproductive health, and medical interventions perceived as unnecessary or conflicting with faith-based teachings. However, the lack of a significant association implies that other factors such as misinformation, fear of side effects, or structural barriers might play a larger role in influencing vaccination decisions.[17] This finding highlights the need for engagement with religious leaders and faith-based organizations to foster evidence-based discussions on HPV vaccination and dispel misconceptions within religious communities.[17]

Regarding belief in infertility as a side effect of the HPV vaccine, a significant proportion of respondents whose daughters had not been vaccinated believed that the HPV vaccine could lead to infertility. Statistical analysis confirmed a significant association between this belief and vaccine uptake. This finding suggests that misinformation regarding the vaccine's effect on fertility is a major deterrent to HPV vaccination which contradict Schmuhl and colleagues' study.[18] The misconception that vaccines, particularly those related to reproductive health, can cause infertility has been persistent in various communities and is often fueled by misinformation, lack of trust in health authorities, and fear of unknown long-term effects. This belief may stem from cultural narratives that link medical interventions to reproductive harm or historical experiences where certain populations have been subjected to unethical reproductive health interventions.[19]

Concerning the myths on vaccine efficacy and HPV vaccine uptake, the study found that 54.2% of respondents whose daughters had been vaccinated believed that myths about vaccine efficacy could create fear, and this belief was significantly associated with vaccine uptake. This suggests that misinformation surrounding vaccines such as claims that they do not work or that they contain harmful substances can significantly impact vaccine acceptance. Myths about vaccine efficacy may originate from social media, community beliefs, or past experiences with vaccines that were perceived as ineffective.[20]

The statistical significance of this finding highlights the role of misinformation in shaping health behaviors and the importance of addressing vaccine hesitancy through public awareness campaigns that provide transparent information on the safety, efficacy, and benefits of HPV vaccination. Strengthening public trust in vaccines through credible sources, such as government health agencies and medical professionals, can help counteract the negative impact of myths.[21]

Regarding fear of side effects and vaccine uptake, a significant majority of respondents whose daughters had not been vaccinated cited fear of side effects as a major barrier to vaccine acceptance, and this belief was significantly associated with vaccine uptake. This finding suggests that concerns about adverse effects play a crucial role in vaccine hesitancy.

Common fears may include immediate side effects such as pain, fever, or allergic reactions, as well as unproven long-term consequences.[22] Misinformation, anecdotal negative experiences, and lack of communication from healthcare providers may exacerbate these fears. The significant statistical association indicates that addressing concerns about side effects through proper counseling, transparency in reporting adverse effects, and reassurance from healthcare professionals can enhance vaccine uptake.[23]

In terms of sexual promiscuity, a considerable proportion of respondents whose daughters had not been vaccinated believed that the HPV vaccine leads to sexual promiscuity, and this belief was significantly associated with vaccine uptake. This finding suggests that concerns about behavioral implications play a substantial role in vaccine hesitancy.

Many caregivers may fear that vaccinating their daughters against HPV, a sexually transmitted infection, might encourage early sexual activity by providing a false sense of protection. Such beliefs are often rooted in cultural and moral perspectives that view adolescent sexual health interventions as promoting promiscuity rather than preventing disease which disagrees with.[24]

Parental peer pressure was also not associated with HPV vaccine uptake. This differs with another study which revealed that parental support plays a significant role in daughter's HPV vaccine uptake.[25]

Regarding communication, the study found that 70.8% of respondents whose daughters had been vaccinated reported that they could discuss HPV vaccination with them. However, there was no significant statistical association between discussing HPV vaccination with daughters and vaccine uptake. This finding suggests that while open communication about the vaccine exists in some households, it may not be a decisive factor in influencing uptake. Parents who are already supportive of vaccination may be more willing to engage in discussions with their daughters, but this does not necessarily translate into a direct cause-effect relationship.[26]

The lack of significant association highlights that while parental communication is important, other external factors such as healthcare provider recommendations, availability of the vaccine, and public health policies may have a stronger influence on vaccination decisions. Strengthening parental engagement through educational programs and counseling sessions can further enhance informed decision-making regarding HPV vaccination.[27]

CONCLUSION

The study concludes that HPV vaccine uptake among girls was extremely low, with 94.3% unvaccinated. Socio-cultural variables of non-uptake included the belief that the HPV vaccine could lead to infertility (p=0.002), myths on vaccine efficacy creating fear (p=0.036), fear of side effects (p=0.001), and belief that vaccination leads to sexual promiscuity (p=0.001). These socio-cultural barriers strongly influenced parental decisions. The study recommends targeted community education to address misconceptions, engagement with religious and cultural leaders to improve acceptance, and increased public awareness campaigns on the safety and benefits of HPV vaccination. Additionally, ensuring vaccine availability and integrating HPV vaccination into routine health services could help bridge the uptake gap and reduce HPV-related disease burden.

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