The role of the health system in uptake of the Human Papilloma-virus (HPV) vaccine among adolescents 9-15 years in Mbale district, Eastern Uganda

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INTRODUCTION(1)

- Globally, cervical cancer is the fourth most common cancer among women (WHO 2014)
- More than 85% of the burden is in developing countries.
- The incidence in Uganda is 47.5 per 100,000
- This is thrice the global estimate (HPV information centre)
- One of the highest globally. More than half of these women die (WHO, 2012, Parkin et al., 2010)
- Over 80% of diagnosed cases present with an advanced stage of the disease(Banura et al., 2010)

Background

- Cervical cancer incidence in Uganda has increased by 1.8% per year over the period of twenty years (Wabinga HR, 2014).
- The Human Papillomavirus (HPV) immunization program is expected to have a significant impact on public health in Uganda
- Cervical cancer deaths to reduce by two-thirds if uptake of HPV vaccine reaches 80%
- The MoH Uganda in partnership with a drug manufacturing company launched a vaccine program in 2012

Problem Statement

- Despite the introduction of the HPV vaccine, there has been low uptake of the vaccine in Uganda.
- Nation-wide uptake estimated at 17% (MoH 2016).
- The ministry of health Uganda has provided the vaccine free of charge .
- Several challenges have been cited with the health system but most research has focused on evidence from developed countries.

OBJECTIVE

- To examine the health system factors influencing uptake of HPV vaccination among adolescents aged 9 to 15 years in Mbale district so as to inform implementation of the HPV vaccination.
- *(WHO building blocks used in the study, three of the six blocks chosen,* SERVICE DELIVERY, HUMAN RESOURCES FOR HEALTH, AND VACCINES,SUPPLIES AND MEDICAL TECHNOLOGY*)*

METHODS

STUDY SITE	Mbale District, Eastern Uganda
STUDY POPULATION	Adolescent girls 9-15 years, purposively selected key informants.
STUDY DESIGN	Cross-sectional study, utilizing both quantitative and qualitative data collection methods
SAMPLING PROCEDURE	Seven respondents per village, from 56 villages, ten parishes and five sub counties.
SAMPLE SIZE CALCUALTION	Bennett's cluster survey sampling formula, used to estimate immunisation uptake
DEPENDENT VARIABLE	Uptake of the HPV vaccine. This was measured by having received two doses of the vaccine
INDEPENDENT VARIABLE	The social demographic characteristics, the human resources for health factors, the vaccines, supplies and medical technology factors and the service delivery factors

Sample size estimation

- $C = \frac{P(1-P)D}{S^2 b}$
- **C** is the number of required villages/clusters
- **P** is the prevalence of uptake which will be assumed to be at 50% (PATH, 2011)
- **S** is the level of precision, 0.032
- **b**= 7 is the expected number of respondents per village
- **D** is the design effect 1+ (b-1) Roh= 1+ (7-1)*0.1,
  =1+ (6*0.1) =1.6
- Roh is the intra cluster variability based on previous research(Bennett et al., 1991)
- $C = \frac{0.5(0.5)1.6}{(0.032)^2 * 7}$ C=56 Clusters/Villages

METHODS

DATA COLLECTION	
PROCEDURES	One on one Interviews with respondents The key informants were audio recorded after consenting verbally.
INSTRUMENTS	Structured questionnaire, key informant interview guide, and an observation checklist
DATA MANAGEMENT	
QUANTITATIVE DATA	Univariate, bivariate and multivariate analysis using STATA 13. Prevalence ratios (PRR) to odds ratios were preferred significance was set at 5%
QUALITATIVE DATA	Thematic analysis using MAXQDA 12

RESULTS

- The mean age was 11.8 ± 1.8 years and median age was 12 years, IQR (10-13).
- 75% of the respondents lived in rural areas.
- Half of caretakers attained up to primary level of education (50.1%).
- Most (71%) of the respondents lived approximately 1km to 3km from a health facility.

• The level of uptake was assessed on the basis of respondent's recall and use of a vaccination card where possible.

No of adolescents who received two doses of vaccine X100
total number of adolescents interviewed

= (56/407) *100

=13.8%

Uptake of HPV vaccine

- The level of uptake was assessed on the basis of respondent's recall and use of a vaccination card where possible.

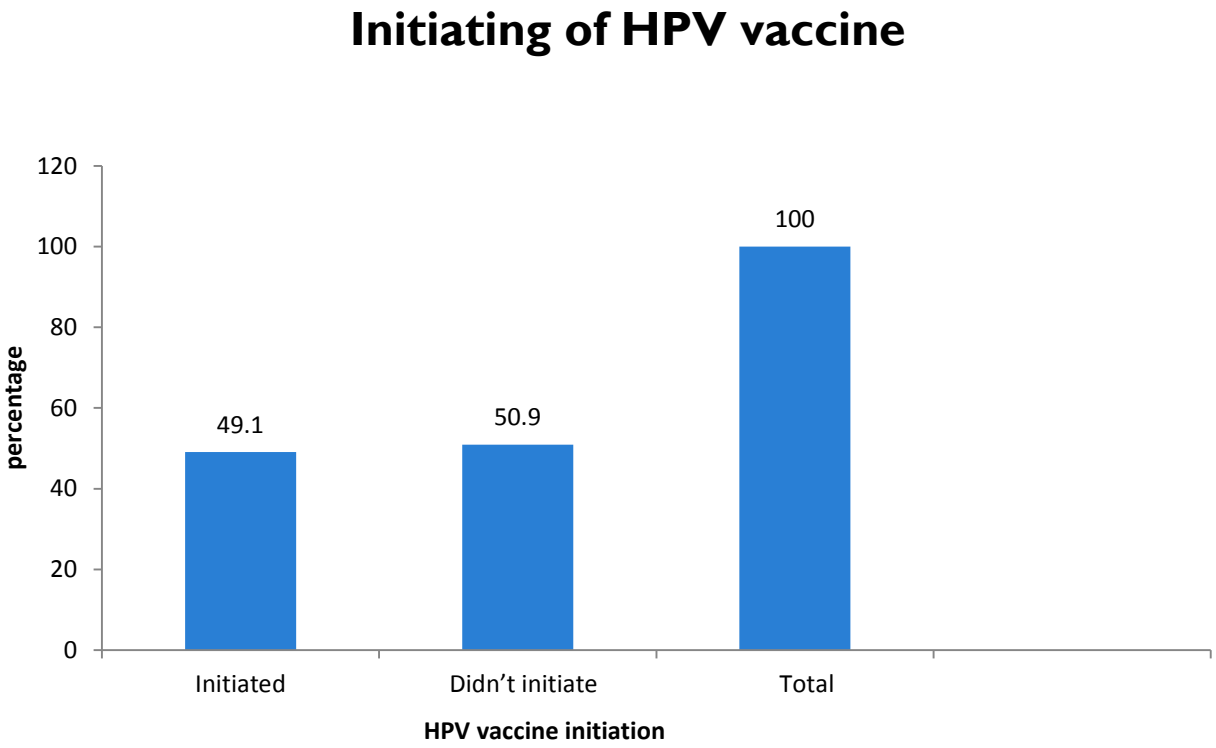
$$\frac{\text{No of adolescents who received two doses of vaccine X100}}{\text{total number of adolescents interviewed}}$$

$$= (56/407) * 100$$

$$= 13.8\%$$

Uptake of HPV vaccine

- Initiation was defined as having received at least one of the recommended two dose series of the HPV vaccine.



Reasons for failing to initiate or complete HPV vaccination

Reason	Frequency (N=348)	Percentage
Distance to health facility	50	14.4
No money	35	10.0
Unfriendly health workers	6	1.7
Lack of awareness	182	52.3
Not due for second dose	14	4.0
Others	61	17.5
Total	**348***	**100**

Multivariable analysis

Independent variable	N= 407 (%)	unadjusted PR (95% CI)	Adjusted PR(95%CI)	P-value
Obtaining vaccine from outreach clinic				
Yes	168(41.3)	7.4(3.6-15.15)	2.6(1.16-5.86)	**0.020***
No	239(58.7)	1	1	
Explanation on side effects of HPV vaccine				
Yes	113(27.8)	10.6(5.5-20.6)	2.7(1.13-6.4)	**0.024***
No	294(72.2)	1	1	
Many options to receive vaccine				
Yes	151(38.1)	7.1(3.5-14.18)	3.6(1.58-8.13)	**0.002***
No	245(61.9)	1	1	
Got vaccine with other services				
Yes	53(13.0)	5.8(3.4-9.7)	2.3(1.11-4.59)	**0.024***
No	353(86.7)	1	1	

Human resources for health

Under this building block, we explored the staffing levels, supportive supervision, and training.

FACILITATORS	BARRIERS
PHC funds motivate them	**Inadequate Staff**
PHC funds have helped to facilitate vaccinators and this is a good strategy for us. In addition, we use phone messages to thank them for the good work they do despite the hardship" (KI DHT)	*"We have few staff, which also compromises our service delivery. If some health workers go to the outreach clinic, you can feel the impact in the health facility when a few of us are left here"*(KI Nurse)
Team work with VHTs	**HPV training was inadequate**
"They go out ten times in a month, approximately twice every week. They work both in the community and the static clinics. It is really the team work that keeps them going" (KI DHT)	"*In my opinion, training was inadequate, it was done hurriedly with the measles campaign" (KI HW)*

Service delivery(1)

Barrier	Quote
Low financing	*"Previously, GAVI was supplementing the PHC Funds but in the last financial year, it has been hard to manage and I am sure that some facilities have not been able to conduct outreaches in both the schools and the community"* *(Key informant, DHT)*
Unclear target for vaccine's coverage	*"We are working blindly, we need to have a clear target for monitoring and evaluation, how are we expected to measure performance?"* (KI DHT) *"Set clear targets for the HPV vaccine just as it is with other vaccine preventable diseases like DPT, Measles and Polio"* (KI nurse)

Service delivery(2)

Barrier	Quote
Exclusion of private for profit facilities and private schools	*"We supply the vaccine to the public and private not for profit health facilities, we are not giving the private for profit clinics, this is because many of them are not equipped with the cold chain and they do not report to us."* *(KI DHT)* *"We give out this vaccine to government schools only, the private schools don't benefit because they have to obtain parental consent for their pupils to get it. In the Government schools, the school authority gives the consent"* *(KI health facility in-charge)*

SERVICE DELIVERY(3)

FACILITATORS	
school based approach of vaccinating	*"So the best approach we use is target the schools, that's why you find that our coverage is higher than the other districts, even though it is still low, it is much higher than the rest"* (Key informant DHT)
support supervision	*"We had some mentorship sessions, we have received support supervision from the district, the ADHO maternal child health has been very instrumental in support supervision, and she motivates us with thank you messages"* (Key Informant nurse)

VACCINES, SUPPLIES & MEDICAL PRODUCTS(1)

Inconsistency in vaccine supply, inflexible policy on targeted age group, integration of services and existing infrastructure were factors that influence uptake of the vaccine.

Barriers	Quote
Inconsistency in vaccine supply	*"The inconsistence in vaccine supply is a major barrier to completion of the doses, and it is something that I know is beyond the district health office to handle."* (KI DCT)
Inflexible policy on targeted age group	*"In addition, there is need to make this vaccine distributed in an equitable manner, we provide the vaccine to only government aided schools, this is not equity"* (KI Health facility in-charge)

VACCINES, SUPPLIES & MEDICAL PRODUCTS(2)

FACILITATORS	
Integration of the HPV vaccines with other vaccines	*"We are giving the vaccine to primary four and primary five pupils, it is an integrated exercise with family planning and HIV counseling and testing"*(KI DHT) *"Furthermore, this is an integrated service and people get very many services at once, may be this has contributed to the success"* (Key informant Nurse)

Discussion

- The estimated uptake in this survey is lower than what the district reported for HPV II uptake of 32%.
- The low uptake of the HPV vaccine may also be attributed to inadequate training of health workers
- It may also be due to limited funding from the central government.
- Studies that looked at uptake in low and middle income countries revealed that human resources for health were inadequate for HPV vaccine delivery(Wigle et al., 2013b, Hongoro and McPake, 2004, Kakuma et al., 2011)

Discussion

- Low awareness may be attributed to the lack of education material on HPV vaccination to young adolescents (La Torre et al., 2013).
- New vaccines put pressure on the health systems of most developing countries. As a result, they face challenges in their vaccine supply and logistics systems(Zaffran et al., 2013)

Discussion

- Integration of services significantly increased uptake of the HPV vaccine. This may be because adolescents get extra services such as deworming, family planning, HIV testing and health education thus reducing the cost and burden on health systems of delivering separate interventions(GAVI, 2017b)

CONCLUSION

- Uptake for the HPV vaccine in this study was defined as completing two doses of the vaccine.
- In this study, uptake was estimated at14%.
- This is much lower than the 80% national HPV vaccine coverage target.
- Receiving an explanation for possible HPV vaccine side effects, having many options from where to get the vaccine, getting the vaccine from an outreach clinic, and getting the vaccine alongside other services greatly influenced uptake

RECOMMENDATIONS

- Ministry of Health and partners - raise awareness about the HPV vaccine
- The Government - continue to nurture a public private partnership
- The District Health Team - conduct on job training of health workers on HPV vaccine

Launching the vaccine

ACKNOWLEDGMENT

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