Acta Scientific Women's Health (ISSN: 2582-3205)

Volume 5 Issue 4 April 2023

Research Article

Factors Influencing the Acceptance of HPV Vaccination Among Caregivers for their Daughters, Attending Reproductive and Child Health Clinic at Fajikunda Major Health Center

Majula Balajo[1], Mariama Keita[2], Baboucarr Cham[2]* and Fatoumatta Bah[3]

[1]Registered Nurse, Gambia College School of Nursing and Midwifery, Banjul, The Gambia

[2]Senior Lecturer, Gambia College School of Nursing and Midwifery, Banjul, The Gambia

[3]Head of School, Gambia College School of Nursing and Midwifery, Banjul, The Gambia

***Corresponding Author:** Baboucarr Cham, Senior Lecturer, Gambia College School of Nursing and Midwifery, Banjul, The Gambia.

Received: September 19, 2022

Published: March 09, 2023

Abstract

Introduction: Cervical cancer is a threat to women's live and the fourth most common cancer among women. It is estimated that over a million women currently have cervical cancer and up to 70% of the cases are caused by Human Papilloma Virus. The purpose of this study was determine the factors influencing the acceptance of HPV Vaccination among caregivers attending Reproductive and Child Health Clinic at Fajikunda Major Health Center.

Methodology: A cross-sectional study design was used to determine the factors influencing the acceptance of HPV vaccine among caregivers attending reproductive and child health clinic at Fajikunda Major Health Center. Simple random sampling method was employed to select participants for the study. Ninety eight (98) participants WERE recruited for this study**.** A structured questionnaire was used to collect the data. Data was analyzed with SPSS version 20.0, using descriptive and the result was presented in frequency/ percentages and tables. Chi-square test WAS employed to determine the association between the variables at 5% level of significant

Results: A total of 98 study participants were included in the study. The response rate was 100%. Approximately 77% of the participants accepted to vaccinate their daughters for HPV vaccination. The acceptance to vaccinate daughters for HPV vaccination was affected by being unemployed (74%), having heard about cervical cancer (54%), and positive perception towards HPV vaccination (66%).

Conclusion: The study revealed that the acceptance to human papillomavirus vaccination is high and was significantly associated with being unemployed, good knowledge about cervical cancer, and positive perception towards HPV vaccination. Therefore, community education on cervical cancer and its prevention is crucial to increase awareness and acceptance as well.

Keywords: Human papillomavirus (HPV); CDC; Sexually Transmitted Infection (STI)

Introduction

Human papillomavirus (HPV) is the most common viral infection of the human reproductive tract [1]. Centers for Disease Control and Prevention (CDC) [2] states that the most common sexually transmitted infection (STI) is HPV. The following are at risk for acquiring HPV**:** Sexually active girls or women, girls who

have sexual intercourse for the first time at an early age, girls or women with multiple sex partners, women or girls with other genital infections and girls or women with weakened immunes systems [3,4]. Approximately between 50% and 80% of sexually active men and women will be infected with the virus at some point in their lives [5]. According to the CDC [2], there are more than 200 types of HPV that have been identified. They are classified into high risk HPV and Low risk HPV [2].

Type 16 is the cause for about 50% of cervical cancers globally however, type 16 and type 18 altogether accounts of approximately about 66% of cervical cancers [2]. Infection with a high-risk HPV types are considered necessary for the development of cervical cancer but, by itself, is not sufficient to cause cervical cancer [6]. The vast majority of women with HPV infection, even those with high-risk HPV types, do not develop cancer [6].

The World Health Organization [1] states that cervical cancer is the fourth most common cancer among women globally, with an estimated 570,000 new cases in 2018. Nearly 90% of the 311,000 deaths worldwide in 2018 occurred in low and medium income countries [1]. Furthermore, in The Gambia cervical cancer is the leading cause of cancer among women in the Gambia and it is ranked first [7]. Women aged 15 to 44 years in the Gambia are most affected with cervical cancer and it is the 1st common cancer among this age group in the country [7]. Approximately 184 new cases and 132 deaths are reported annually in the Gambia, 2018 [7].

Furthermore, Human Papillomavirus (HPV) Vaccine is a vaccine that protects against human papillomavirus [7]. CDC states that, HPV vaccine has the potential to prevent more than 90% of HPV attributable cancers [2]. HPV vaccination programs target girls aged 9 to 14 years, as recommended by the WHO [1]. In addition, about 3.3 million females received at least one dose of HPV vaccine during 2008-2020 with an approximated 66.69% of the target population being vaccinated [8]. In countries with high uptake, the uptake was higher in females than male (45.48% vs 8.45%) and showed significant decline in 2015-2020 compared to 2006 2014(89.03% vs 41.48%). however, in countries with low uptake, the estimate of uptake was low in both males and females (5.31% vs 2.93%) and showed increase in uptake in 2015-2020 compared to 2006-2014 (0.76% vs 5.22%) [8].

The uptake of the HPV vaccine is generally low. Emberger, states that the HPV vaccine unique among vaccines for the fact that it can prevent cancer yet vaccination rates remain low and infection with HPV remains high [9]. Moreover, some reasons that surveyed parents have cited for not vaccinating their children for HPV include needing more information, no recommendation of vaccination by a physician, and the perception that their daughter are not sexually active [9].

Problem Statement

Globally, cervical cancer is one of the gravest threats to women's lives and the fourth most common cancer among women [10]. It is estimated that over a million women currently have cervical cancer and up to 70% of the cases are caused by Human Papilloma Virus (HPV) type 16 and 18 [11]. HPV vaccination could be the most effective strategy that can be used to prevent cervical cancer [12]. It is indicated that the HPV vaccine can reduce mortality associated with cancer of the cervix by two third if the uptake reaches 80% [13]. However, compare to other vaccines, the uptake of HPV vaccine is still low in both developed and developing countries [14]. For instance, findings of a meta-analysis of data obtained from 79 studies in 15 countries revealed that only 42% of the parents allow their children to have one or more doses of HPV vaccine [15]. In addition, the uptake of HPV vaccine varies significantly from region to region [16]. For instance, the uptake of HPV vaccine in Africa, Asia, Europe and North America are 1.1%, 1.2%, 31% and 36% respectively [7]. Inconsistency in vaccine supply, inadequate training on HPV vaccine and lack of a clear target for HPV vaccine coverage are factors that contributed to low uptake [17].

It is estimated that high HPV Vaccination coverage will lead to cervical cancer eradication in most countries especially the low and middle income countries by the end of the century [18]. In-contrast, low vaccination uptake will lead to high cervical cancer cases with an approximate 44.4 million cases will be diagnosed globally over a period of 2020-2069, about two-third of this cases will occur in countries with poor human recourses [19].

The vaccine uptake rate essentially determines the success of the HPV vaccination coverage, which in the long run reduces the burden of diseases associated with HPV [20], in other to achieved this, the factors influencing the acceptance of HPV vaccine among

caregiver of girls should be determine as they are the prime decision makers. Therefore, to determine these factors is a step towards achieving high vaccine coverage rate which will in turn reduce the cases of cancers related to HPV [21].

Significance of the study findings

The finding of the study will enable the authorities concern to come up with strategies that will enhance the uptake of HPV vaccine among children of care givers residing in the Gambia. It will also serve as a reference for researchers interested in carrying out further studies with regards to this topic. Also, the findings of the study would add to the available literature on the factors influencing the acceptances of HPV vaccines.

Aim and Objectives of the Study

AIM: To determine factors influencing the acceptance of HPV vaccination among caregivers attending Reproductive and Child Health Clinic at Fajikunda Major Health Center.

Objectives

- To determine the factors enhancing the acceptance of HPV vaccination among caregivers attending Reproductive and Child Health Clinic at Fajikunda Major Health Center.
- To determine the factors hindering the acceptance of HPV vaccination among caregivers attending Reproductive and Child Health Clinic at Fajikunda Major Health Center.

Methods and Materials

Study design

A cross-sectional study design was used to determine the factors influencing the acceptance of HPV vaccine among caregivers attending reproductive and child health clinic at Fajikunda Major Health Center.

Study setting

Fajikunda Major Health Centre is located at Fajikunda community, Serekunda East, Kanifing Municipal Area. The Health facility has a catchment area population of 303,055with Lives Births of 3,780, Surviving Infants of 3,648, under five (5) population of 14,305,Under 15 of 32,187 and Pregnant Women: 3,780.

It's covering eight communities namely; Fajikunda, Abuko, Tallinding, Latrikunda, Nema Kunku, Wellingara, Kunkujang Keitaya and Tabokoto.

The health facility has different units that works together to ensure quality health services are delivered to its population and the units are; Labor ward (Maternity), out-Patients (OPD), In-patient, Lab, TB unit, Eye Unit, Public Health office, Family Planning unit, Postnatal, Antenatal and Pharmacy. The services offered by the facility include the followings; Reproductive and child health (RCH), clinical services (OPD, Eye care, chest clinic and inpatient ward), immunization, birth registration, environmental inspection and disease surveillance, laboratory services and scanning for antenatal mothers.

Sampling technique and sample size

A simple random sampling technique was used for this study. The lottery method was used to select participants for the study. A total of Ninety eight (98) participants were required as the prevalence of acceptance of HPV vaccination was estimated as 50% while allowing an error margin of 5%. The sample size was calculated using the formula below.

$n = z^2 \times p\ (1-p) \div d^2$. Where:

n = the desired sample size

z = standard deviation at 95% confidence level (1.96)

p = is the expected hypothesized prevalence that is the proportion of the target population estimated to have a particular characteristics. Thus, p will be the proportion of patients with knowledge about cataract.

d = is the intended precision when estimating the prevalence, d = 0.1 means that the true prevalence will fall within ± 10% of the estimated prevalence from the sample.

The hypothesized prevalence of knowledge on cataract was 50% (i.e. p = 0.50), the level of confidence was set at 95% that mean that z = 1.96 and the precision was chosen to be 10%, which means d = 0.10.

$n = 1.96^2 \times 0.5\ (1-0.50) \div 0.1^2 = 98$

Inclusion and exclusion criteria

This study included caregivers attending reproductive and child health clinic at Fajikunda Major Health who were willing to participate. However, the study excluded caregivers that were not attending reproductive and child health clinic at Fajikunda Major Health Center who do not consent.

Data collection tool and technique

Data was collected using structured questionnaire and it was adapted from a similar study by Alene., *et al*. [10]. The questionnaire consist 3 sections namely; section A was on socio-demographic characteristics and health behavior, section B was on factors enhancing the acceptance of HPV vaccine**,** section C was on factors hindering the acceptance of HPV vaccine. The questionnaire was both open and close ended.

The questionnaire was reviewed by the supervisor to check for face and content validity and amendments was made according to the research supervisor's recommendations. Data was collected from 9a.m to 2p.m for a period of 5 days.

Data analysis

Collected data were entered in a data set using SPSS version 20.0, data was then analyzed using descriptive statistics and results were presented as frequencies and percentages for categorical variables. For the Inferential statistic, Chi-square test was employed to determine the association between the variables at 5% level of significant.

Ethical consideration

Ethical clearance was obtained from the Regional Health team before the commencement of the study. Written approval from head at Faji Kunda health center and oral approval to conduct the research in the various units was also granted by the head of those units. Written consent was obtained from the participants and the purpose of the study was explained to them. The participants were told that they have the right to withdraw from the study anytime without affecting their rights.

Results

A total of 98 caregivers from various units of the Reproductive and Child Health Clinics (RCH) took part in this study. Table 1 below showed that 30% of the participants were selected from Infant Welfare Clinic, 32% from the Family Planning Unit, 26% from the Antenatal Unit and 12% from the Post Natal Unit respectively.

Variables	Frequency	Percent
Infant welfare clinic	29	30%
Family planning unit	32	32%
Antenatal unit	25	26%
Post natal unit	12	12%
Total	98	1005

Table 1: Distribution of respondents by service delivery point (n = 98).

As can be seen in table 2 below, 33% (n = 32) participants are between the ages 27-31, 87% have ever attended school and only 13% (n = 13) attained tertiary education. Majority of the participants (74%) are unemployed and 72% are married. Approximately 98% even have a child, 80% have 2 Boys and 72% have 2 Girls.

Variables	Frequency	Percent
Age category		
17-21	13	13%
22-26	25	26%
27-31	32	33%
32-36	18	18%
37-41	10	10%
Have you attended school		
Yes	85	87%
No	13	13%
Highest level of education		
Primary education	18	18%
Secondary education	25	26%
Tertiary education	13	13%
Madrasa	29	30%
No education	13	13%
Employment status		
Employed	25	26%
Unemployed	73	74%
Marital status		
Single	10	11%
Married	71	72%

Widowed	7	7%
Divorced	10	10%
Have you had a child		
Yes	96	98%
No	2	2%
Number of boys		
0-2	78	80%
3-5	20	20%
Number of girls		
0-2	71	72%
3-5	27	28

Table 2: Socio-demographic characteristics of participants (n = 98).

The study revealed that 54% (n = 53) heard of cervical cancer and television was the commonest source of information about cervical cancer (20%, n = 19). More than half of the respondents (58%, n = 57) reported that they don't know the causes of cervical cancer whilst 32% mentioned having an unprotected sexual intercourse as the cause of cervical cancer.

Variable	Frequency	Percent
Have you heard of cervical cancer		
Yes	53	54%
No	45	46%
Source of information		
Radio	4	4%
Television	19	20%
Health facility	14	14%
Community	16	16%
No source of information	45	46%
Cervical cancer mode of transmission		
Unprotected sexual intercourse	31	32%
Using dirty clothes during menstruation	8	8%
Mosquito bite	2	2%
Don't know	57	58%
Cervical cancer causes		
Hpv virus	12	13
Mosquitoes	5	5
Bacteria	11	11
Don't know	70	71
Signs and symptoms of cervical cancer		
Abdominal pain	10	10
Nausea	3	3
Vomiting	4	4
Painful sexual intercourse	5	5
Abnormal vaginal discharge	5	5
Bleeding from the vagina	5	5
Don't know	40	41
Abdominal pain, painful sexual intercourse, abnormal vaginal discharge and bleeding	13	14
Painful sexual intercourse and bleeding from the vagina	5	5
Abdominal pain and bleeding from the vagina	8	8

Table 3: Knowledge of respondents on cervical cancer (n = 98).

As shown in table 4 below. majority of the respondents (65%, n = 64) stated that cervical cancer is very serious, 62% agreed that it can only happen to women over 50 years and 49% strongly agreed that being sexually active puts a woman at a risk of cervical cancer. Majority of them (43%, n = 42) disagreed that their daughters are at risk of developing cervical cancer. 62% agreed that there are effective treatment of cervical cancer and less than two-third (62%, n = 61) agree that it can be prevented.

Variable	Frequency	Percent
How serious is cervical cancer		
Very serious	64	65%
Moderate serious	1	1%
Not serious	1	1%
Don't know	32	33%
Cervical cancer can happen to only women over 50 years		
Strongly agree	25	26%
Agree	61	62%
Disagree	5	5%
Strongly disagree	2	2%
Don't know	5	5%

Being sexually active puts a women at a risk of cervical cancer		
Strongly agree	48	49%
Agree	10	10%
Disagree	25	26%
Strongly disagree	8	8%
Don't know	7	7%
There effective treatment of cervical cancer		
Strongly agree	20	21%
Agree	61	62%
Disagree	10	10%
Strongly disagree	0	0%
Don't know	7	7%
Cervical cancer can be prevented		
Strongly agree	25	26%
Agree	61	62%
Disagree	5	5%
Strongly disagree	2	2%
Don't know	5	5%
My daughter is at risk of de-veloping cervical cancer		
Strongly agree	15	15%
Agree	29	30%
Disagree	42	43%
Strongly disagree	10	10%
Don't know	2	2%

Table 4: Perception of respondents on cervical cancer (n = 98).

Over one-third (47%, n = 47) of the respondents strongly disagreed that having sex at an early age increase the risk of cervical cancer, Majority of the respondents (62%) have never heard about HPV vaccination and health facility is their main source of information (14%, n = 13). 57% believed that HPV vaccine can prevent cervical cancer. Only 22% stated that HPV is the main cause of cervical cancer and 33% indicated that HPV is transmitted sexually. More than one third of the participants (37%) agreed that HPV vaccine is available and 77% stated that they will allow their daughters to opt for the HPV vaccine.

Variables	Frequency	Percent
Having sex at an early age increase the risk of cervical cancer		
Strongly agree	10	10
Agree	31	32
Disagree	47	48
Strongly disagree	6	6
Don't know	4	4
Have you ever heard about hpv vaccine		
Yes	37	38%
No	61	62%
Source of information		
Radio	2	2%
Television	10	10%
Health facility	13	14%
Community	12	12%
No source of information	61	62%
Hpv vaccine can prevent cervical cancer		
Yes	56	57%
No	15	15%
Don't know	27	28%
Hpv is the main cause of cervical cancer		
Yes	22	22%
No	17	18%
Don't know	59	60%
Hpv is transmitted sexually		
Yes	32	33%
No	17	17%
Don't know	49	50%
Hpv vaccination is available		
Strongly agree	29	30%
Agree	36	37%
Disagree	12	12%
Strongly disagree	3	3%
Don't know	18	18%

Will you allow your daughter to opt for the vaccine		
Yes	76	77%
No	22	23%
Why will you allow your daughter to opt for it		
To prevent her from having cervical cancer	76	77%
No to the vaccine	22	23%
Why will you not allow your daughter to opt for it		
I don't trust the vaccine	7	7%
It is risky to use such vaccines	4	4%
It is not safe	7	7%
I don't believe in these vaccines	4	5%
Yes to the vaccine	76	77%

Table 5: Respondents' knowledge and perception of HPV and its vaccination (n = 98).

The analysis revealed that employment status (P = 0.024) was the only sociodemographic characteristic that was significantly associated with HPV vaccine acceptance. Employed participants are significantly associated with not accepting their daughters to be vaccinated.

Variables	Accept daughters to opt for hpv vaccine N (%)	Will not allow their daughters to opt for hpv vaccine n (%)	P value
Age category			0.238
17-21	11 (11.2%)	2 (2.0%)	
22-26	23 (23.5%)	2 (2.0%)	
27-31	23 (23.5%)	9 (9.2%)	
32-36	12 (12.2%)	6 (6.1%)	
37-41	7 (7.1%)	3 (3.1%)	
Highest level of education			0.258
Primary education	12 12.2%)	6 (6.1%)	
Secondary education	20 (20.4%)	5 (5.1%)	
Tertiary education	12 (12.2%)	1 (1.0%)	
Madarasa	24 (24.5%)	5 (5.1%)	
No education	8 (8.2%)	5 (5.1%)	
Employment status			0.024
Employed	20 (20.4%)	5 (5.1%)	
Unemployed	56 (57.1%)	17 (17.3%)	
Marital status			0.187
Married	56 (57.1%)	13 (13.3%)	
Not married	20 (20.4%)	9 (9.2%)	
Parity (had a child)			0.345
Yes	75 (75.6%)	21 (21.4%)	
No	1 (1.0%)	1 (1.0%)	

Table 6: Association between the respondent's socio demographic characteristics and vaccine acceptance (n = 98).

The table below showed that having heard about cervical cancer (P = 0.028) and perception (P = 0.006) were significantly associated with HPV vaccine acceptance. Participants who heard about cervical cancer and those who perceived that cervical cancer is serious were less likely not to accept their daughters to be vaccinated.

Variables	Accept daughters to opt for hpv vaccine N (%)	Will not allow their daughters to opt for hpv vaccine n (%)
Ever heard about cervical cancer		
Yes	46 (46.9%)	7 (7.1%)
No	30 (30.6%)	15 (15.3%)
What causes cervical cancer		
HPV virus	8 (8.2%)	4 (4.1%)
Mosquitoes	5 (5.1%)	0 (0.0%)
Bacteria	9 (9.2%)	2 (2.0%)
Don't know	55 (55.1%)	16 (16.1%)
What are the signs and symptoms of cervical cancer		
Abdominal pain	7 (7.1%)	3 (3.1%)

Nausea	2 (2.0%)	1 (1.0%)
Vomiting	2 (2.0%)	2 (2.0%)
Painful sexual intercourse	5 (5.0%)	0 (0.0%)
Abnormal vaginal discharge	4 (4.1%)	2 (2.0%)
Bleeding from the vagina	4 (4.1%)	1 (1.0%)
Abdominal pain, painful sexual intercourse, Abnormal vaginal discharge and Bleeding.	10 (10.2%)	3 (3.1%)
Painful sexual and bleeding from the vagina	3 (3.1%)	2 (2.0%)
Abdominal pain and abnormal vaginal discharge.	6 (6.0%)	2 (2.1%)
Don't know	30 (30.1%)	10 (10.0%)
How is cervical cancer transmitted		
Unprotected sexual intercourse	26 (26.5%)	5 (5.1%)
Using dirty clothes during menstruation	8 (8.2%)	0 (0.0%)
Mosquito bite	1 (1.0%)	1 (1.0%)
Don't know	41 (41.8%)	16 (16.3%)
How serious is cervical cancer		
Serious	57 (58.1%)	8 (8.2%)
Not serious	1 (1.0%)	0 (0.0%)
Don't know	18 (18.4%)	14(14.3%)

Table 7: Knowledge and perception about cervical cancer and vaccine acceptance (n = 98).

Discussion

The study assessed the factors influencing the acceptance of HPV vaccination among 98 caregivers attending reproductive and child health (RCH) clinic at Fajikunda major health center. Caregivers are the ones that decide whether or not to vaccinate their children against HPV; the decision is complex, and several factors are important. On an individual level, the decision is based on attitudes, beliefs, knowledge, subjective norms, socio-demographics, as well as cultural and religious aspects. While on a national level, governmental policies and access to adequate health services (such as health check-ups, vaccination- and screening programs) are significant factors. There are gender differences in the decision-making process and in the level of knowledge one has about HPV and the HPV vaccination. Previous research findings on whether religion has an influence on beliefs and acceptance of the HPV vaccination are inconsistent. HBM is a common theoretical framework used in studies about the behavioral aspects of HPV and the HPV vaccination from a public health perspective. Thus, this study aimed to assess the factors influencing the acceptance of HPV vaccination among caregivers attended Reproductive and Child Health clinic at Fajikunda Major Health Centre.

This study showed that the majority of the respondents 76 (77%) reported that they will allow their daughters to be vaccinated with HPV vaccine. However, several studies conducted in other counties like Tanzania (93.0%), Malaysia (87.1%), and Honduras (91.0%) have shown higher acceptance level [22]. The differences could be due to the low level of awareness among participants in this study which may affect their level of acceptance. Moreover, some of the above studies were conducted after the provision of the vaccine and summary of information to participants which can lead to an increased level of acceptance compared to participants without such kind of information and vaccine. This may be due to the study participant's differences in socio-demographic characteristics and the level of awareness about HPV and its vaccination. The previous studies might have less information about the benefits of vaccines and the disease problem which might also be due to the study time differences.

Factors influencing the acceptance of hpv vaccine

The study highlighted that employment status, having heard about cervical cancer and perception were significantly associated with HPV vaccine acceptance.

The study revealed that employment status (P = 0.024) was significantly associated with HPV vaccine acceptance as most of the unemployed participants accepted the HPV vaccine for their daughters.

It was also found in this study that participants with good knowledge about cervical cancer were more likely to accept HPV vaccine than participants with poor knowledge, this in line with a study conducted by (10) and participants with a positive perception about HPV vaccine were more likely to accept HPV vaccine for their daughters than their counter parts.

Factors hindering the acceptance of hpv vaccine

The study revealed that employed caregivers are significantly associated with not accepting their daughters to be vaccinated. A study conducted in Uganda highlighted that lack of awareness about HPV vaccine was the main factor hindering the acceptance of the HPV vaccine, most of the study participants reported lack of awareness as a reason for not taking the vaccine [17]. A similar study conducted in Nigeria showed that the major reasons given by parents as a factor associated with not vaccinating their eligible children is lack of awareness about the HPV vaccine [23].

Insufficient information and to make informed decision were some of the things the caregivers complained about [24]. A study conducted by Katz., *et al.* [25] showed that the barriers to acceptance of the HPV vaccine reported by adolescents and caregivers is that they believed they lacked adequate information to make informed decisions about the vaccine. Participants who had heard of or been informed about the HPV vaccine had higher acceptance than those who are not informed about the vaccine [26].

Summary and Conclusion

A total of 98 study participants with a response rate of 100% were included in the study. Among participants in this study, 77% accepted to vaccinate their daughters for HPV vaccination. The acceptance to vaccinate daughters for HPV vaccination was affected by being unemployed (74%), having heard about cervical cancer (54%), and positive perception towards HPV vaccination (66%).

Inclusions, the study revealed that the acceptance to human papillomavirus vaccination is high and were significantly associated with being unemployed, good knowledge about cervical cancer, and positive perception towards HPV vaccination. Therefore, community education on cervical cancer and its prevention is crucial to increase awareness and acceptance as well.

Recommendation

It is recommend the ministry of health, The Gambia to;

- Conduct massive HPV vaccination community sensitizations to build positive attitudes.
- Conduct HPV vaccinations community outreaches.
- To ensure regular availability at vaccination sites.
- Base on the findings of the study, it is recommended that the same study should be carried out nationwide.

Bibliography

1. WHO. "Human papillomavirus (HPV) and Cervical Cancer" (2020).
2. Center for Disease Control. "Human Papillomavirus (hpv)" (2020).
3. WHO. "Human papillomavirus (HPV) and Cervical Cancer" (2019).
4. UNICEF. "Human papillomavirus vaccine: Supply and demand update" (2019).
5. Liu G., *et al*. "Seroprevalence of 9 Human Papillomavirus Types in the United States, 2005-2006". *The Journal of Infectious Diseases* 213.5 (2015): 191-198.
6. Meites E., *et al*. "Human Papillomavirus". *The Journal of Infectious Diseases* (2020).
7. Bruni L., *et al*. "Global estimates of human papillomavirus vaccination coverage by region and income level: a pooled analysis". *Lancet Global Health* 4.7 (2016): e453-463.
8. Dorji T., *et al*. "Human Papillomavirus Vaccination uptake in low and middle-income countries". *ELSEVIER* (2021).
9. Emberger J. "The Hpv Vaccine: Overcoming Barriers to Acceptance of a medical Triumph". *AMA Journal of Ethics* (2015).
10. Alene T., *et al*. "Acceptance of Human Papillomavirus Vaccination and Associated Factors Among Parents of Daughters in Gondar Town, Northwest Ethiopia". *Dove Press Journal* (2020).

11. Bruni L., *et al*. "Cervical human papillomavirus prevalence in 5 continernts: meta-analysis of 1 million women with normal cytological findings". *Journal Infectious Disease* 202.12 (2010): 1789-1799.

12. Keating M K., *et al*. "Potential Barriers to HPV Provision Among Medical practices in an Area with High Rates of Cervical Cancer". *Journal of Adolescent Health* 43 (2008): 61-67.

13. Boyce T and Holmes A. "Addressing Health Inequality in the Delivery of the Human Papillomavirus Vaccination Programme: Examining the Role of the School Nurse". *PloS ONE* 7.9 (2012): e43416.

14. Ndiokom CM and Oboh P. "Perception, Acceptance and Uptake of Human Papillomavirus Vaccine among Female Adolescents in Selected Secondary Schools in Ibadan, Nigeria". *African Journal of Biomedical Research* 20.3 (2017).

15. Newman AP., *et al*. "Parents' uptake of human papillomavirus vaccines for their children: a systematic review and meta-analysis of observational studies". *BMJ Open* (2018).

16. Cooper S., *et al*. "Factors that influence acceptance of human papillomavirus (HPV) vaccination for adolescents". *Cochrane Library* (2019).

17. Nabirye J., *et al*. "Health system factors influencing uptake of Human Papilloma Virus (HPV) vaccine among adolescent girls 9-15 years in Mbale District, Uganda". *BMC Public Health* (2020).

18. Brisson M., *et al*. "Impact of HPV vaccination and cervical screening on cervical cancer elimination: a comparative modelling analysis in 78 low-income and lower-middle-income countries". *The Lancet* 395.10224 (2020): 575-590.

19. Simms T K., *et al*. "Impact of HPV vaccine hesitancy on cervical cancer in Japan: a modelling study". *THE LANCET Public Health* 5.4 (2020): 223-234.

20. Loke Y A., *et al*. "The Uptake of Human Papillomavirus Vaccination and Its Associated Factors Among Adolescents". *Journal of Primary Care and Community Health* (2017).

21. WHO. "Human papillomavirus vaccines" (2014).

22. Ezat P W S., *et al*. "National HPV Immunisation Programme: Knowledge and Acceptance of Mothers Attending an Obstetrics Clinic at a Teaching Hospital, Kuala Lumpur". *Asian Pacific Journal of Cancer Prevention* (2013).

23. Bisi-Onyemaechi I A., *et al*. "Reducing incidence of cervical cancer: knowledge and attitudes of caregivers in Nigerian city to human papilloma virus vaccination". *Infectious Agents and Cancer* (2018).

24. Bastani R., *et al*. "Understanding Suboptimal Human Papillomavirus Vaccine Uptake Among Ethnic Minority Girls". *Cancer Epidemiology Biomarkers and Prevention* 20.7 (2011): 1463-1472.

25. Katz T., *et al*. "Barriers to HPV immunization among blacks and latinos: a qualitative analysis of caregivers, adolescents, and providers". *BMC Public Health* (2016).

26. Grandahl M., *et al*. "Parents' knowledge, beliefs, and acceptance of the HPV vaccination in relation to their socio-demographics and religious beliefs: A cross-sectional study in Thailand". *PLoS ONE* (2018).